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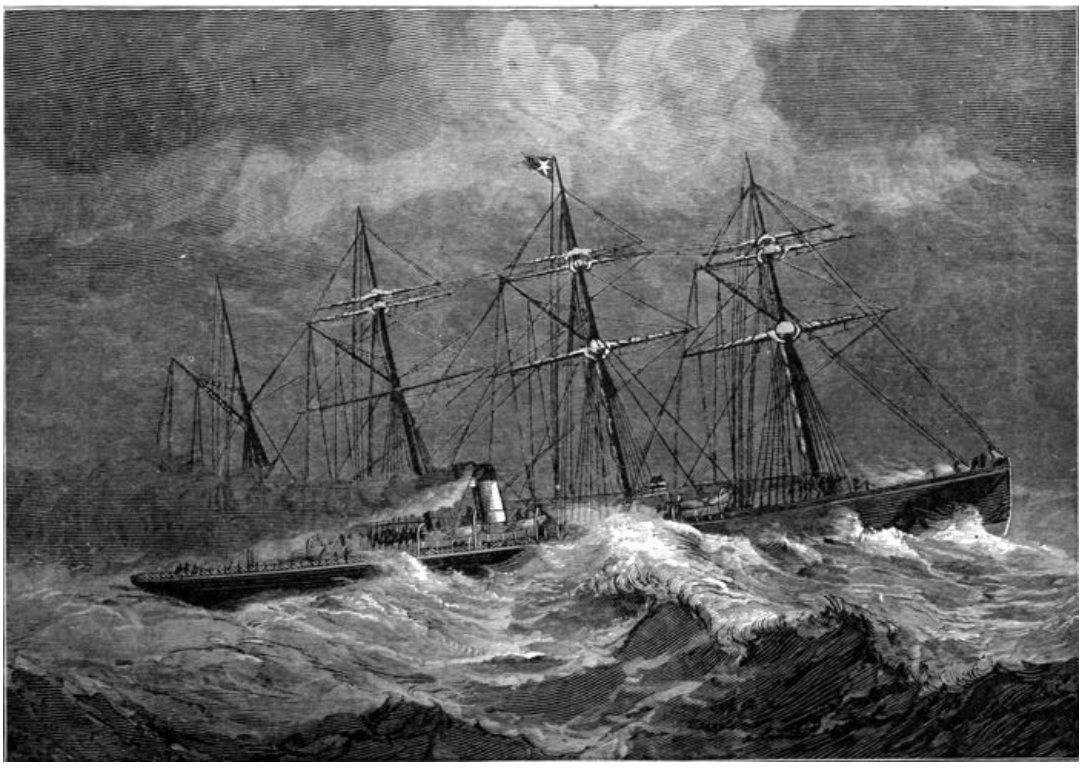
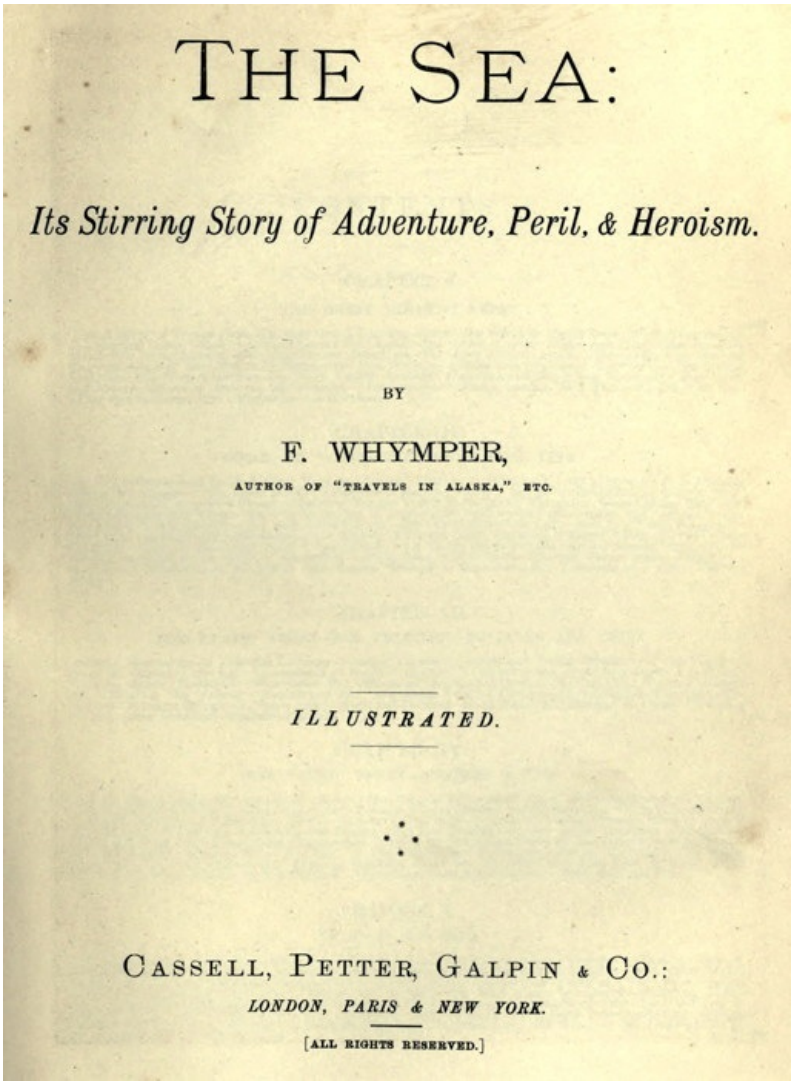


A "WHITE STAR" LINER CROSSING THE ATLANTIC.


THE SEA:

Its Stirring Story of Adventure, Peril, & Heroism.

BY

F. WHYMPER,

AUTHOR OF "TRAVELS IN ALASKA," ETC.

ILLUSTRATED.

CASSELL, PETTER, GALPIN & CO.:

LONDON, PARIS & NEW YORK.

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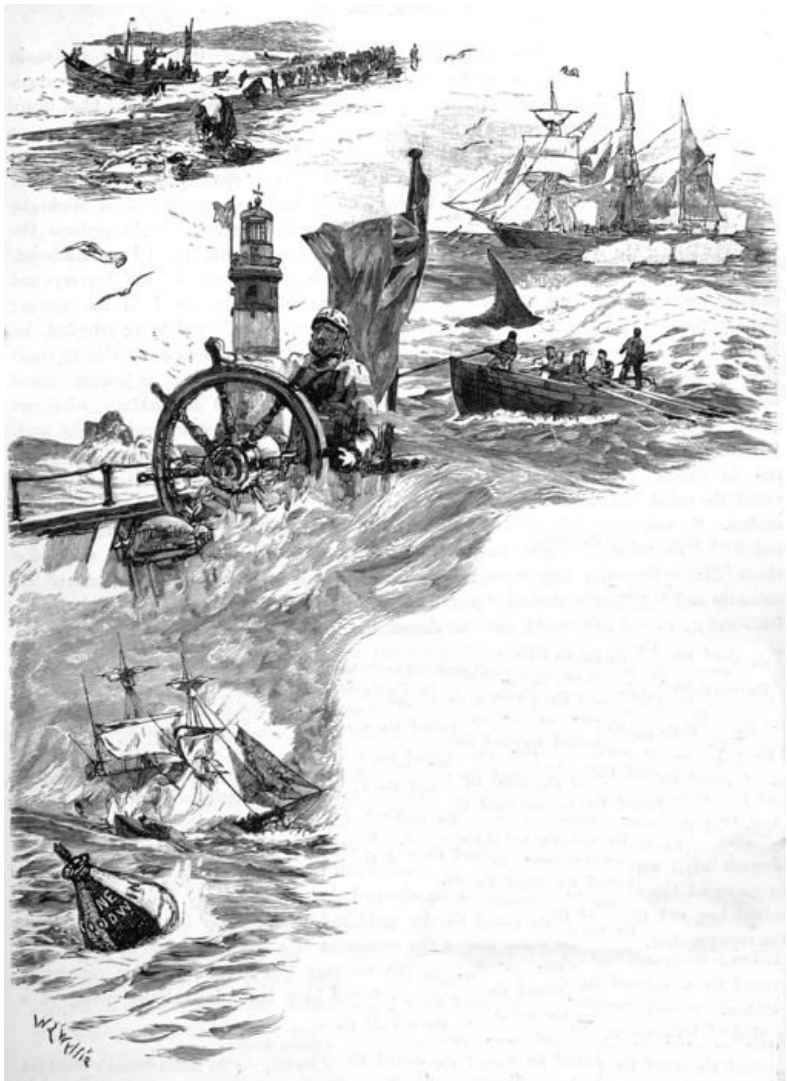


THE SEA.

CHAPTER I.

The Great Atlantic Ferry.

The "Grand Tour" of Former Days—The only Grand Tour left—Round the World in Eighty Days—Fresh-water Sailors and Nautical Ladies—Modern Steamships and their Speed—The *Orient*—Rivals—Routes round the Globe—Sir John Mandeville on the Subject—Difficulties in some Directions—The Great Atlantic Ferry—Dickens's Experiences—Sea Sickness—Night at Sea—The Ship Rights—And then Wrongs—A Ridiculous Situation—Modern First-class Accommodation—The Woes of the Steerage—Mark Tapley—Immense Emigration of Third-class Passengers—Discomfort and Misery—Efforts to Improve the Steerage—"Intermediate"—Castle Gardens, New York—Voyage safer than by the Bay of Biscay—The *Chimborazo* in a Hurricane.

"Come, all ye jovial sailors,
And listen unto me,
While I do sing the *troubles*
Of those that plough the sea."

We all know what the "Grand Tour" meant a few generations ago, and how without it no gentleman's education was considered complete. Now-a-days the journey can be made by almost any one who can command thirty or forty pounds, and the only really grand tour left is that
[pg 2] around the world. M. Verne tells us—inferentially, at all events—that it can be made in eighty days, while Puck, as we know, speaks of putting a "girdle round the earth in forty minutes." But this statement of the popular French author, like many others put forth in his graphic and picturesque works, must be taken *cum grano salis*. It *could* be, undoubtedly, but it is very questionable whether any one has yet accomplished the feat. Could one ensure the absolute "connection" as it is technically termed, of all the steamship lines which would have to be employed it might be done; or better, one vessel with grand steaming and sailing qualities might perform the "Voyage Round the World" in the given time. But M. Jules Verne, it will be remembered, paints his hero as landing at various points, and as performing acts of bravery and chivalry *en route*, such as the episode of rescuing a Hindoo widow from the Suttee; finding time to lounge and drink in San Francisco "saloons," and being attacked by Indians, who would wreck the overland train; and still, with all delays, he is able to reach London in time to win his wager. The very idea of describing a journey round the world as an act of eccentricity is peculiarly French. The Englishman who can afford to make it is especially envied by his friends, and not considered mildly mad. We have before us a list of books of travel, all published within the last few years, and in circulation at the ordinary libraries. Thirteen of these works describe voyages round the world, and they are mostly the productions of amateur rather than of professional writers. So easy, indeed, is the trip now-a-days, that two of these records are modestly and deprecatingly described as "Rambles," while one of the best of them is the work of a clever and enthusiastic lady,[1] whose excellent husband, in and out of Parliament, has earnestly and persistently studied "poor Jack's" best interests. This lady is evidently no fresh-water sailor, and would put to shame the land-lubber described in a very old song:—

"A tar, all pitch, did loudly bawl, sir,
'All hands aloft!'—'Sweet sir, not I.
Though drowning I don't fear at all, sir,
I hate a rope exceedingly.'"[2]

Another work, by a young lady in her teens, is entitled, "By Land and Ocean; or, the Journals and Letters of a Young Girl who went to South Australia with a Lady, thence *alone* to Victoria, New Zealand, Sydney, Singapore, China, Japan, and across the Continent of America." Perhaps the most remarkable, however, of modern female travellers is a German lady,[3] who left Paris with only seven and a half francs in her pocket, and yet managed to go round the entire globe. It must be admitted that she had many friends abroad who helped her, and passed her on to others who could and did assist her in every way. Still, the voyages and travels she made denote the possession of a goodly amount of pluck.

The item of speed is of great importance, and may well be considered in connection with a
[pg 3] voyage round the globe. Verne's title would have been deemed the raving of a lunatic had it been published before the age of steam, while in the first days of that great power which has now revolutionised the world it would have been regarded as absurd. The wooden Cunarder which, forty years ago, conveyed Charles Dickens on his first trip to America took double the ordinary time occupied now in making the voyage; and as a journalist has said, between such a vessel "and such ships as the *Arizona* (Guion line), the *Germanic* (White Star line), the *City of Berlin* (Inman line), and the *Gallia* (Allan line), there is undoubtedly not less difference than between the Edinburgh or Glasgow mail-coaches and a modern express train." The *Arizona* has made the *round* trip—that is, the voyage from Queenstown, Ireland, to Sandy Hook, New York, and back again—in fifteen days. The Inman line has been specially celebrated for quick passages, whilst their "crack" steamer, the *City of Berlin*, has made the single trip outwards in seven days, fourteen hours, and twelve minutes, and inwards in seven days, fifteen hours, and forty-eight

minutes. The *City of Brussels* and the *City of Richmond* have done nearly as well, while other steamships of the same line have made the trip in a very few hours and minutes more time. Think of considering minutes in a voyage of 3,000 miles! The magnificent steamship named after the Orient Company has made the voyage from England to Australia in thirty-seven and a half days, or not very far from half the time occupied by other steamships a few years ago. This grand vessel is said to be only exceeded in size by the *Great Eastern*; she has a displacement of 9,500 tons and indicated horse-power of 5,400, and carries coal enough for her entire voyage—some 3,000 to 4,000 tons. But she is not to remain unchallenged, for, at the time these pages are being written, the Barrow Shipbuilding Company is constructing for the Inman line Atlantic service a still larger iron vessel, with engines of 8,500 horse-power, capable of propelling her at the rate of sixteen or seventeen knots; she will have four masts and three funnels. And yet another vessel of equal or greater power has been put on the stocks for the Cunard Company. Again, the largest *steel* steamship, or ship of any kind, has been launched at Dumbarton. She is intended largely for the cattle trade between the River Plate, Canada, and England. She is over 4,000 gross tonnage, and has been christened the *Buenos Ayrean*. The sums of money invested in the construction of these superb vessels are enormous. The *Orient* is said to have cost, *without* her fittings, little less than £150,000, her engines alone involving the expenditure of one-third of that amount. And yet a third-class or steerage ticket to the Antipodes by her costs only fifteen guineas, while the emigrant can go out to the United States or Canada by almost any one of the finest steamships of the various Atlantic services for six guineas.

Many routes might, of course, be taken round the world, England being the eventual goal in all cases. As quaint Sir John Mandeville says, in the first chapter of his “Travels”:—“In the Name of God Glorious and Allemyghty, he that wil passe over the See to go to the City of Jerusalem, he may go by many Weyes, bothe on See and Lande, aftre the Contree that hee cometh fro: manye of hem comen to an ende. But troweth not that I wil telle you alle the Townes and Cytees and Castelles that Men schaslle go by: for then scholde I make to longe a Tale; but alle only summe Contrees and most princypalle Stedes that Men schulle gone thorgh, to gon the righte Way.”

[pg 4] “Although,” says Mr. Simpson, the popular artist, in his work entitled “Meeting the Sun,” “the reference here is to Jerusalem only, yet in the Prologue he states that he was born in the ‘Town of Seynt Albanes,’ and ‘passed the See in the Yeer of Lord Jesu Christ MCCCXII, in the Day of Seynt Michelle, and hidne to have ben longe tyme over the See, and have reign and gon thorgh manye diverse Landes and many Provynces and Kingdomes and Iles, and have passed throghe Tartarye, Percye, Ermonye, the litylle and the gret; throghe Lybye, Caldee, and a gret partie of Ethiope, throghe Amazoyne, Inde the lasse and the more, a gret partie; and thorghe out many others Iles, that ben abouten Inde; where dwellen many dyverse Folkes, and of dyverse Maneres and Lawes, and of dyverse Schappes of Men.’ ” He adds further on in his “Boke” that going all round the world was not unknown even before his time.

“The world is wide,” yet the practical lines for a journey of this sort are very limited. There is the Siberian overland route, leading by St. Petersburg, Moscow, from which it goes about straight east through Siberia to Lake Baikal; and then there is about a month’s journey south, over the Mongolian Desert to Peking; or it may be varied by descending the great Amoor River, on which the Russians have a number of steamers, to Nicolaiefsk; thence sailing to San Francisco, and home by America and the Atlantic. “When,” says Mr. Simpson, “the Shah and Baron Reuter have
[pg 5] made railways through Persia it may add slightly to the choice; perhaps when Russia civilises the whole of Central Asia it may open up a new route as far as China; but till that happy period, unless the traveller is willing, and at the same time able, to become a dervish, or something of that sort, like M. Vambéry, he had better not take the chance of risk in these regions. Many attempts have been made to pass from India to China, and *vice versâ*, but as yet no one has succeeded. The difficulties of such an enterprise are very great, not so much from the races of people as from the physical character of that region of the earth. These difficulties can, however, be overcome; and in evidence of this, we have perhaps one of the most wonderful expeditions of modern times in the journey of the two Jesuit missionaries, Huc and Gabet, from Peking to Lhassa. When they were ordered to leave the capital of the Great Lama, they wished to do so in the direction of Calcutta, as being by far the nearest, and, at the same time, the easiest way; but in vain. By a policy rigidly insisted upon by the Chinese Government, no one is allowed to pass anywhere along the frontiers between China and India.” This writer adds, that when travelling in Tibet he heard of many parties who wished to cross the frontier in that quarter, with the purpose only of having a few days’ shooting of some particular animal which they wanted to bring home; but he never knew of any one who was able to gratify his wish. One man told him that he had taken some pieces of very bright red cloth and other tempting bribes for the officials on the Chinese side, but it was all to no purpose. “It is not easy to understand why this intense jealousy should exist, but about the fact there can be no doubt.”

But dismissing any and all ideas of journeying by land through Europe, Asia, or Africa, our trip will be almost entirely by sea, the trans-continental route across America being excepted. Practically that route is to-day the best if you would reach quickly and pleasantly any part of the Pacific. The great railway is an enormous link binding the Atlantic and Pacific Oceans together. The Suez Canal and the Panama route have been mentioned in these pages—the first very fully; and place must certainly be had for a description of a railroad which is so intimately connected with the sea. But first we must reach it.

The passage across the “Great Atlantic Ferry” is now one of ease, and in the case of first-class

passengers almost luxury. How different was it about forty years ago, even on the best steamships of that period! Charles Dickens has graphically described his experiences on board the *Britannia*, one of the earliest of the Cunard fleet, in one of his least-read works[4]—at least in the present generation. The little cupboard dignified by the name of "state-room;" the dingy saloon likened "to a gigantic hearse with windows in the sides;" the melancholy stove at which the forlorn stewards were rubbing their hands; the stewardess, whom Dickens blesses "for her piously fraudulent account of January voyages;" the excitement before leaving the dock; the captain's boat and the dapper little captain; the last late mail bags, and the departure, are all sketched from nature, as the great novelist alone could depict them. And now they are off.

"'The sea! the sea! the open sea!
That is the place where we all wish to be,
Rolling about so merrily!'
So all sing and say, by night and by day,
[pg 6] In the *boudoir*, the street, at the concert, and play,
In a sort of coxcombical roundelay.
You may roam through the City, transversely or straight,
From Whitechapel turnpike to Cumberland Gate,
And every young lady who thrums a guitar,
Every mustachioed shopman who smokes a cigar,
With affected devotion, promulgates his notion,
Of being a "Rover" and "Child of the Ocean"—
Whate'er their age, sex, or condition may be,
They all of them long for the "Wide, wide sea!"
But however they dote, only set them afloat,
In any craft bigger at all than a boat,
Take them down to the Nore, and you'll see that before
The "wessel" they "woyage" in has made half her way
Between Shellness Point and the pier at Herne Bay,
Let the wind meet the tide in the slightest degree,
They'll be all of them heartily sick of the sea!"

So says "Ingoldsby," and it is, no doubt, true of some London Jack Tars and Cheapside buccaneers, who, on leaving port, are much more nautically "got up" than any of the crew. These stage sailors become very limp when the sea-water takes the starch out of them. Barham tells us of one Anthony Blogg:—

"So I'll merely observe, as the water grew rougher
The more my poor hero continued to suffer,
Till the sailors themselves cried, in pity, 'Poor buffer!' "

The great steamships of most lines running to distant foreign parts are *comparatively* easy and steady in their motions, and there is really more chance of being attacked by the *mal de mer* on an English or Irish Channel boat than there is on the voyage across the Atlantic. The waves in such channels are more cut up and "choppy" than are those of the broad ocean. The employment of the twin-boat, *Calais-Douvres*, has mitigated much of the horrors of one of our Channel lines. It is curious to note the fact that Indians often use a couple of canoes in very much the same manner as did the designer of the doubled-hulled vessel just mentioned. The writer has seen, in the Straits of Fuca, natives conveying all their possessions on the top of planks, placed over and lashed to two canoes. One suggestion for the improvement of the steamboat service across the Channel to France is to construct an enormous vessel, 650 feet long and 150 wide, a ship as long as the *Great Eastern* and twice her beam, to be propelled by both paddles and screws. She is to be capable of carrying several trains, and is to have a roofed station on board, with all the necessary saloons. Floating platforms are to connect this great steam ferry-boat with the shore rails, so that it can start or arrive at any time of the tide.

"Are you a good sailor?" asks one passenger of another just after leaving Liverpool. "Oh, I suppose I'm no worse than anybody else," is, perhaps, the answer; while some are bold enough to answer, "Yes." But Dickens noticed that the first day very few remained long over their wine, and that everybody developed an unusual love of the open air. Still, with the exception of one lady,
[pg 7] "who had retired with some precipitation at dinner-time, immediately after being assisted to the finest cut of a very yellow boiled leg of mutton with very green capers," there were few invalids the first night.

The subject of sea sickness is an unpleasant one, and cannot occupy much space here. Every old and many a new traveller has a remedy for it, so possibly the mention of our mode of prevention may be permitted here. It is simply for the sufferer to wear a very tight belt round the waist. It has been recommended to many fellow-passengers, and its use has proved invariably beneficial. The unusual motion, and sometimes the smells of the vessel, are the cause of the nausea felt. The tightened belt steadies the whole body, and, provided the sufferer be not bilious, soon braces him up corporally and mentally. If he *is* bilious (which he often is on account of leave-takings and festivities prior to his departure) the worst thing possible is generally recommended him—the ordinary brandy on board. *Very* fine old liqueur cognac in small doses can, however, be taken with advantage. An authority (Dr. Chapman) recommends the application of ice, enclosed in an india-rubber bag, to the spinal cord. In various travellers' works, marmalade, cayenne pepper,

port wine, chutnee, and West India pickles, are prescribed for the malady. The invalid would do much better by eating fresh or canned fruits of a cooling nature. But to return to the voyage. Dickens describes the first night at sea in feeling language.

"To one accustomed to such scenes," says he, "this is a very striking time on shipboard. Afterwards, and when its novelty had long worn off, it never ceased to have a peculiar interest and charm for me. The gloom through which the great black mass holds its direct and certain course; the rushing water, plainly heard, but dimly seen; the broad white glistening track that follows in the vessel's wake; the men on the look-out forward, who would be scarcely visible against the dark sky but for their blotting out some score of glistening stars; the helmsman at the wheel, with the illuminated card before him shining, a speck of light amidst the darkness, like something sentient and of Divine intelligence; the melancholy sighing of the wind through block and rope and chain; the gleaming forth of light from every crevice, nook, and tiny piece of glass about the decks, as though the ship were filled with fire in hiding, ready to burst through any outlet, wild with its resistless power of death and ruin."

Irresistibly comic, as well as true, is his description of the ship during bad weather. "It is the third morning. I am awakened out of my sleep by a dismal shriek from my wife, who demands to know whether there's any danger. I rouse myself and look out of bed. The water-jug is plunging and leaping like a lively dolphin; all the smaller articles are afloat, except my shoes, which are stranded on a carpet-bag, high and dry, like a couple of coal-barges. Suddenly I see them spring into the air, and behold the looking-glass, which is nailed to the wall, sticking fast upon the ceiling. At the same time the door entirely disappears, and a new one is opened in the floor. Then I begin to comprehend that the state-room is standing on its head.

"Before it is possible to make any arrangement at all compatible with this novel state of things the ship rights. Before one can say 'Thank Heaven!' she wrongs again. Before one can cry she *is* wrong, she seems to have started forward, and to be a creature actively running of its own
[pg 8] accord, with broken knees and failing legs, through every variety of hole and pitfall, and stumbling constantly. * * * And so she goes on staggering, heaving, wrestling, leaping, diving, jumping, pitching, throbbing, rolling, and rocking, and going through all these movements sometimes by turns, and sometimes all together, until one feels disposed to roar for mercy."

Dickens gives a droll account of a ridiculous situation in which he was placed. "About midnight we shipped a sea, which forced its way through the skylights, burst open the doors above, and came raging and roaring down into the ladies' cabin, to the unspeakable consternation of my wife and a little Scotch lady—who, by the way, had previously sent a message to the captain by the stewardess, requesting him, with her compliments, to have a steel conductor immediately attached to the top of every mast and to the chimney, in order that the ship might not be struck by lightning. They and the handmaid before-mentioned, being in such ecstasies of fear that I scarcely knew what to do with them, I naturally bethought myself of some restorative or comfortable cordial; and nothing better occurring to me at the moment than hot brandy-and-water, I procured a tumblerful without delay. It being impossible to stand or sit without holding on, they were all heaped together in one corner of a long sofa—a fixture extending entirely across the cabin—where they clung to each other, in momentary expectation of being drowned. When I approached this place with my specific, and was about to administer it, with many consolatory expressions, to the nearest sufferer, what was my dismay to see them all roll slowly down to the other end! And when I staggered to that end, and held out the glass once more, how immensely baffled were my good intentions by the ship giving another lurch, and their all rolling back again! I suppose I dodged them up and down this sofa for at least a quarter of an hour, without reaching them once; and by the time I did catch them the brandy-and-water was diminished by constant spilling to a tea-spoonful."

What a difference to the accommodations and comfort of most modern steamships, with their luxurious saloons placed amidships, where there is least motion; their spacious and airy state-rooms, warmed by steam, water laid on, and fitted with electric bells; their music-room with piano and harmonium, their smoking-room, bath-rooms, library, and even barber's shop. The table is as well served as at the best hotel ashore, and the *menu* for the day is as extensive as that of a first-class restaurant, while everything that may be required in the drinkables, from modest bottled beer to rare old wine, is to be obtained from the steward. And provided that the passengers assimilate reasonably well, there will be enjoyable games, music, and possibly private theatricals and other regularly organised entertainments. The idea of a "Punch and Judy" in the middle of the Atlantic seems rather funny; but we have known of an instance in which even this form of amusement has been provided on board a great steamship! On long voyages it is not by any means uncommon for some one to start a MS. daily or weekly journal, to which many of the passengers contribute. Such have often been published afterwards for private circulation, as affording reminiscences of a pleasant voyage.

Then there is the pleasure of discovering "a sail in sight," and of watching it grow larger by degrees as the vessels approach each other. The "look out" is kept by some passengers almost as persistently as by the sailors detailed for the purpose. Perhaps, again, the captain or officers
[pg 10] have let out the fact that they should pass one of their own or some rival company's vessel that day. How many eyes are strained after that first mere thread of smoke on the horizon! What ringing cheers as the two great steamships near each other! What an amount of anxious enthusiasm when it is known that a boat is coming off from the other vessel, and what feverish excitement to learn all the news! They may have been seven or eight days without any, and in

that time what may not have occurred in the history of nations!

Then, again, the sea itself, in its varying beauty or grandeur, has for most travellers a great interest. Is there not a chance of seeing an iceberg, a whale, or even the great sea serpent?

In March-April, 1869, the writer crossed the Atlantic in splendid weather. The ocean was, for the ten days occupied on the passage, almost literally as calm as a lake; even the lady passengers emerged from their cabins two or three days before they would otherwise have ventured forth. Among them was one lady seventy-five years of age, who was running away—so she informed the passengers—from her husband, and going to join her children in the States. This female had "stood it" for fifty years, but now, she said, she was going to end her days in peace. Here was a champion of "woman's rights!" Alas! on arrival in New York there was no one to receive her, and she was taken back on board the steamer. What became of her afterwards we know not.

THE STEERAGE OF AN ATLANTIC STEAMSHIP FORTY YEARS AGO.

The woes of steerage passengers have been graphically described by Charles Dickens. He tells us that "unquestionably any man who retained his cheerfulness among the steerage accommodations of that noble and fast-sailing packet, the *Screw*, was solely indebted to his own resources, and shipped his good humour like his provisions, without any contribution or assistance from the owners. A dark, low, stifling cabin, surrounded by berths filled to overflowing with men, women, and children, in various stages of sickness and misery, is not the liveliest place of assembly at any time; but when it is so crowded, as the steerage cabin of the *Screw* was every passage out, that mattrasses and beds are heaped on the floor, to the extinction of everything like comfort, cleanliness, and decency, it is liable to operate not only as a pretty strong barrier against amiability of temper, but as a positive encourager of selfish and rough humours." Dickens follows with a dismally correct picture of the passengers, with their shabby clothes, paltry stores of poor food and other supplies, and their wealth of family. He adds that every kind of suffering bred of poverty, illness, banishment, and tedious voyaging in bad weather was crammed into that confined space, and the picture, almost revolting in its naked truthfulness, was not overdrawn in those days. It could not be written, however, of any steerage whatever in our times, for partly from governmental care, partly from the general improvement in means of travel, partly from competition and the praiseworthy desire of the owners to earn a high character for their vessels' accommodations, the steerage of to-day is *comparatively* decent; although it is not yet that which it should be, nor has the progress of improvement kept anything like pace with railway accommodation of the cheaper kind. Yet one would think it to the interest of owners[5] to make the steerage an endurable place of temporary abode.

[pg 11] In 1879 nearly 118,000 steerage passengers left the port of Liverpool for the United States. It should be noted that this was from *one* port, undeniably the principal one for emigration, but still by no means the only British one used for that purpose. Observe further that it was for America alone that these emigrants were bound. According to the United States census of 1870, there were at that time 5,600,000 human beings in the country who were foreign born, and this number has since gone on increasing to a very large extent. Nine-tenths of them at the least crossed the Great Ferry in ships bearing the Union Jack, and of these, three-fourths or more crossed as steerage passengers. Hence the importance of the question.

Latterly a considerable amount of attention has been given to the sub-division of the steerage space, so that, when practicable, friends and families may remain together. Married people and single women have now separate quarters. The sleeping accommodations are the weak point. They are simply rough wooden berths, and the passenger has to furnish his own bedding, as well as plate, mug, knife, fork, spoon, and water-can. The provisions are now-a-days generally ample, and on some lines are provided *ad libitum*. The bill of fare is pretty usually as follows. Breakfast: coffee, fresh bread or biscuit, and butter, *or* oatmeal porridge and molasses; Dinner: soup, beef or pork, and potatoes—fish may be substituted for the meat; on Sunday pudding is often added; Tea: tea, biscuit and butter. Three quarts of fresh water are allowed daily. A passenger who has a few shillings to spend can often obtain a few extras from the steward, and many, of course, take a small stock of the minor luxuries of life on board with him.

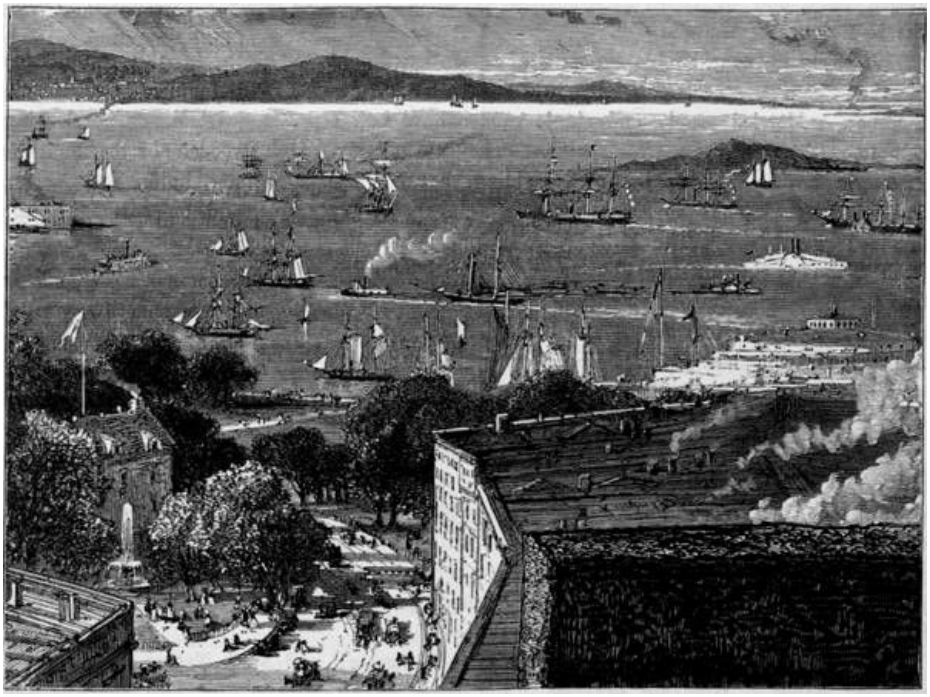
To those of small means who are contemplating emigration, the “Intermediate” (second-class) on board some of the Atlantic steamers to the States and Canada can be commended. For a couple of guineas over the steerage rates, excellent state-rooms, generally with four to six berths in each, furnished with bedding and lavatory arrangements, are provided. The intermediate passenger has a separate general saloon, and the table is well provided with good plain living. As the steerage passenger has to provide so many things for himself, it is almost as cheap to travel second-class.

AT DINNER IN THE FIRST-CLASS DINING SALOON OF AN ATLANTIC STEAMSHIP DURING A STORM.

Almost every reader will remember Martin Chuzzlewit and Mark Tapley on board the wretched *Screw*. How, for example, “the latter awoke with a dim idea that he was dreaming of having gone to sleep in a four-post bedstead which had turned bottom upwards in the course of the night,” for which there seemed some reason, as “the first objects he recognised when he opened his eyes were his own heels looking down at him, as he afterwards observed, from a nearly perpendicular elevation.” “This is the first time as ever I stood on my head all night,” observed Mark.

The lesson taught by Dickens regarding the necessity of keeping up one’s spirits on board ship, and better, of helping to keep up those of others, as exemplified by poor Tapley, is a very important one. If anything will *test* character, life on board a crowded ship will do it. Who that has read can ever forget Mark, when he calls to the poor woman to “hand over one of them young ’uns, according to custom.” “ ‘I wish you’d get breakfast, Mark, instead of worrying with people who don’t belong to you,’ observed Martin, petulantly.” “ ‘All right,’ said Mark; ‘*she’ll* do that. It’s
[pg 12] a fair division of labour, sir. I wash her boys and she makes our tea. I never *could* make tea, but any one can wash a boy.’ The woman, who was delicate and ill, felt and understood his kindness—as well she might, for she had been covered every night with his great coat, while he had for his own bed the bare boards and a rug.” “If a gleam of sun shone out of the dark sky,” continues Dickens, “down Mark tumbled into the cabin, and presently up he came again with a woman in his arms, or half-a-dozen children, or a man, or a bed, or a saucepan, or a basket, or something animate or inanimate that he thought would be the better for the air. If an hour or two of fine weather in the middle of the day tempted those who seldom or never came on deck at other times to crawl into the long-boat, or lie down upon the spare spars and try to eat, there in the centre of the group was Mr. Tapley, handing about salt beef and biscuit, or dispensing tastes of grog, or

cutting up the children's provisions with his pocket-knife for their greater ease and comfort, or reading aloud from a venerable newspaper, or singing some roaring old song to a select party, or writing the beginnings of letters to their friends at home for people who couldn't write, or cracking jokes with the crew, or nearly getting blown over the side, or emerging half-drowned from a shower of spray, or lending a hand somewhere or other: but always doing something for the general entertainment."



NEW YORK BAY, LOOKING ACROSS TO STATEN ISLAND.

[pg 13] Dickens drew his picture from life, and although an extreme case, there are many Mark Tapleys yet to be met. And indeed, unless the emigrant can remain happy and jovial amid the unmistakable hardships of even the best regulated steerage, he had better have stopped at home. If he can stand them well, he is of the stuff that will make a good colonist or settler, ready to "rough it" at any time. Before leaving the subject of steerage passengers and emigrants, it may be well to note that the United States Government does all in its power on their arrival in New York to protect them from imposition and furnish them with trustworthy information. At the depôt at Castle Gardens, where third-class passengers land, there are interpreters, money-changers, railway-ticket offices, and rooms for their accommodation; and it is very much their own fault if they slide into the pitfalls of New York—for New York *has* pitfalls, like every other great city.

The risks of the voyage across the Atlantic are not really as great as those of ships passing southwards through the Bay of Biscay, which is the terror of passengers to Australia, India, China, and other points in the Orient. At the beginning of 1880 the fine S.S. *Chimborazo* returned with difficulty to Plymouth, three persons having been washed overboard, and one killed from injuries received on board. Off Ushant a formidable gale arose, and the vessel began to roll heavily, while on the following morning the storm had become a hurricane, and the water was taken on board and below in volumes, threatening a fate similar to that experienced by the *London*. Just before 9 A.M. an enormous sea broke over the ship, heeling her over and washing the deck with resistless force. The steam launch, six heavy boats, the smoking room, saloon companion, and everything on the spar deck, were in three seconds carried overboard among the breakers as though they were mere children's toys, while, in addition to the losses of life already mentioned, seventeen other passengers were more or less injured. Just before the ship was struck the smoking-room was full of passengers, who were requested by the captain to leave it to give place to some helpless sheep who were floundering about, and to this fact they owed their lives. "As," said a leading journal, "the stricken ship entered Plymouth Harbour on Tuesday morning, her shattered stanchions and skylights, her damaged steering apparatus, and the heap of wreckage lying upon her deck, proclaimed the fury of the tremendous ordeal through which she had passed, and awakened many a heartfelt and silent prayer of gratitude among her rescued passengers, as they contemplated the evidences of the peril from which they had so narrowly escaped." It is in moments such as these that the poverty of human words is keenly felt. There can be no doubt that, but for the excellent seamanship displayed by Captain Trench and his officers there would have been a sadder story to relate.

[pg 14]

CHAPTER II.

The Great Trans-Continental Railway—New York to Chicago—Niagara in Winter—A Lady's Impressions—A Pullman Dining Car—Omaha—"The Great Muddy"—Episodes of Railway Travel—Rough Roads—Indian Attempts at Catching Trains—Ride on a Snow Plough—Sherman—Female Vanity in the Rocky Mountains—Soaped Rails—The Great Plains—Summer and Winter—The Prairie on Fire—A Remarkable Bridge—Coal Discoveries—The "Buttes"—The Gates of Mormondom—Echo and Weber Cañons—The Devil's Gate—Salt Lake—Ride in a "Mud Waggon"—The City of the Saints—Mormon Industry—A Tragedy of Former Days—Mountain Meadow Massacre—The "Great Egg-shell"—Theatre—The Silver State—"Dead Heads"—Up in the Sierra Nevada—Alpine Scenery—The Highest Newspaper Office in the World—"Snowed up"—Cape Horn—Down to the Fruitful Plains—Sunny California—Sacramento—Oakland and the Golden City—Recent Opinions of Travellers—San Francisco as a Port—Whither Away?

Sufficient mention of New York has already been made in this work. The tourist or traveller bound round the world, viâ the great trans-continental railway and San Francisco, has at starting from the commercial metropolis of America, and as far as Omaha, a choice of routes, all the fares being identical for a "through ticket" to the Pacific. You may go among the Pennsylvanian mountains and valleys, and catch many a glimpse of the coal and coal "ile" fields; the country generally being thickly wooded. The Pennsylvania, Pittsburg, and Fort Wayne Railway passes through really grand scenery, and the construction of the road has been a work of great difficulty, involving extensive cuttings and embankments and long tunnels. The road takes a serpentine course among the mountains, and at one point, known as the "Horse-shoe Bend," the line curves round so much that it almost meets itself again. A train following your own appears to be going in the opposite direction. The only city of any importance on this route, before Chicago is reached, is Pittsburg, the busy, coaly, sooty, and grimy—a place reminding one of Staffordshire, and abounding in iron and cutlery works. It is situated among really charming scenery, near where the Monongahela, Alleghany, and Ohio rivers meet, and is an ugly blot among the verdant and peaceful surroundings. After leaving Pittsburg the railroad passes through a charmingly fresh and fruitful country, watered by the Ohio. "Long stretches of green meadows, shut in by hill and dale, shady nooks, cosy farm-houses, and handsome villas, steamers, barges, boats, and timber-rafts—almost as large as those famous Rhine rafts—on the river, make up a varied and most attractive scene." Next you reach Indiana, a country of fairly good soil, bad swamps, fearful fever and ague, and an indolent and shiftless people. In general terms it is a good country to leave.

But the tourist's popular route from New York to Chicago is that briefly known as "The Great Central." At Niagara it passes over a bridge spanning the river below the great Falls, where a tolerable view is obtainable. Most tourists naturally stop a day or two at the Falls, where there are fine hotels. They have been so often described that every schoolboy knows all about them. They are especially worth seeing under their winter aspect, when miniature icebergs and floes are falling, crashing, and grinding with the water. Below the Falls these will bank up to a considerable height, and the river is in places completely frozen over. From the rocks huge stalactites of hundreds of tons of ice depend. The contrast of the dashing green waters with the
[pg 15] crystal ice and virgin snow around is very beautiful. Some idea of the volume of water may be gathered from this fact: the Niagara River a mile and a half above the Falls is two and a half miles wide, and is there very deep. At the Falls all this water is narrowed to about 800 yards in breadth. A traveller already mentioned[6] thus describes her impressions:—

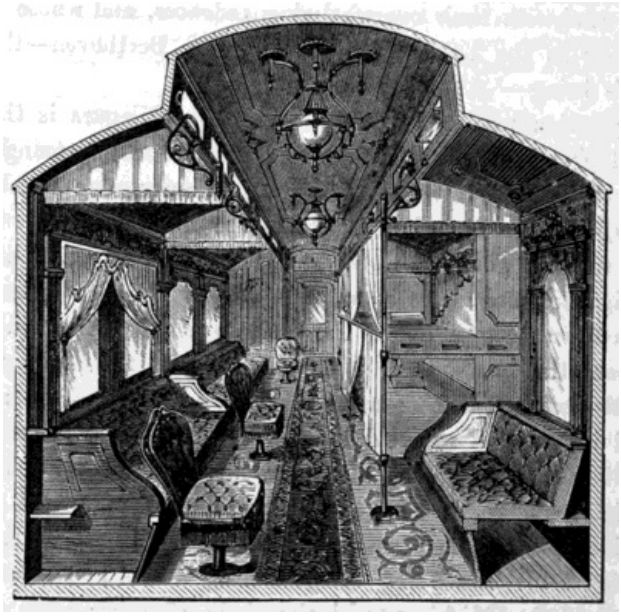
"Nor do I think that the most powerful imagination can, with its greatest effort, attain even an approximate notion of the awful sublimity of this natural wonder. Like all other stupendous things which the mind has been unaccustomed to measure and to contemplate, Niagara requires time to grow upon one. The mind also demands time to struggle up to its dimensions, and time to gather up its harmonies into the mighty tones which finally fill the soul with their overwhelming cadences, and whose theme, ever-varying but still the same—as in the hands of a Handel or a Beethoven—thunders through the whole extent of one's being—'Almighty Power!'

"The chief impression produced upon the mind by Niagara is the perpetuity of immeasurable force and grandeur. This it is which lends such a strange fascination to the Falls; however pressingly one is desirous of getting away, one is obliged to turn back again, and yet again, like the disturbed needle to the magnetic pole. There is nothing in the way of natural scenery which has stamped itself so clearly, indelibly, and awfully on my mind as this gigantic magnificence; as this mighty body of waters, gliding stealthily but rapidly on its onward course above the Falls, springing forward more wildly, more exultingly, as it nears the brink, until it leaps over into the abyss to swell the mighty canticle, which, for thousands and thousands of years, by day and by night, through every season, has ascended in tones of subdued thunder to the Creator's throne."

Passing over all intermediate points, the traveller at length reaches the Garden City, Chicago. This, which used to be counted a western city—it is 900 miles west of New York—is now considered almost an eastern one. And it must be remembered that this place of half a million souls is a port. Large sailing-vessels and steamers enter and leave it daily, and through Lake Michigan and the chain of other lakes can reach the ocean direct. There are miles on miles of wharfs, and it is generally considered one of the "livest" business places in America. Handsomely

laid-out and built, the city now hardly bears a trace of the terrific conflagration which in 1871 laid three-fourths of the finest streets in ruins.

From Chicago to Omaha the various routes have little to interest the ordinary traveller, and so, while speeding on together, let us dine in a Pullman hotel car. On entering you will be presented with a bewildering bill of fare, commencing with soups and finishing with ice-cream and black coffee. The dinner is served on little separate tables, while the purity of the cloths and table napkins, the brightness of the plate, and the crystal clearness of the glass-ware, leave nothing to desire. You can have a glass of iced water, for they have an ice-cellar; you can obtain anything, from a bottle of beer to one of Burgundy, port, or champagne; and cigars are also kept "en board;" while at the particular point indicated you will not pay more than seventy-five cents (about three shillings) for the dinner. It must be admitted that the liquid refreshments are
[pg 16] generally very dear: a "quarter" (*i.e.*, twenty-five cents, the fourth of a dollar) for any small drink, fifty cents for a very small bottle of Bass, and wines expensive in proportion. Still you dine at your ease and leisure, instead of rushing out with a crowd at the "eating stations," where the trains usually stop three times a day. We have the authority of Mr. W. F. Rae for stating that "no royal personage can be more comfortably housed than the occupant of a Pullman car, provided the car be an hotel one."[7]



A PULLMAN RAILWAY CAR.

At Omaha, on the Missouri, the Pacific Railway *proper* commences, although the various New York and other lines, as we have seen, connect with it. The river, irreverently known on the spot as "The Great Muddy," from the colour of its water and its numerous sand and mud banks, is crossed at this point by a fine bridge. *Apropos* of the said banks, which are constantly shifting, a story is told of a countryman who, years ago, before the age of steam ferries, wanted to cross the Missouri near this point. He did not see his way till he observed a sand-bank "washing-up," as they call it, to the surface of the water near the shore on which he stood. He jumped on it, and it shifted so rapidly that it took him clear across the river, and he was able to land on the opposite side! The story is an exaggerated version of fact. The shifting sand-banks make navigation perilous, and good river pilots command a high figure.

The literature of the railway has hardly yet been attempted. It is true that scarcely a day passes without something of interest transpiring in connection therewith: now some grand improvement, now a terrible accident or narrow escape, and now again the opening of some important line. The
[pg 17] humours of railroad travel—good and bad—often enliven the pages of our comic journals, while the strictly mechanical aspect of the subject is fully treated in technical papers. But the facts remain that all this is of a transient nature, and that the railway can hardly be said yet to have a literature of its own.

MADISON STREET, CHICAGO.

The following episodes mainly refer to the grand railway under notice, which is by all odds the longest direct road on the surface of the globe. From New York to San Francisco the distance by this railway is 3,300 miles, and the ticket for the through journey is about two feet long! This would be more justly described as a series of tickets or coupons. The writer has crossed the American continent twice by this route, his first trip having been made on its completion in 1869, when, as correspondent of a daily journal, he had ample facilities for examining it in detail. In Chicago he had the pleasure of meeting Mr. Pullman, who kindly furnished him with information which in those days, at all events, was new to the British public. He was even then trying to get his famous carriages introduced into England; as events proved, it took him several years to get them even tested. In this connection he is credited with a *bon mot*. He was speaking of our land in the highest terms, but, like many Americans, did not think we adopted new ideas with sufficient readiness. “It is a grand country,” said he, “a grand country. But you have to be born *very* young there;” meaning that otherwise you might grow grey in the consummation of even a promising scheme.

[pg 18] When the writer first crossed the continent the railway was very much in the rough. Rails laid at the rate of seven, and, on one occasion, *ten* miles a day, can hardly be implicitly relied upon; much of the road was flimsily ballasted, and many of the bridges were temporary wooden structures of a shaky order. The train had sometimes to literally crawl along; passengers would often get off and walk some distance ahead, easily beating the locomotives, and be found seated on the boulders at the side of the road, having had time for a quarter of an hour’s smoke. Mr. James Mortimer Murphy, in his “Rambles in Northwestern America,” gives some similar experiences on a still rougher line on which he travelled from Wallula, on the Columbia River, to a point in Washington Territory. The railroad was only fifteen miles long, and had wooden rails. Having secured an interview with the president, secretary, conductor, and brakesman of the road —represented by one and the same individual—he was booked as a passenger, and placed on some rough iron in an open truck, with instructions to cling to the sides, and be most careful not to stand on the floor if he cared anything about his limbs. The miserable little engine gave a grunt or two, several wheezy puffs, a cat-like scream, and finally got the train under weigh, proceeding at the headlong speed of two miles an hour, “rocking,” says the narrator, “like a canoe in a cross sea. The gentleman who represented all the train officials did not get on the train, but told the engineer to go on, and he would overtake him in the course of an hour. Before I had proceeded half a mile I saw why I was not permitted to stand on the floor of the truck, for a piece of hoop-iron, which covered the wooden rails in some places, curled up into what is called a ‘snake head,’ and pushed through the wood with such force that it nearly stopped the train. After this was withdrawn the engine resumed its course, and at the end of seven hours hauled one weary passenger, with eyes made sore from the smoke, and coat and hat nearly burnt off by the sparks, into a station composed of a rude board shanty, through whose apertures the wind howled, having made the entire distance of fifteen miles in that time.” The drivers of the passing “prairie schooners,” as the waggons drawn by eight or more pairs of mules or oxen are called, occasionally challenged the president of the line to run a race with them in his old machine; but he scorned their offers, and kept quietly walking beside his train. This eccentric railway has since been superseded by one much more desirable, while in justice to the great line referred to, it must be said that it is now, and long has been, in admirable condition, and that it is crossed by numerous express, emigrant, and freight trains daily.

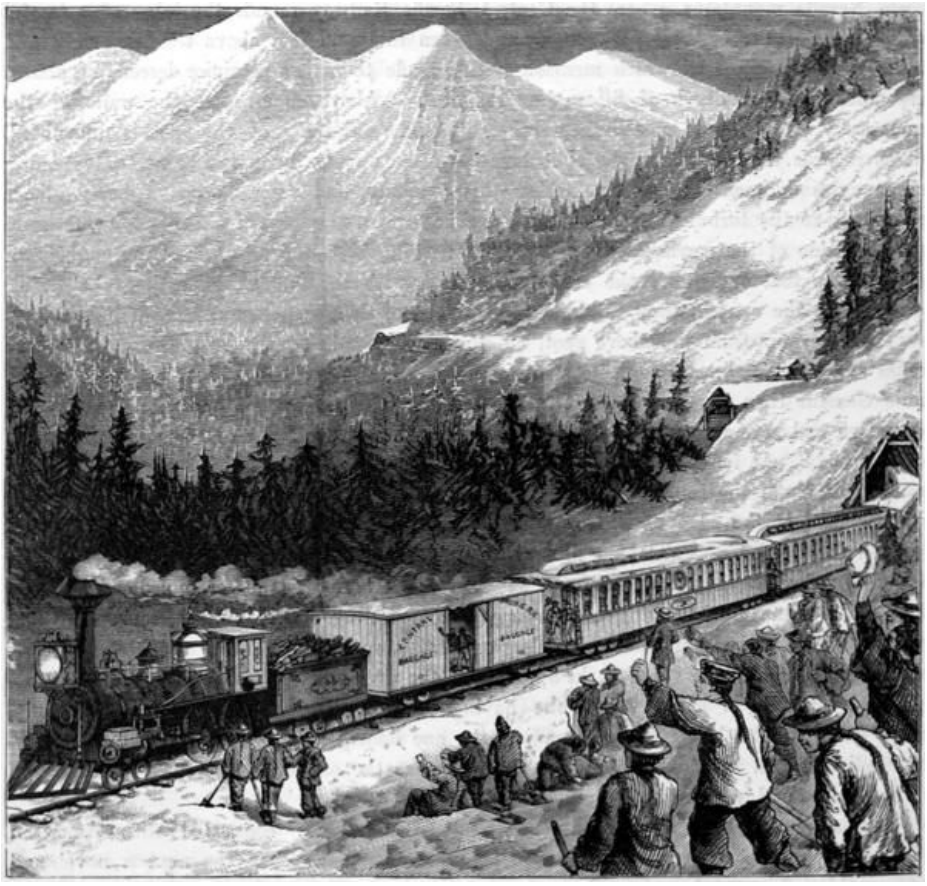
The Indians have never given the trans-continental railway companies much trouble since the completion of the lines. Early in its history a story is told, however, of the Chien or Dog Indians, from whom the town of Cheyenne takes its name. They had a strong prejudice against the iron

horse with the fiery eyes, and determined to vanquish him. Some thirty of them mounted their ponies, and urging them up the line, valiantly charged a coming train. It is perhaps unnecessary to state that fragments of defunct red men were found shortly afterwards strewed about the road, and that the tribe has not since repeated the experiment. Perhaps better is the true story of the Piute Indians of Nevada, who tried to catch a train, and found that they had “caught a Tartar” instead. Annoyed by the snorting monster, they laid in ambush, and as it approached dexterously
[pg 19] threw a lasso, such as is used for catching cattle, over the “smoke stack,” or funnel of the locomotive, while a number of them held on to the other end of the rope. The engine went on its way unharmed; but it is said that the eccentric gymnastics performed by the Indians, as they were pulled at twenty-five miles an hour over the rocks and boulders at the side of the track, were more amusing to the passengers than to themselves.

Most readers will have heard of the celebrated “Cape Horn,” high up among the Sierra Nevada mountains, where the Central Pacific Railway rounds the edge of a fearful cliff. The traveller is there between six and seven thousand feet above the sea level; and at the particular point of which mention is now made there is a precipice descending almost perpendicularly to a depth of fifteen hundred feet. Above, again, rise the walls of the same rocky projection to a still greater height. The sublimity of the spot is undoubted, but as regards the passengers, the ridiculous too often appears upon the scene. Most ladies and many timid men audibly shudder at this juncture, and after taking a hasty glance downwards at the turbulent Truckee River dashing round the base of the precipice, retire to the other side of the carriage, where there is nothing but the prospect of a rough-hewn rocky wall a foot or so off the carriages. Is it with the idea of ballasting the train? Perhaps like the ostrich, they think themselves out of danger, when danger is hidden!

Not very far from the above spot, on the western side of the mountains, where the grades are particularly steep, an accident occurred a few years ago which had more of the comic element than the serious. A train, proceeding at a rapid rate, broke in two, the locomotive and several carriages dashing on, while the second half of the train followed at slower speed. At length the foremost car of this part of the train left the rails, and breaking off from the couplings, turned bottom upwards on the embankment, just coming to an anchor at the edge of a ravine, into which, had it fallen, no one could have been saved. A husband of Falstaffian proportions was in one of the foremost carriages which had proceeded with the locomotive, and as soon as they stopped he scrambled off, running back to the scene of the accident, hurrying and stumbling and shinning himself on and over the rough roadway and obtrusive sleepers, for his wife was in one of the hindmost cars, and he feared the worst. At last he approached the wreck, where his wife was seen standing, calmly waving a handkerchief, she having climbed out through one of the windows, almost unhurt. She had just been tending the one damaged person of the whole number. That individual, in his anxiety to grasp something as the carriage overturned, had seized on the hot stove, and was badly, though not seriously, burned.

Not altogether a nuisance is an institution inseparably connected with American trains—the peripatetic boy who offers you one minute a newspaper, the next a novel, and then anything from a cigar or a box of sweetmeats to a “prize package.” These latter are of all values, from a twenty-five cent package of stationery to a bound book at a dollar and a half, about one in a hundred of which may possibly contain a money prize. The writer had been a good customer as regards paper-covered novels, and his plan was to sell the books back at half-price, then purchasing a new story, and this, of course, suited the boys well enough. In consequence of these and other purchases, he was one day allowed to win a five-dollar “greenback” in a prize package. He was somewhat annoyed afterwards to find that he had been used really as the “decoy duck.” The news of his winnings flew through the carriage, and even through the train, and the enterprising
[pg 20] youngster soon sold a dozen or so of the same packages, and, it may be added, the same number of purchasers. There were no more prizes that day!



ON THE PACIFIC RAILWAY: A SCENE IN THE SIERRA NEVADA MOUNTAINS.

A newspaper is published regularly on the overland trains of the Pacific Railway. There are telegraph stations everywhere on the route, and the latest news is handed “aboard” to the editor, leader-writer, compositor, and pressman—represented by, or condensed into, one and the same individual—as soon as the train arrives, and is immediately “set up” and printed. Thus “specials,” “extra specials,” and “special extra specials” follow one another in rapid succession, and keep the train alive with excitement.

[pg 21]

A term which has come into vogue here originated on the Pacific Railway during the writer’s stay in California. A terrible accident occurred near Oakland, in which one train of the long cars usual in the United States met and literally “telescoped” another. The expression was used in a rather curious way in San Francisco for some time afterwards. If a business man in a hurry ran into another person—say, for example, coming round a corner—the latter would ejaculate, “Hi! are you trying to *telescope* a fellow?”

The writer will not soon forget his ride from Laramie to Sherman, a station on one of the ridges of the Rocky Mountains, which the Pacific Railway crosses at an altitude of over 8,000 feet. Armed with a pass from the company, the courteous station-master at the former place made no objection to his accompanying a locomotive with a snow-plough attached in front, then starting ahead of the regular train. The plough was a rough specimen of its kind, in form not greatly unlike the ram of an ironclad, and was constructed of sheet-iron, covering a strong wooden frame. But it did its work efficiently, scattering the soft snow on either side in waves and spray, reminding one of the passage of some great ocean steamship through the billows. The snow had drifted in places till it was five or six feet deep on the road, but this proved child’s play to the plough, and the services of the navvies, who, seated on the coal, were swinging their legs over the side of the tender, were not required. The greatest danger on the line, now so amply protected by great snow sheds—literally wooden tunnels—and snow fences, arises from snow which has thawed, frozen, re-thawed, and re-frozen until it is literally packed ice. The wheels of a locomotive, arrived at such a point, either revolve helplessly, without progressing, or run clean off the metals.

The mention of the effect of ice on the rails recalls a story told by Colonel Bulkley, when the latter was chief of the Russo-American Telegraph Expedition. The colonel during the civil war in the States was at the head of a constructing party, who built temporary lines of telegraph to follow the advancing northern army. The driver of a train which passed through the district in which they were engaged had been ordered to stop nightly and pick the party up, but one night neglected to do so, and the weary constructors had to tramp a dozen miles in the dark to the nearest village. The men naturally determined that this should not occur again, and so next morning armed themselves with several boxes of bar soap. What for? To soap the rails! Colonel Bulkley tells gleefully how they rubbed it on for about a quarter of a mile, how the train arrived at the place, and after gliding on a certain distance, from the momentum it had acquired, came nearly to a standstill, and how the men jumped on and told the joke to everybody. The engineer

next day did not forget to remember them.

"Some writers strongly advise the traveller to make a halt at Sherman station," says Mr. Rae. "The inducements held out to him are mountain scenery, invigorating air, fishing and hunting. A sojourn among the peaks of the Rocky Mountains has the attraction of novelty to recommend it. Life there must be, in every sense of the word, a new sensation. But some sensations are undesirable, notwithstanding their undoubted freshness. That splendid trout swarm in the streams near Sherman admits of no dispute. Yet the disciple of Isaak Walton should not be tempted to indulge rashly in his harmless and charming sport. It is delightful to hook large fish; but it is less agreeable to be pierced through by arrows. Now, the latter contingency is among the probabilities which must be taken into consideration. A few weeks prior to my journey, one of the conductors of the train by which I travelled, learned, by practical experience, that fishing
[pg 22] among the Rocky Mountains has palpable and painful drawbacks. Having taken a few days' holiday, he went forth, fishing-rod in hand, to amuse himself. While whipping the stream in the innocence of his heart, he was startled to find himself made the target for arrows shot by wild Indians. He sought safety in flight, and recovered from his wounds, to the surprise as much as to the gratification of his friends. His story did not render me desirous of sharing his fate."

The Great Plains, over which the "prairie schooners"[8] toil, and the trains now fly, have a dreary interest of their own. In summer they are hot and dusty, and the contemplation of nearly unlimited sage-brush, and the occasional prairie dog or hen, is not enlivening; while the constant recurrence of skeletons bleaching in the sun—skeletons of overworked mules, horses, and oxen, and sometimes of the human animal—is apt to make one melancholy. But on a winter moonlight evening, when covered with snow, which has thawed in the day, and become *glacé* at night, they resemble one vast glittering lake, with the brush-covered hillocks standing for islands. The buffaloes, once so common, are rarely or never seen near the railway. In that more fertile portion of the plains nearer the Missouri, in Nebraska and adjoining states, it is also possible that the oft-times grand sight of the prairie on fire may be witnessed from the train. The writer was, one evening in May, 1868, in company with others, in a Pullman car, when huge massive clouds of smoke hanging over the horizon appeared in view. Soon it became evident, as the train approached the spot, that the prairie was on fire for miles, although fortunately at some distance from the line. The flames rose fiercely to the peaceful, starlit sky; the homesteads of settlers, trees, and hillocks stood out black against the line of destroying fire; while over all a canopy of smoke hung heavily, affording a scene not soon to be forgotten.

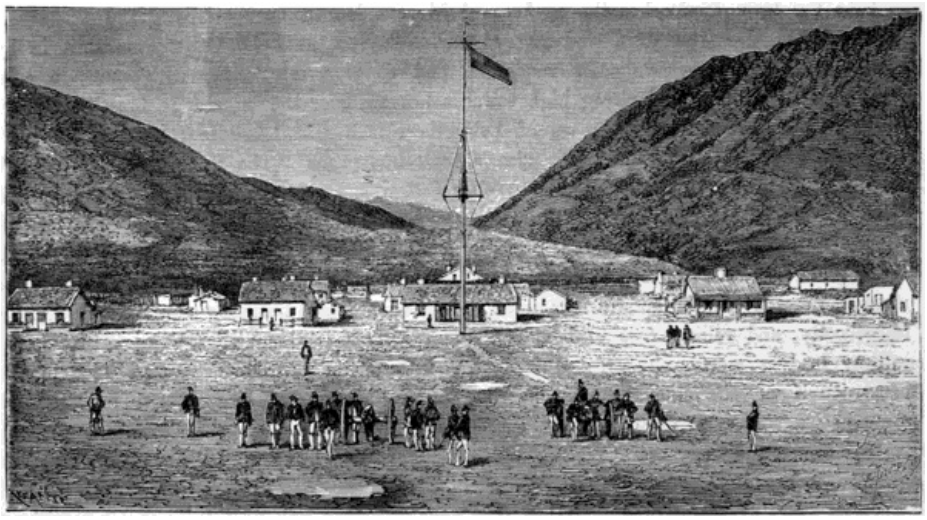
Westward from the high point where Sherman stands, the railway line makes a rapid descent to the Laramie Plains, the trains going down, not merely by their own weight, but with brakes tightly screwed down. At Dale Creek, on this section of the line, a wonderful bridge is crossed. It is 650 feet long, and in the centre of the deep ravine it bridges is 126 feet high. It is built entirely of wood, was erected in thirty days, and is a perfect puzzle of trestle-work. "More than one passenger," says Mr. Rae, "who would rather lose a fine sight than risk a broken neck, breathes more freely, and gives audible expression to his satisfaction, when once the cars have passed in safety over this remarkable wooden structure." Now the train is again proceeding rapidly; in twenty miles, the descent of 1,000 feet is accomplished. Next, Laramie City is reached, round which is a good grazing country. This is succeeded by the plains known as "The Great American Desert," another barren sage-brush-covered stretch of country. And yet—in addition to the fact that even sage-brush is good for something, a decoction of it being recommended in cases of ague—the desert has been proved to contain its treasures. At Carbon, and other stations on the line, fine deposits of coal have been found, and are worked to advantage. It was at first feared that all the coal for the railway would have to be transported from far distant points.

[pg 23] Among the wonders of the plains are the huge rocks and bluffs known as the "Buttes," which often rise from comparatively level ground, and in detached spots. Seen in the gloaming, their often grotesque forms appear weird and unearthly, and the effect is increased by the fact that all around is silent and desolate, and their mocking echoes to the snorting iron horse are the only sounds that are heard. Some of these rock-masses are columnar, and others pyramidal, in form; some assume the shape of heads, human or otherwise. Now they rise in huge walls, with as wonderful colouring as have the cliffs at Alum Bay in the Isle of Wight; they are often several hundred feet in height. One, particularly noted by the writer, had almost the exact form of an enormous dog seated on its haunches.

As the train approaches the confines of Mormondom some specially grand scenery is met and passed. The stern and rugged ravine known as Echo Cañon[9] is shut in by abrupt and almost perpendicular sandstone and conglomerate cliffs, with many a crag standing sentinel-like, and rising high towards heaven, over the impetuous, brawling Weber river. Close to the Mormon town of Echo there is a cliff 1,000 feet high, which *overhangs its base* fifty feet. There is also a rock known as "The Sphinx of the Valley," from a resemblance to the original. Weber Cañon succeeds the first-named, and in this is to be noted a remarkable and nearly perpendicular cleft in the cliff—well known as "The Devil's Slide." Further on, and the train arrives at "The Devil's Gate," where the stern rock-walls narrow, and the dark hills approach each other closely. Here the river becomes a boiling and furious rapid, white with foam, hurrying onward with terrible impetuosity, and rolling *tons* of boulders before its resistless course. Some of the early railway bridges were quite washed away by it, and many difficulties were met in the construction of the line, heavy tunneling almost obviously having been necessary in some places. But all obstacles were successfully overcome. Emerging from the gloomy, rugged cañon, the more or less fertile

and cultivated Weber valley is, by contrast, a perfect glimpse of Paradise.

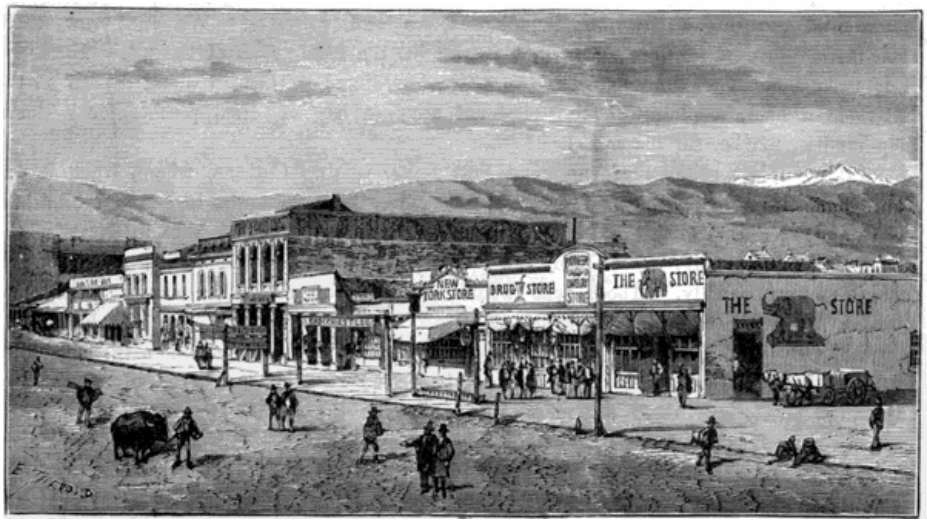
Few travellers, however much they may have to hurry, will pass through Utah without a flying visit to Salt Lake City, now a very different place from what it was when Captain Burton wrote his "City of the Saints." The Mormon capital is not on the main line of the Pacific Railway, but is connected with it by a short branch of forty miles in length. Ogden is the "junction" for Salt Lake, and has a very tolerable station, with dining-rooms, book-stands, and other conveniences. The last time the writer passed through this part of Utah in winter, the (spirit) thermometer on the platform at Ogden marked −16° Fahr., or 48° below the freezing-point of water. On the first visit, the branch railway was barely commenced, and he proceeded to the "city" in a "mud-waggon," a kind of packing-case on wheels—for he can hardly say on springs—which was driven at a furious rate. How many miles he travelled perpendicularly—in jolts—he knows not, but he was very tired on arrival at his destination. Yet the journey had much of interest in it. There was, for instance, almost all the way in sight, and sometimes within a few hundred yards, the Great Salt Lake—the
[pg 24] Dead Sea of America—whose waters are said to be one-third salt. This is probably an exaggeration, but its shores are white with a mineral efflorescence, and it took the Mormons years to irrigate much of the surrounding land, and thus literally wash the salty deposits out of it. The fresh water for the purpose had to be diverted and brought in hill-side ditches, &c., in many cases from a considerable distance. The result has repaid them, for the road from Ogden to Utah passes through several prosperous towns, and by scores of pleasant homesteads embowered in gardens and orchards of peach and apple trees, the marks of industrious farm cultivation being everywhere apparent.



CAMP DOUGLAS GARRISON, NEAR SALT LAKE CITY.

At one period there was some opposition among the Mormons to the construction of the trans-continental railway through their territory, as they feared that influx of strangers which has actually come to pass. The late Brigham Young, however, was either more enlightened, or saw that it was no use fighting against the inevitable, and actually took contracts to assist in making the railroad, besides afterwards building the branch line to the city. It was cleverly said by the *New York Herald* that "railway communications corrupt good Mormons," to which President Young is stated to have replied that "he did not care anything for a religion which could not stand a railroad." And in fact, up to a comparatively recent date, several thousand fresh recruits, principally from Great Britain and the northern nations of Europe, have been conveyed over it annually.

This is not the place for any discussion of the Mormon mystery. It is easy to laugh at it, and say with Artemus Ward that, "While Brigham's religion was singular, his wives were plural." The fact remains that, in hundreds of cases, Mormons had and have but one wife; although, theoretically,
[pg 25] they approve of polygamy. The further point remains that no Mormon was allowed to have more than one helpmeet unless he could prove that his means were amply sufficient for her support. Industry was the keystone of Brigham Young's teachings, however otherwise mixed with fanaticism and superstition, and the result has been that thousands of people, mostly poor, who settled in an unpromising-looking country, have now homes and farms of their own, and that by sheer hard work the desert has been made literally "to blossom as the rose."



A STREET IN SALT LAKE CITY.

Salt Lake City has been laid out with care, and the streets are wide and well kept; while, excepting those of a small business centre, every house has a very large garden attached. The days of the “avenging angels,” or Danites, is over, and every man’s life and property are nowadays safe there, although at one time many suspected or obnoxious persons were, as our American cousins say, “found missing.” On one terrible occasion—the Mountain Meadow massacre—a whole train of emigrants who, on their way to California, had encamped near the city, were murdered by Indians, whom, there is no doubt, the Mormons had incited to the deed. A dignitary of the Mormon Church, Bishop Lee, suffered the death-penalty at the hands of the United States authorities for his share in the transaction. The emigrants, then passing with their families by the hundred, had, there is no doubt, much aggravated the Mormons by jeering and mockery, and sometimes by purloining their cattle and goods. There has been for many years a garrison of United States troops kept at Camp Douglas, a short distance from Salt Lake City, for the protection of Gentiles,[10] and the regulation of affairs generally.

[pg 26] One of the best features of this strange community is the marked absence of drunkenness and profligacy. Most Mormons are teetotallers, and drink little more than tea or coffee, or the crystal water which runs in deep brooks through every street, and has its birth in the heights of the beautiful snow-clad Wahsatch Mountains, which are a great feature in the scenery of Salt Lake Valley. Salt Lake City has a remarkable building, known by the faithful as “The Tabernacle,” and by the irreverent as the “Big Egg-shell,” from the oval form of its roof. It holds 8,000 persons, or, under pressure, even more. It has an organ in point of size the second in America. The writer attended a service there, given in honour of some missionary Mormons who were about to part for Europe. The Salt Lake theatre is another feature of the place, and has a good company of Mormon amateur actors and actresses. We once saw there some twenty-five of Brigham Young’s family in the front rows of the pit. Formerly, it is said, payment at the doors was taken “in kind,” and a Mormon would deposit at the box-office a ham, a plump sucking-pig—not alive—a bag of dried peaches, or a dozen mop-handles, maybe, for his seats!

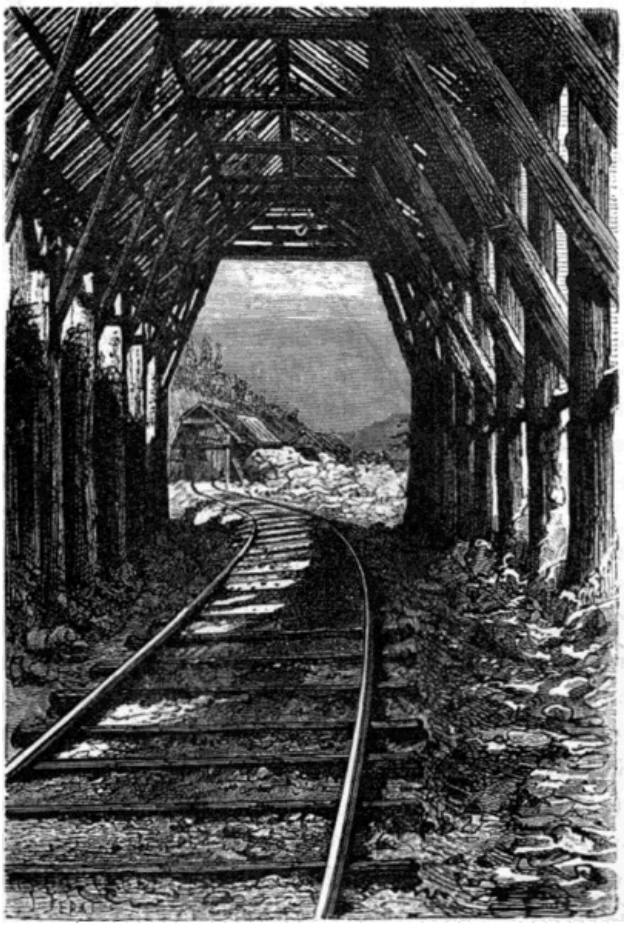
Taking a last glimpse of the great Salt Lake, passing Corinne, where, when it was only six weeks old, a bank and a newspaper office, both in tents, had been established, the train proceeds through a more or less barren district on its way to Nevada, the Silver State, a country where, for the most part, life is only endurable when one is making money rapidly. Those who would see some of the silver mines with comparative ease “get off” the train at Reno, thence proceeding by branch rail to Virginia City and Gold Hill, places where that form of mining life may be studied to perfection. So great has been the yield of the Nevada and other silver mines of adjoining territories, that, as most of us know, the value of silver has actually depreciated. Some of the millionaires of San Francisco gained their wealth in Nevada.

In the United States the distances between leading places is so great that the fares charged, albeit generally moderate, cannot suit slender purses, while empty pockets are nowhere. In consequence many attempt to smuggle themselves through. The writer remembers, in about the part of the route under notice, a “dead-head” who had for several stations managed to elude the notice of the guard, but who was at last detected, and put off at a point a dozen or more miles from the nearest settlement. The “dead-head,” like the stowaway on board ship, of whom as many as fourteen have been concealed on a single vessel, and not one of them discovered by the proper authorities till far out at sea, is an unrecognised institution on the railways of the United States. Perhaps because our ticket system is more rigidly enforced, few attempt to take a free passage on English railways, although it is stated that a sailor was found, some little time since, asleep *under* a carriage, his arms and legs coiled round the brake-rods, having succeeded in nearly making the trip from London to Liverpool undiscovered. But, then, sailors are hardened to jars and shocks and noises, by being accustomed to the warring of the elements and so forth. The reader may remember that when, some few years ago, a Great Western train intersected and completely cut in two another which crossed its path, a sailor was found asleep on the seat of a
[pg 27] *half* third-class carriage, and that he was quite angry when awoke and told of his narrow escape.

All this bears a strong resemblance to digression, so let us return to our subject—"dead heads." Examples of this tribe have boasted that they have travelled all over the States for nothing. Good-natured guards—always "conductors" in America—will often wink at his presence, but more rigid officials have been known to stop the train outside a long tunnel, or on one side of a dangerous open trestle-work bridge, and peremptorily tell the vagrant to "get!" He has often worked his way clear across the American continent. Turned off one train, kicked off another, left in the snow half-way between far distant stations, charitably allowed a short ride on an open freight car, walking where he may not ride, stealing where it is easier than begging, and *vice versâ*, he has at last arrived in California, where, to do a glorious country and a generous people justice, not even a tramp is allowed to starve. After all, does not the vagabond deserve something for his enterprise? Perhaps in that land, now far more of corn and hops and wine than of gold, he may, under more auspicious circumstances, become a better and more prosperous man.

Few tourists or travellers of leisure will fail to pay a flying visit to the grand and beautiful lakes and tarns lying among the eternal snows of the Sierra Nevada mountains, which separate the Silver from the Golden State, and are crossed by the Pacific Railway at an elevation of 7,042 feet above the sea level. From the Summit and Truckee stations there are all necessary facilities for reaching Donner, Tahoe, and other lakes, and for a stay among some of the grandest scenery in the world. The space occupied by this chapter would not describe in the barest details the grand mountain peaks, in one case rising to an altitude of 14,500 feet; the forests of magnificent trees; the quieter valleys "in verdure clad;" the waterfalls and cataracts and torrents of this Alpine region, which is within half a day's journey of San Francisco, and but three or four hours from districts which for eight months of the year have the temperature of Southern Italy. Sufficiently good coaches convey you to leading points, where there are comfortable inns, or, in the summer months, travellers can do a little tent-life and open-air camping with advantage, the climate among the mountains being pure, bracing, and yet warm. On the leading lakes there are boats to be had, and on one or two there are small steamers plying regularly. Fishing and hunting can be indulged in to the heart's content. The Sierra mountain trout is unsurpassed anywhere; while the sportsman can bag anything from a Californian quail to a grizzly bear—the latter, more especially, *if he can*. At most of the ordinary places of resort he will get the morning papers of San Francisco the same day, while Truckee boasts of a journal of its own, published, be it observed, 7,000 feet up the mountains![11]

One of the writer's recollections of the Sierra region is not so pleasant, but then it was under its winter aspect. He had been warned on leaving San Francisco that the railway might be "snowed up," as it was in 1871-2, when for several weeks there was a blockade, and he was recommended to go to New York *viâ* Panama. That voyage he had once made, and, besides, had a desire to see
[pg 28] the continent in winter, when the journey from the Sierra Nevada Mountains to New York is made through 3,000 miles of snow. So he started, and for twelve hours or so all went well; but at the very "summit" of the railway line, *i.e.*, its highest point among the Sierra Nevada, and near the station of the same name, the train came suddenly to a standstill in the gloom of a long "snow-shed" tunnel. Worse, as it seemed to some, the engine deserted it, and ran away, while the conductor was also absent for a long time. The carriages were not too well lighted, although quite warm enough, thanks to the glowing stoves, while memories of former blockades and half-starved passengers did not aid in reassuring the frozen-in travellers. Few slept that night, and, indeed, in one carriage, where there were several squalling babies and scolding females, it would have been difficult. Some of the older travellers, who had something of Mark Tapleyism about them, did their best to cheer the rest, and passed their wicker-covered demijohns—flasks are hardly enough for a seven days' journey, which might be indefinitely extended—to those who had not provided themselves; one individual did his best to relieve the monotony with a song; but it fell rather flat, and melancholy reigned supreme.[12] But not for long. About seven next morning there was a commotion; a whistle in the distance; another nearer, which, hoarse as it was, sounded like heavenly music; and in a few minutes the good locomotive arrived, coupled with the train, and took it to the nearest station, where breakfast was ready for all who would partake. And that breakfast! Trout, chicken, venison, hot bread, buckwheat cakes, and molasses, and all the usual, and some other of the unusual, adjuncts of a regular American meal. The traveller must not expect all these luxuries at places nearer the centre of the continent, where, in some cases, all that you will get are beans and bacon, hot bread, tea or coffee, and perhaps stewed (dried) apples or peaches. At such places the excuse is sufficient, for everything is brought from a considerable distance, while the stations themselves have only been erected for the railway, and sometimes do not boast a single dwelling other than those immediately connected with it.



ON THE PACIFIC RAILWAY: THE INTERIOR OF A SNOW-SHED IN THE SIERRA NEVADA.

And so we descend, first to the foot-hills, and then to the plains of sunny California. Evidences of mining, past and present, are to be often seen: flumes and ditches through which the water is rushing rapidly, old shafts, and works, and mills, and boarding-houses. But the glory is departed, or rather changed for the more permanent vineyard and grain-field and orchard. Some of the finest wines and fruits are raised among these said foot-hills. And now we cross the American river, and are in Sacramento, the legislative capital of the State, a city surrounded by pleasant suburbs, handsome villas, and splendid mansions. Thence to San Francisco there is the choice of a ride on the Sacramento River to the Bay, or one of two railways—once so near the Bay City, few care to delay, and so press on. The railway bears you through a highly-cultivated country to Oakland, the Brooklyn of San Francisco, and place of residence for many of its merchant princes. Here all the year round flowers are in full bloom. When leaving California in winter we noted
[pg 29] roses, daisies, verbenas, pansies, violets, hollyhocks, calla lillies, and camellias, all growing in the open-air. This is not particularly surprising, for in our own country, in Devonshire and Cornwall, particularly at Penzance, a modified statement of the same nature might be made. At Oakland the railway runs out on a wooden pier or bridge, one mile and a quarter long, to the bay.

Of San Francisco and its glorious bay these pages have already furnished some account. It is the grand depôt for all that concerns commerce and travel between every part of America and much of Europe and the Pacific generally. The successful miner, trader, or farmer, from Nevada, Oregon, Colorado, and all outlying territories, spends his money there; as the metropolis of the coast-trade of all kind *centres* there. Hence its success and cosmopolitan character.

In speaking of the cosmopolitan characteristics of the Golden City, a traveller (Mr. Carlisle), says that one of the good points, coming, as did he, from the remoteness of Japan, is the proximity of the city to Europe as regards the receipt of news.

[pg 30] “The city of San Francisco is eight hours behind London in the matter of time, and one turns this to good advantage. When her corn-merchants go down to their offices in the morning they find on their desks a report of the Liverpool market of that morning; each morning paper has two or three columns filled with telegrams of the preceding evening from all parts of Europe, and not unfrequently there appears among these telegrams a notice of the following kind:—‘The *Times* of to-day has an article in which it says,’ &c., &c., giving the substance of that morning’s leader.” The present writer can illustrate this point by an actual occurrence in his own experience. Every reader will remember the terrible explosion in the Regent’s Park, which did so much damage, and which happened about half-past three in the morning. He was then occupying the post of “telegraphic editor,” &c., on the staff of the *Alta California*, the oldest journal published on that coast. The news of the explosion reached him by telegram at 11.30 the *evening before*, that is, *apparently*, before it happened! The *Alta* therefore was able to give the sad intelligence to all its readers—some few of them as early as four o’clock—the next morning, while the London newspapers of the early editions could naturally have nothing about it, as they were printed

before its occurrence.

Mr. W. F. Rae, a writer before quoted in regard to the character which the city unfortunately acquired in early days, says of it:—"From being a bye-word for its lawlessness and licentiousness, the city of San Francisco has become in little more than ten years as moral as Philadelphia, and far more orderly than New York." The fact is that one must obtain a "permit" to carry a revolver at all, and that permission cannot properly be obtained by anyone of dissipated or dangerous character. A heavy fine is inflicted on any one wearing a pistol without having secured the necessary authority. The same writer says:—"That the Golden State is of extraordinary richness is well known to every traveller. To some, as to me, it may have been a matter of rejoicing to discover that California is also a land teeming with unexpected natural beauties and rare natural delights." He quotes approvingly Lieutenant-Governor Holden's speech at a festive meeting held in Sacramento, California, on the completion of the Pacific Railway. "Why, sir," said the Lieutenant-Governor, a gentleman who had himself done much towards the successful consummation of that grand enterprise, "we have the bravest men, the handsomest women, and the fattest babies of any place under the canopy of heaven!" Baron Hübner, in his published work,[13] says of the climate, "It is a perpetual spring;" and then, alluding to the decreased yield of gold, remarks truly, "Its real riches lie in the fertility of the soil." And once more, Margharita Weppner, the German lady-traveller before mentioned, says, speaking of a fruit-show she visited:—"What I saw there could only be found in California, for I have never seen anything to equal it, even in the tropics." She adds, enthusiastically:—"This beautiful city of the golden land I prefer to any other in America. My preference is due to the agreeable kind of life which its people lead, and to the extraordinary salubrity of the climate." The present writer has preferred to collate from these independent sources rather than from his own long experience; but he can testify to the truth of every one of the above statements. One of the grandest features in San Francisco's
[pg 31] present and assured future success is the fact that the steamship companies of the whole Pacific make it their leading port.

From San Francisco the traveller bent on seeing the world can proceed to New Zealand and Australia, calling at Honolulu in the Hawaïan Islands, and Fiji, on the way; *or* he can make his way to China, calling at Japan, in steamships having perhaps the most roomy accommodation in the world; *or* he can reach Panama and South American ports, calling at Mexican ports *en route*, by steamships which pass over the most pacific part of the Pacific Ocean; *or*, again, he can make delightful trips northwards to Californian and Oregonian and British Columbian ports; *or*, once again, southwards to ports of Southern California. These lines are running constantly, and the above list is far from complete. Whither away?

CHAPTER III.

The Pacific Ferry—San Francisco to Japan and China.

The American Steamships—A Celestial Company—Leading Cargoes—Corpses and Coffins—Monotony of the Voyage—Emotions Caused by the Sea—Amusements on Board "Chalked"—Cricket at Sea—Balls Overboard—A Six Days' Walking Match—Theatricals—Waxworks—The Officers on Board—Engineer's Life—The Chief Waiter—"Inspection"—Meeting the *America*—Excitement—Her Subsequent Fate—A Cyclone—At Yokohama—Fairy Land—The Bazaars—Japanese Houses—A Dinner *Menu*—Music and Dancing—Hongkong, the Gibraltar of China—Charming Victoria—Busy Shanghai—English Enterprise.

A very ordinary trip now-a-days for those rounding the world is that from San Francisco to China, calling at Japan on the way. The steamships of the Pacific Mail Company are those principally employed, and a voyage on such a vessel as the *China*, which is one of the crack vessels of the service, is one almost invariably of pleasure. The *China* is a steamship of over 4,000 tons, and cost 800,000 dollars, or, roughly, £160,000 sterling. She will often carry 2,000 tons of tea on a return voyage, to say nothing of perhaps from five to fifteen hundred Chinamen. A traveller[14] already referred to states, that with only 580 on board half a ton of rice had to be served out daily, with a modicum of meat and vegetables. One of the leading cargoes on the outward trip from San Francisco is corpses and coffins, few Chinamen being ever buried out of their native land. In the splendid and roomy saloons of these steamers there are always Chinese waiters, who are said to be most obliging, and noiseless in their motions. Negro waiters are civil and assiduous enough in their attendance, but are always fussy; in this respect "John" is a great improvement on "Sambo."

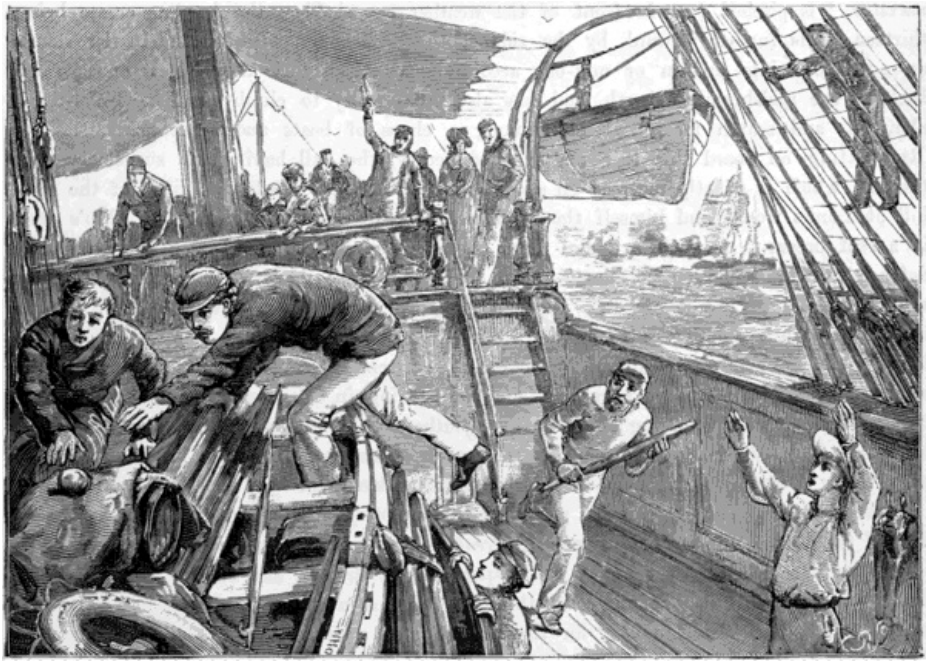
"An additional proof," said a leading journal "of the new vitality infused into that long inert mass, the Chinese Empire, has just been supplied from San Francisco," and the writer goes on to describe a new development of their mercantile enterprise. It seems that there has been in existence for some time past an association termed the Chinese Merchants' Steamship Company,

[pg 32] the stockholders of which are wealthy native merchants and mandarins, who own many coasting steamers. The company is now about to start a line from China to the Sandwich Islands and San Francisco, and it is not improbable that the Chinese emigrants may prefer these steamers to any other. The manager of this Celestial "P. and O." is one Tong Ken Sing, a shrewd native of Singapore; and, continues the writer, "under the enlightened control of this man of his epoch, who is equally at home with tails and taels, the company is sure to succeed."

After leaving the "Golden Gate," the entrance to the Bay of San Francisco, and passing the rocky Farralones, islands whence a company brings a million of sea-birds' eggs to the city yearly, the voyager by this route will not see land till Japan is reached. The steamships stop nowhere *en route*. The passengers must depend on their own resources aboard for amusement, and every passing sail becomes an object of greatest interest. Yet still there is always the sea itself, in its varying aspects of placid or turbulent grandeur. "The appearance of the open sea," says Frédol, "far from the shore—the boundless ocean—is to the man who loves to create a world of his own, in which he can freely exercise his thoughts, filled with sublime ideas of the Infinite. His searching eye rests upon the far-distant horizon; he sees there the ocean and the heavens meeting in a vapoury outline, where the stars ascend and descend, appear and disappear in their turn. Presently this everlasting change in nature awakens in him a vague feeling of that sadness 'which,' says Humboldt, 'lies at the root of all our heartfelt joys.' " When the Breton fisherman or mariner puts to sea, his touching prayer is, "*Keep me, my God! my boat is so small, and Thy ocean so wide!*" "We find in the sea," says Lacepède, "unity and diversity, which constitute its beauty; grandeur and simplicity, which give it sublimity; puissance and immensity, which command our wonder." That immense expanse of water is no mere liquid desert; it teems with life, however little that life may be visible. The inhabitants of the water through which the good ship ploughs her way are as numerous as those of the solid earth; although, unless the great sea-serpent makes its fitful appearance, the experience of a traveller over the Pacific by this route will be repeated. Says he:—

"Few signs of life are visible outside the vessel. Occasionally a whale is reported in sight, but for many days most of the passengers are inclined to think it is only something very 'like one,' till, as the days pass, every person has caught a glimpse of a spout of water suddenly shooting up from the sea without any apparent reason, or of a black line cutting through the blue surface for a moment, and then disappearing to unknown depths. Occasionally, too, one or more sea-birds are seen following in the vessel's wake, sweeping gracefully across and again across the white band of foam, and with difficulty keeping down their natural pace to that of the steam-driven monster. These birds are of two kinds only: the 'Mother Carey's Chicken,' and another, called by the sailors the 'Cape Hen'—a brown bird, rather larger and longer in the wing than a sea-gull. Both birds are visible when we are in mid-ocean, 1,000 miles at least from the nearest dry land." The writer of these pages has seen whales, in the North Pacific, keep up with the vessel on which he was a passenger for half an hour or more together. On one occasion a large whale was swimming abreast of the steamer so closely that rifle and pistol shots were fired at it, some undoubtedly
[pg 33] hitting their mark, yet the great mammal did not show the slightest symptoms of even temporary annoyance, and there is reason to believe was not much more hurt by the shots than would the targets at Wimbledon be affected by a shower of peas.

Occasionally a little diversity and profit are got out of passengers by the sailors when they go for the first time on the fo'castle. The latter draw on the deck a chalk line quickly round the former, and each visitor so "chalked," as it is called, must pay a fine in the shape of a bottle of rum. This secures one, however, the freedom of the ship ever after.



A CRICKET-MATCH ON BOARD SHIP.

One of the deck games popular on long voyages is a form of quoits, played with rings and chalked spaces, or, in some cases, on a spike driven into the deck. A traveller[15] gives an amusing account of a cricket club formed on the vessel in which he was a passenger. Fancy playing cricket at sea! He says:—"The *Lord Warden* cricket-ground is on the main deck, and, owing to the somewhat limited space at the disposal of the ten members, single-wicket matches are the invariable rule. The stumps, which are fixed in a frame so as to remain steady on the deck, are about two feet in height, and of course bails are provided, but never used. Of bats the club boasts not a few, of
[pg 34] varied construction. Of these the majority are fashioned out of a thick deal plank, and soon go to pieces; but one of elm, which was christened off Cape de Verde, survived many weeks of hard usage, and was more precious to the club than the most expensive of Cobbett's productions. It was fully intended by a member of the Marylebone Club to obtain for this tough little piece of elm a final resting-place in the Pavilion at Lord's, but unfortunately the 'leviathan hitter,' in attempting a huge drive, let it slip out of his hands, and it is lost to us for ever." The boatswain furnished spun-yarn balls at sixpence each, but these seldom had a long life, four or five being frequently hit overboard in the course of an afternoon's play; nearly 300 were exhausted on the voyage. "The wicket," continues the narrator, "is pitched just in front of the weather poop-ladder, the bowling-crease being thirteen yards further forward, by the side of the deck-house. Behind the bowler stands an out-field, while mid-on or mid-off, according to which tack the ship is on, has his back to the midshipmen's berth, and has also occasionally to climb over the boom-board above it, and search for a lost ball among a chaos of boats and spare spars.... Run-getting on board ship is a matter of difficulty, the ball having the supremacy over the bat, which is exactly reversed on shore. A cricketer who thinks but little of the side-hill at Lord's would find himself thoroughly non-plussed by the incline of a ship's deck in a stiff breeze. A good eye and hard straight driving effected much, but a steady defence and the scientific 'placing' of the ball under the winch often succeeded equally well, especially on a wet wicket. The highest score of the season was eighteen, which included two hits on to the forecastle, feats of very rare occurrence." The games were highly popular, and were watched by appreciative assemblages of the passengers. On the same vessel a glee club was organised, and an evening in Christmas week was devoted to theatricals, by the "Shooting Stars of the Southern Seas." Dancing is common enough on board, and, of course, is often pursued under difficulties; a sudden lurch of the ship may throw a number of couples off their feet or tumble them in a chaotic heap.

Another traveller[16] gives us some amusing notes on the private theatricals performed on board the famous old steamship *Great Britain*. He was stage manager, and says:—"I had a great deal to do, as I was responsible for dresses, and had to see that everybody was ready. I had among other things to procure a chignon. I was in a dilemma, as I did not like to ask a lady for the loan of one, even where no doubt existed as to her wearing false hair; so at last I procured some oakum from the carpenter, and made three large sausages, and it was pronounced a success. The stage is erected in the saloon, and we had footlights, with a gorgeous screen of flags, &c." Special prologues were written for these entertainments, one of which, on the occasion of performing the "Taming of a Tiger" and the "Area Belle," ran as follows:—

"Far from Australia or from British home,
Across wide ocean's trackless breast we roam;
And though our ship both swift and steady speeds,
Yet dreary week to dreary week succeeds.
Our joys restricted, and our pleasures few,
We all must own the prospect's rather blue.
[pg 35] At such a time to fill the vacant place,
A chosen few have taken heart of grace,
And tho' unused the actor's part to fill,
Will show, if not the deed, at least the will."

Then came mention of some of the amateurs who had already played before the passengers:—

"Yet not all novices—the veteran Flood
You've seen before, and you've pronounced him good;
The modest Griffiths, and the blushing Lance,
Joy of the fair and hero of the dance;"

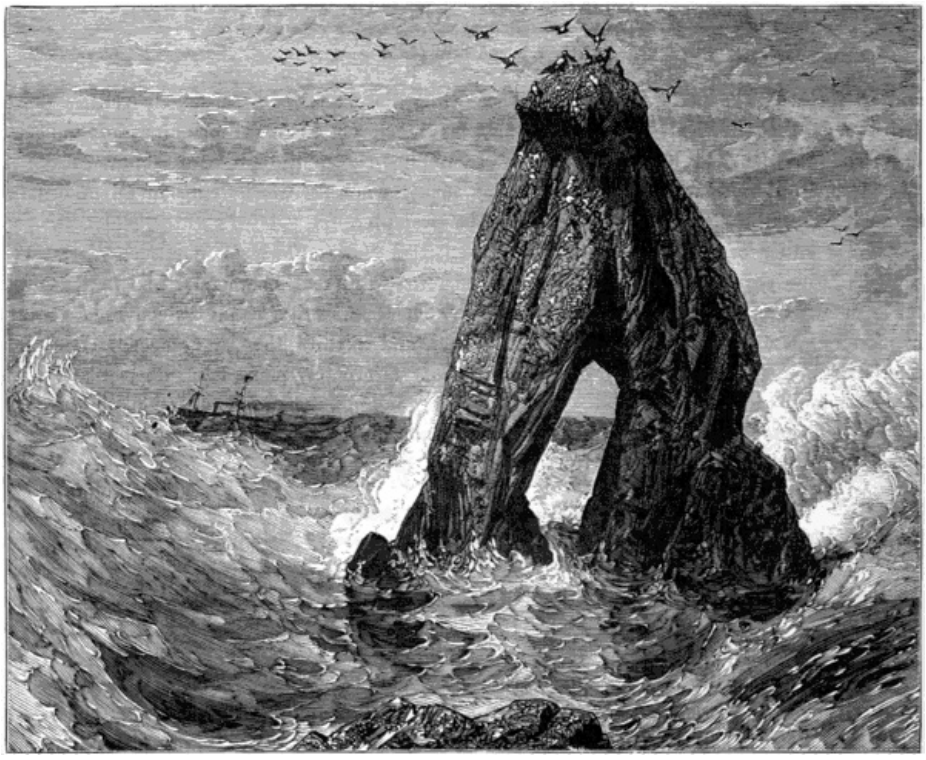
and so forth. The performance took place while the vessel was constantly rolling. Mr. Laird says that he had to think almost as much of his equilibrium as of anything else; but as he had always to appear trembling before the presence of his master in the piece, it did pretty well, except in one lurch, when he went flying in an undignified manner across the stage into the arms of the prompter.

On another occasion an entertainment, entitled "Mrs. Jarley's Waxworks," was presented. Five children were dressed up to represent different characters, and pretence was made of winding them up to make them go. The best was a cannibal, converted to be a missionary; another personated Fair Rosamond; and a third the Marquis of Lorne. The missionary handed tracts about, and Queen Eleanor alternately presented a dagger and a cup of cold poison to Fair Rosamond. A regularly-organised concert followed, while a farce and spoken epilogue concluded this, the last performance on board the *Great Britain*. After speaking of the voyage and the fun on board, it continued:—

"And now our sweet communion must shortly see its close,

And never more, till next time, shall we share in joys like those;
No more the fragrant sea-pie or delectable burgoo,
No more on the same plate be seen fish, cheese, and Irish stew.
* * * * * * *
No longer Mrs. Jarley's works our mimic stage shall grace,
Or the little missionary-eater show his little face.
Of Mrs. J. I would not say one harsh word if I could;
No use to tread upon her toes, because they're only wood.
No more the sailor's plaintive song with tears our eyes shall dim,
No more on Sunday morning shall we sing the Evening Hymn;"

the fact being that a clergyman on board had once inadvertently chosen the latter for morning service! The epilogue concluded by wishing good luck to all the officers and men and to the good old ship.



LEAVING THE COAST OF CALIFORNIA.

Baron Hübner has given us, in his published work before quoted, some interesting reminiscences of, and graphic notes on, his voyage to Japan from San Francisco. A few extracts may be permitted.

"*July 4.*—The sky is pearly grey. The vessel is all painted white: masts, deck-cabins, deck, tarpaulins, benches—all are white. This deck, from poop to prow, is all in one piece, and makes a famous walk. Almost all the morning I am alone there. The first-class passengers get up very late;
[pg 36] the second-class—that is, the Chinese—not at all. They go to bed at San Francisco, and never leave their berths till they reach their destination. You never see one of them on deck. The sailors, having done their duty, disappear likewise. And how easy that duty is in such weather! On leaving the Golden Gate the sails were hoisted, and have remained untouched ever since. The breeze is just strong enough to fill them and keep us steady. The result is a complete calm. The smoke ascends up to heaven in a straight line. So the sailors have a fine time of it. They sleep, smoke, or play down-stairs with their companions. The two men at the helm—these two are Americans—are equally invisible, for a watch-tower hides them from sight, as well as the rudder and the officer of the watch. I have thus got the deck of this immense ship entirely to myself. I pace it from one end to the other, four hundred feet backwards and forwards. The only impediment is a transverse bar of iron, as high as one's head, which binds in the middle the two sides of the ship. It is painted white, like all the rest, and is difficult to see. In every position in life there is always the worm in the bud or thorn in the flesh—or, at any rate, some dark spot. On board the *China* the dark spot for me is that detestable white bar. Not only am I perpetually
[pg 37] knocking my head against it, but it reminds me unpleasantly of the frailty of human things. It is very thin, and yet, if I am to believe the engineer, it is this bar alone which, in very bad weather, prevents the enormous shell of the boat from breaking in half. There are moments when one's life hangs on a thread; here it hangs on an iron bar. That is better, perhaps, but it is not enough."

The fine vessels of the company then running were, although perhaps the most commodious in the world, hardly the safest. The distance between San Francisco and Japan is 5,000 miles, and, barring a few hundred miles on the coasts of the latter, the ocean is almost one grand calm lake. But cyclones occur in the Japanese seas when the high-built American boats are not safe.

Baron Hübner gives us some notes on the passengers on board, which included nine nationalities. Among them was a dignified and venerable Parsee merchant, a merchant prince in his way, who had wished to study European manners, and so had proceeded as far as San Francisco. What he saw there impressed him so unfavourably, that he immediately took passage back again. What he observed, indeed, filled him with disgust. “The men,” said he, “what a lack of dignity! Never in the streets of our towns will you be shocked by the sight of drunkards and bad women.”

Hübner gives also some sketches of the officers on board. The chief engineer is described as a thoughtful and meditative man—a Roman Catholic, deeply imbued with the spirit of religious fervour, and spending his time in the alternate study of theology and practical mechanics. His cabin, opening on the one side to the deck and on the other to the machinery, contained a well-selected, though small, library of scientific and classical books, and was adorned by pots of flowers, which he managed to keep alive by constant care, in spite of the sea-breezes, for they had been given to him by his young and beautiful wife, whose portrait hung upon the wall. For a couple of weeks only in each three months could he see his better half.

“Sweetly blows the western wind
Softly o’er the rippling sea,
And thy sailor’s constant mind
Ever turns to thee.
Though the north wind may arise,
And the waves dash madly by,
Though the storm should rend the skies,
And vivid lightnings round me fly;
Then I love thee more and more,
Then art thou more dear to me,
And I sigh for that dear shore
Distant o’er the sea.”

The Baron describes the waiters on board as follows:—“The head waiter is a native of Hamburg. He and his white comrade lead an easy life; they confine their labours to overlooking the Chinese men, and pass the rest of their time in flirting with the ladies’-maids. These are the only two idlers in the service. Thirty-two Chinamen do the duties of waiters on the passengers and at table. Although short, they look well enough with their black caps, their equally black pig-tails,
[pg 38] which go down to their heels, their dark-blue tunics, their large white trousers, their gaiters or white stockings, and their black felt shoes with strong white soles. They form themselves into symmetrical groups, and do everything with method. Fancy a huge cabin, in which the small table of twenty-two guests is lost, with all these little Chinamen fluttering round them and serving them in the most respectful manner, without making any noise. The Hamburg chief, idly leaning against a console, with one hand in his trousers’ pocket, directs with the forefinger of the other the evolutions of his docile squadron.” The daily inspection, common on all well-regulated passenger ships, is thus described:—

“*July 6.*—Every day, at eleven o’clock in the morning and at eight o’clock in the evening, the captain, followed by the purser, makes the rounds of the ship. In that of the morning all the cabin-doors are opened, only excepting those of the ladies; but the moment these have gone out the captain visits them with equal care. If any matches are discovered they are pitilessly confiscated. This morning the captain invited me to accompany him, and I could convince myself with my own eyes of the perfect order and discipline which reign everywhere. Nothing was more tempting than that department which one greatly avoids, the kitchens. The head cook and his assistants, all Germans, did the honours of their domain. Every man was at his post, and only anxious to show the visitors the most secret corners of his department. It was like an examination of conscience carefully made. The provision and store-rooms were admirable. Everything was of the first and best quality; everything was in abundance; everything was classed and ticketed like the drugs in a chemist’s shop. The Chinese quarter is on the lower deck. We have about 800 on board. They are all in their berths, smoking and talking, and enjoying the rare pleasure in their lives of being able to spend five weeks in complete idleness. In spite of the great number of men penned into so comparatively small a space, the ventilation is so well managed that there is neither closeness nor bad smells. The captain inspects every hole and corner, literally everything —and everywhere we found the same extraordinary cleanliness. One small space is reserved for the opium-eaters or smokers; and we saw these victims of a fatal habit, some eagerly inhaling the poison, others already feeling its effects. Lying on their backs and fast asleep, their deadly-pale features gave them the look of corpses.”

A common occurrence, but always of great interest to the passengers, is thus described:—

“*July 7.*—Contrary to our usual sleepy habits, we are all to-day in a state of excitement and agitation. The *China* is to come to the point where it ought to meet the *America*, which was to leave Hong-Kong five-and-twenty days ago. Our top-sails are filled with little Chinamen, whose eager eyes are fixed on the horizon. The captain and officers are standing close to the bowsprit, their telescopes pointed in the same direction. Even my Spanish friend has left his engine, his flower-pots, and his wife’s portrait, to gaze at the blue sea, slightly rippled, but, as usual, without a speck of a sail. No *America*! The captain’s heart is in his shoes. He consults his charts, his instruments, his officers, all in vain. The day passes without the steamer being signalled. The dinner is silent and sad. Every one seems preoccupied, and the captain is evidently anxious. It
[pg 39] seems that the directors of the company make a point of their two boats meeting. It is to them a

proof that their captains have followed a straight course, and that the San Francisco boat has crossed, without any accident, a third of the Pacific. The passengers gladly avail themselves of this precious opportunity to write to their friends. For the captains themselves it is a question of honour. They like to show their skill in this way, and their cleverness in being able, despite the variable and imperfectly-understood currents of the Pacific, to make a straight course across this enormous sheet of water.

"*July 8.*—At five o'clock in the morning the second officer rushed into my cabin—'The *America*[17] is in sight!' I throw on my clothes and tumble on deck. The morning is beautiful, and this colossal steamer, the largest after the *Great Eastern*, draws near majestically. The usual salutes are exchanged, and the *America's* gig brings us an extract from their log, the list of the passengers, the newspapers from Hong-Kong, Shanghai, and Yokohama, and, which is essential, takes charge of our letters for America and Europe. A few moments after she resumes her course. What a grand and imposing sight! At six o'clock she has already disappeared behind the horizon. At the moment of meeting we had run exactly 1,500 miles—that is, half the distance between England and New York."

The *China* encountered a cyclone, or rather the outer edge of one, which is graphically described by Hübner. He says:—"At this moment the ocean was really magnificent. In the boiling sea the foam was driven horizontally towards the east. The water was positively inky, with here and there whitish gleams of light. The sky was iron-grey; to the west a curtain of the same colour, but darker. The thermometer was still falling rapidly. In the air above the waves I suddenly saw a cloud of white flakes; they were little bits of Joss paper which the Chinese were throwing into the sea to appease their gods. I passed before the open door of the engineer; he was watering his plants. The passengers were all gathered together in the saloon. Some of them were moved almost to tears. At twelve o'clock the sky cleared a little, and the faces brightened considerably. I have often remarked that people when in danger, whether real or imaginary, are like children; the slightest thing will make them laugh or cry. The Bombay master-baker, the Chinese merchant, and the two Japanese, struck me by their imperturbability. The first whispered in my ear, 'The company is very unwise to have a Chinese crew; the Malays are much better. Chinese sailors are scared at the least danger, and would be the first to make off in the lifeboats.' Fung-Tang has an equally bad opinion of his fellow-countrymen. He says to me, 'Chinese good men, very good; bad sailors, very bad!' I reply, 'If we go to the bottom, what will become of Fung-Tang?' He replies, 'If good, place above; if bad, *below stairs*, punished.'

"*July 20.*—In the middle of the night the ocean suddenly calmed. The *China* has got out of the
[pg 40] region of the cyclone. The weather is delicious; the sea like glass. But at four o'clock in the afternoon we suddenly find ourselves amidst colossal waves; and yet there is not a breath of wind. They tell us that this was probably yesterday the centre of the typhoon. It has exhausted itself or gone elsewhere; but the sea which it lashed into fury is still agitated, like the pulse of a fever patient after the fit is over."

Yokohama, whose very name signifies "across the sea and shore," has been before briefly described in these pages. Travellers have given some interesting accounts of it, and as in a tour round the world it would form one of the leading stopping-places, some further allusion to it may be permitted.

Baron Hübner says in effect that at every step one takes there one asks if it be not all a dream, a fairy tale, a story of the thousand-and-one nights. Arriving there from San Francisco, the step from American to Oriental civilisation is particularly noticed. The Baron refers particularly to the courtesy and extreme cleanliness of the people. Even the coolies, bearing great cases or baskets slung on bamboos resting on their athletic shoulders, stop to chatter and laugh so pleasantly that labour seems to have lost half its curse. "Misery," says he, "is unknown amongst them; so also is luxury." If the Japanese have arrived at this happy mean it would be a great pity to disturb their peaceful condition by the introduction of a so-called civilisation, and its attendant expenses and new wants.

"What adds to the charm of the scene," says the same authority, "is the smiling look of the country, and the intense beauty, at this season (summer), of the setting sun. The sky is positively crimson, with great clouds of Sèvres blue; the long promontory of Thanagawa is inundated with mother-of-pearl; and on the purpled violet sea the pale shadows of the ships and junks stand out against the sky, the one rocked by the swell, the others gliding across the water like phantoms." The winter in Japan is cold enough, as Mrs. Brassey discovered;[18] for icicles were hanging from the shrouds and riggings of the *Sunbeam*.

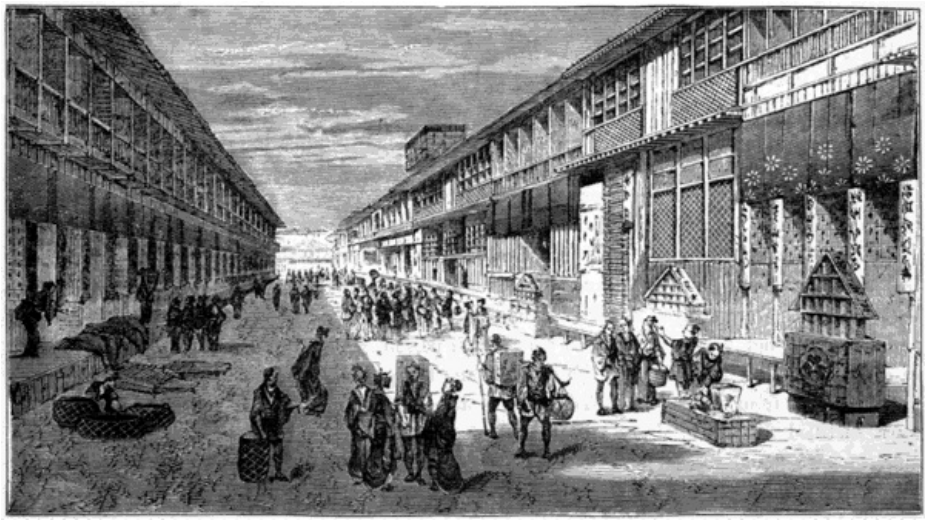
Mrs. Brassey gives some life-like pictures from Yokohama.

"Having landed," says she, "we went with the Consul to the native town to see the curio shops, which are a speciality of the place. The inhabitants are wonderfully clever at making all sorts of curiosities, and the manufactories of so called 'antique bronzes' and 'old china' are two of the most wonderful sights in Yokohama. The way in which they scrape, crack, chip, mend, and colour the various articles, cover them with dust, partially clean them, and imitate the marks and signatures of celebrated makers, is more creditable to their ingenuity than to their honesty. Still, there are a good many genuine old relics from the temples and from the large houses of the reduced Daimios to be picked up, if you go the right way to work, though the supply is limited.

“Dealers are plentiful, and travellers, especially from America, are increasing in numbers. When we first made acquaintance with the shops we thought they seemed full of beautiful things, but even one day’s shopping, in the company of experienced people, has educated our taste and taught us a great deal; though we have still much to learn. There are very respectable-looking lacquer cabinets, ranging in price from 5s. to £20. But they are only made for the foreign market. No such things exist in a Japanese home.”

[pg 41] A really fine piece of old lacquer is often worth a couple of hundred pounds.

“It is said that the modern Japanese have lost the art of lacquer-making; and as an illustration I was told that many beautiful articles of lacquer, old and new, had been sent from this country to the Vienna Exhibition in 1873, but the price put on them was so exorbitant that few were sold, and nearly all had to be sent back to Japan. Just as the ship with these things on board reached the Gulf of Jeddo, she struck on a rock and sank in shallow water. A month or two ago a successful attempt was made to raise her and to recover the cargo, when it was found that the new lacquer had been reduced to a state of pulp, while the old was not in the least damaged. I tell you the tale as it was told to me.



A STREET IN JAPAN.

“After a long day’s shopping, we went to dine, in real Japanese fashion, at a Japanese tea-house. The establishment was kept by a very pleasant woman, who received us at the door, and who herself removed our exceedingly dirty boots before allowing us to step on to her clean mats. This was all very well, as far as it went; but she might as well have supplied us with some substitute for the objectionable articles, for it was a bitterly cold night, and the highly-polished wood passages and steep staircase felt very cold to our shoeless feet. The apartment we were shown into was so exact a type of a room in any Japanese house that I may as well describe it once for all. The wood-work of the roof and the framework of the screens were all made of a handsome dark polished wood, not unlike walnut.

“The exterior walls under the verandah, as well as partitions between the other rooms, were simply wooden lattice-work screens covered with white paper, and sliding in grooves, so that you could walk in or out at any part of the wall you chose, and it was, in like manner, impossible to say whence the next comer would make his appearance; doors and windows are by this
[pg 42] arrangement rendered unnecessary, and do not exist. You open a little bit of your wall if you want to look out, and a bigger bit if you want to step out. The floor was covered with several thicknesses of very fine mats, each about six feet long by three broad, deliciously soft to walk upon. All mats in Japan are of the same size, and everything connected with house-building is measured by this standard. Once you have prepared your foundations and wood-work of the dimensions of so many mats, it is the easiest thing in the world to go to a shop and buy a house ready-made, which you can then set up and furnish in the scanty Japanese fashion in a couple of days.

“On one side of the room was a slightly raised daïs, about four inches from the floor. This was the seat of honour. On it had been placed a stool, a little bronze ornament, and a china vase, with a branch of cherry-blossom and a few flag-leaves gracefully arranged. On the wall behind hung pictures, which are changed every month, according to the season of the year. There was no other furniture of any sort in the room. Four nice-looking Japanese girls brought us thick cotton quilts to sit upon, and braziers full of burning charcoal to warm ourselves by. In the centre of the group another brazier was placed, protected by a square wooden grating, and over the whole they laid a large silk eider-down quilt, to retain the heat: this is the way in which all the rooms, even bed-rooms, are warmed in Japan, and the result is that fires are of very frequent occurrence. The brazier is kicked over by some restless or careless person, and in a moment the whole place is in a blaze.”

The following gives a description of a Japanese meal:—"Presently the eider-down and brazier were removed, and our dinner was brought in. A little lacquer table, about six inches high, on which were arrayed a pair of chop-sticks, a basin of soup, a bowl for rice, a saki cup, and a basin of hot water, was placed before each person, whilst the four Japanese maidens sat in our midst, with fires to keep the *saki* hot and to light the tiny pipes with which they were provided, and from which they wished us to take a whiff after each dish. Saki is a sort of spirit distilled from rice, always drunk hot out of small cups. In this state it is not disagreeable, but we found it exceedingly nasty when cold.

"Everything was well cooked and served, though the ingredients of some of the dishes, as will be seen from the following bill of fare, were rather strange to our ideas. Still, they were all eatable, and most of them really palatable.

Soup.
Shrimps and Seaweeds.
Prawns, Egg Omelette, and Preserved Grapes.
Fried Fish, Spinach, Young Rushes, and Young Ginger.
Raw Fish, Mustard and Cress, Horseradish, and Soy.
Thick Soup of Egg, Fish, Mushrooms, and Spinach; Grilled Fish.
Fried Chicken and Bamboo Shoots.
Turnip-Tops and Root, Pickled.
Rice *ad libitum* in a large bowl.
Hot Saki, Pipes, and Tea.

"The meal concluded with an enormous lacquer box of rice, from which all our bowls were filled; the rice being thence conveyed to our mouths by means of chop-sticks. We managed very well with these substitutes for spoons and forks, the knack of using which, to a certain extent, is soon
[pg 43] acquired. The long intervals between the dishes were beguiled with songs, music, and dancing, performed by professional singing and dancing girls. The music was somewhat harsh and monotonous, but the songs sounded harmonious, and the dancing was graceful, though it was rather posturing than dancing, great use being made of the fan and the long trailing skirts. The girls, who were pretty, wore peculiar dresses to indicate their calling, and seemed of an entirely different stamp from the quiet, simply-dressed waitresses whom we found so attentive to our wants. Still, they all looked cheery, light-hearted, simple creatures, and appeared to enjoy immensely the little childish games they played amongst themselves between whiles.

"After dinner we had some real Japanese tea, tasting exactly like a little hot water poured on very fragrant new-mown hay. Then, after a brief visit to the kitchen, which, though small, was beautifully clean, we received our boots, and were bowed out by our pleasant hostess and her attentive handmaidens."

Recommending the perusal of the interesting works last quoted, let us finish our trip on paper at its natural termination, so far as the route from San Francisco is concerned, in China, to which country the American vessels take us in a week or so.

Hong Kong is a commercial port of the first order, but has not come up to the expectations once made of it. It has not progressed in the same ratio as has Shanghai. Its situation is picturesque. "Fancy to yourself the rock of Gibraltar, on a large scale, looking to the north. There facing us is *terra firma*. Let us scramble up to the flag-staff, proudly standing on the highest peak of the mountain. The sun, which is already low, bathes sky, earth, and sea in crude, fantastic, exaggerated lights. Woe be to the painter who should dare reproduce such effects! Happy would he be if he could succeed!

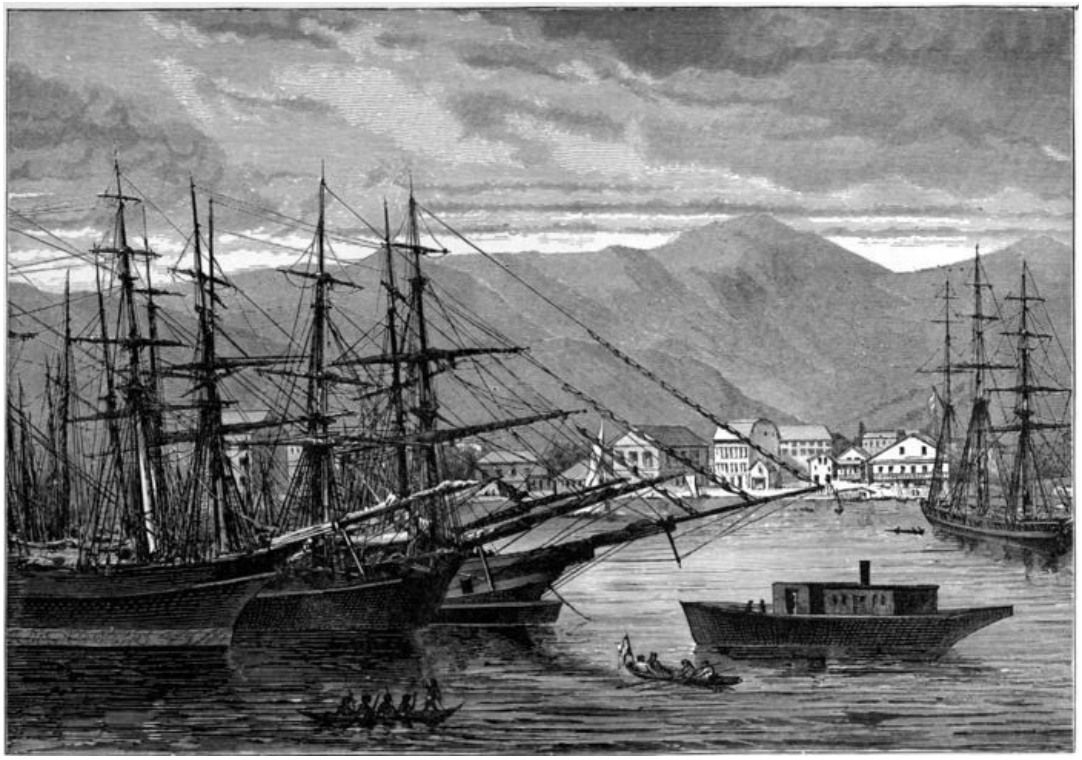
"Towards the south, the sun and the fogs are fighting over the islands, which at this moment stand out in black groups on a liquid gold ground, framed in silver. Towards the north we look over the town, officially called Victoria, and vulgarly Hong Kong. It is stretched out at our feet, but we only perceive the roofs, the courts, and the streets; further on the roadstead is crowded with frigates, corvettes, gun-boats, steamers belonging to the great companies, and an infinity of smaller steam and sailing vessels of less tonnage. In front of us, at three or four miles distance, is a high chain of rocks, bare and rugged, but coloured by the setting sun with tints of rose colour and crimson, resembling a huge coral bracelet. That is the continent. Towards the west are the two passages which lead to Canton and Macao; to the north-east is a third passage, by which we ourselves have come. The sea here is like a lake, bordered on one side by the rocks of *terra firma*, and on the other by the peaks and summits of the Hong Kong cliffs. I have seen in many other lands softer and more harmonious effects of light, but I never saw any so strange.

"Victoria is charming, sympathetic, and imposing: English and yet tropical—a mixture of cottages and palaces. Nowhere can be found a happier combination between the poetry of nature and the prose of commercial life; between English comfort and the intoxicating exuberance of the south. The streets, which are well macadamised, well kept, and beautifully clean, run in a serpentine fashion along the rock, sometimes between houses, of which the rather pretentious façades are coquettishly veiled by the verandahs, sometimes between gardens, bamboo hedges, or stone balustrades. It is like Ventnor or Shanklin seen through a magnifying-glass and under a jet of
[pg 44] electric light. Everywhere there are fine trees—banians, bamboos, and pines. One may go on foot from one end of Hong Kong to the other, and yet always be in the shade. No one dreams of walking. Nothing is to be seen but chairs or palanquins. The coolies, their heads sheltered by

enormous straw hats, carry you at a rattling pace. Nothing can be more delicious than a night promenade in an open sedan-chair. In the lower part of the town the scene is most animated and busy; officers and soldiers in red uniforms and with swarthy complexions (Sepoys), Parsees, Hindoos, Chinese, Malays, European ladies in elegant toilets, and men and women with yellowish skins, dressed like Europeans (half-caste Portuguese). The higher you climb the quieter you find it. Insensibly the town turns into country. Scramble up still a little higher, and you are in the middle of rocks, bare of trees, but covered with odoriferous shrubs, and traversed by a fine macadamised road, with glimpses of views here and there of marvellous beauty."[19]

THE CUSTOM HOUSE, SHANGHAI.

Shanghai, as another leading port, would naturally be visited by the tourist of leisure, and it affords a wonderful example of English enterprise. It is by nature the port of Suchow, ninety
[pg 45] miles up the great Yang-tse-Kiang river. Near the city its flat, green, cultivated banks recall the Humber in Yorkshire. The port is crowded with foreign shipping: great American steamships, the boats of the English P. and O. Company, those of the French "Messageries," merchant steamers straight from London, Liverpool, and Glasgow, and sailing vessels in numbers. In a picturesque point of view the place has little to recommend it, but commercially it is a lively place, nine-tenths of the capital employed being English, and the white population counting at least six Englishmen to all the rest of the foreigners put together. There are three "concessions," *i.e.*, tracts ceded by the Chinese to the English, French, and Americans, for commercial purposes. Stone being scarce, these concessions are fringed by enormous wooden wharves, slips, and piers, outside the warehouses, depôts, and stores. There are streets of well-filled shops, where everything is to be obtained that could be bought in the Strand or Oxford Street. In this point of view, Hübner tells us, neither Yokohama nor any other European town in Asia, saving Calcutta and Bombay, can bear a comparison with Shanghai. The Chinese do not adopt numerals for their shops and warehouses, but use mottoes and descriptive titles, and the great English houses have adopted the custom of the country. Messrs. Dent & Co. have for their *nom de maison*, "Precious and Obliging," while Messrs. Jardine & Co. are known, not as number 45, or what-not, but as "Honest and Harmonious."



VIEW OF HONOLULU, SANDWICH ISLANDS.

CHAPTER IV.

The Pacific Ferry.—Another Route.

The Hawaiian Islands—King and Parliament—Pleasant Honolulu—A Government Hotel—Honeysuckle-covered Theatre—Productions of the Islands—Grand Volcanoes—Ravages of Lava Streams and Earthquakes—Off to Fiji—A Rapidly Christianised People—A Native Hut—Dinner—Kandavu—The Bush—Fruit-laden Canoes—Strange Ideas of Value—New Zealand—Its Features—Intense English Feeling—The New Zealand Company and its Iniquities—The Maories—Trollope's Testimony—Facts about Cannibalism—A Chief on Bagpipes—Australia—Beauty of Sydney Harbour—Its Fortifications—Volunteers—Its War-fleet of One—Handsome Melbourne—Absence of Squalor—No Workhouses Required—The Benevolent Asylums—Splendid Place for Working Men—Cheapness of Meat, &c.—Wages in Town and Country—Life in the Bush—"Knocking Down One's Cheque"—Gold, Coal, and Iron.

A popular route now to New Zealand and Australia is that *viâ* San Francisco, Honolulu, and Fiji, the bulk of the voyage being usually over the quieter parts of the Pacific; it takes the passenger, of course, through the tropics.

Honolulu, the capital of the Hawaiian or Sandwich Islands, is now a civilised and pleasant city, while the natural attractions of the islands themselves are many and varied. One need not now fear the fate of poor Captain Cook. Most of the natives, of whom there are 50,000, are clothed in semi-European style: the men in coats and trousers of nankeen, and the women more picturesquely clad in long robes fastened round the neck, and pretty often of pink or some other bright colour. There is a white population of some 10,000 souls scattered over the islands, a large proportion of whom are English and American. Honolulu is the Government centre and residence of King Kalakau, who used to be called "Calico" in the United States, and who, in fact, is a very
[pg 46] slightly tinted, good-looking, and most intelligent gentleman. The Ex-Queen Emma, who visited England some years ago, has a villa beautifully situated a few miles out of town. The king devotes his energies to bettering the condition of his people, and some few years ago, when the money was voted to build a new palace, declined to accept it, at least for two years. The Hawaiian Parliament consists of a House of seventeen nobles and twenty-eight commoners, who, strange to say, sit in the same hall, their votes being of equal weight. There are always several Europeans or Americans in this council.

Mr. Guillemard thus describes Honolulu[20]:—"The town, which is built on the low land bordering the shore—partly, indeed, on land reclaimed from the sea, thanks to the industry of the architects of the coral reef—looks mean and insignificant from the harbour, but on going ashore to breakfast we get glimpses of fine public buildings and numerous shops and stores, of neat houses

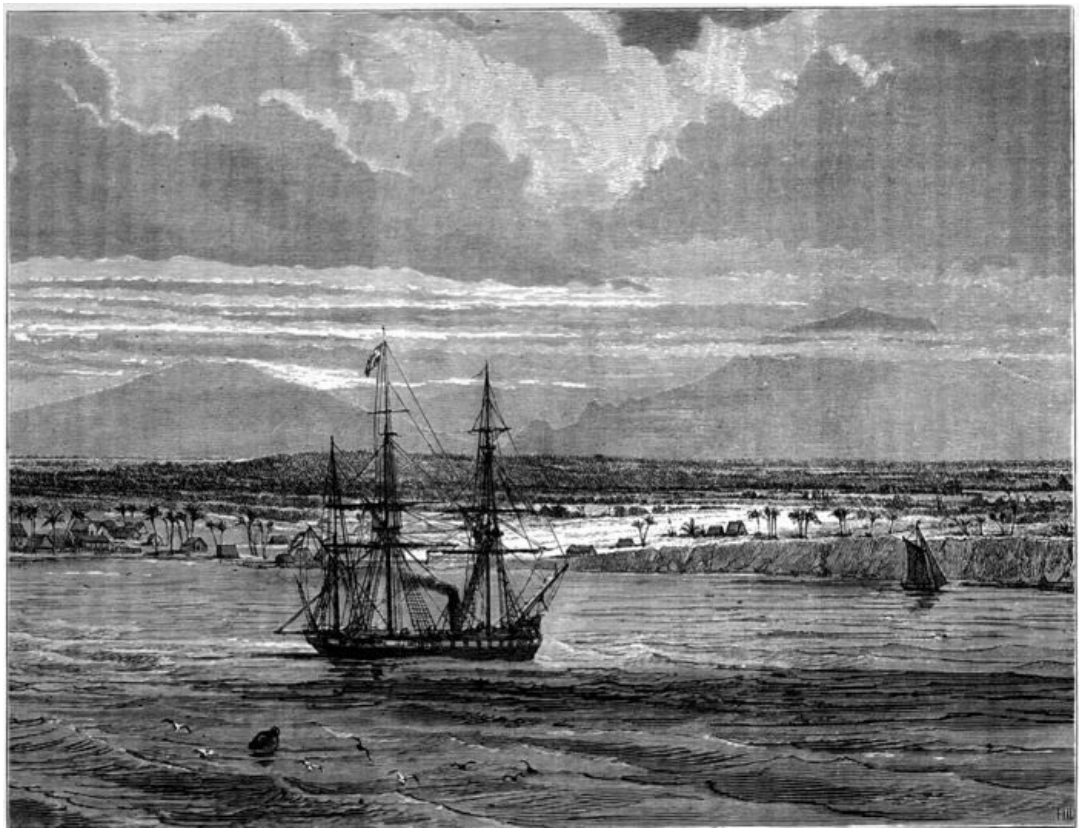
nestling among bowers of shrubs and flowers, and evidences of a busy trade and considerable population. The streets are narrow, and the houses built of wood, without any attempt at decoration or even uniformity. In the by-streets or lanes pretty verandah-girt villas peep out from shrubberies of tropical foliage, honeysuckle, roses, lilies, and a hundred flowers strange to English eyes. Tiny fountains are sending sparkling jets of water up in the hot, still air; and other music is not wanting, for here and there we hear the tinkle of a distant piano, telling us that early rising is the rule in Honolulu, and suggesting as a consequence a *siesta* at mid-day.

“But here we are at the grand Hawaiian Hotel, a fine verandahed building, standing back from the road in a pretty garden, the green lawn, cool deep shade, and trickling fountain of which are doubly grateful after the glare of the scorching sunlight, scorching even though it is not yet seven a.m. The theatre, half-hidden by its wealth of honeysuckle and fan-palm, is not fifty yards distant, but is quite thrown into insignificance by the hotel. This was built by Government, at a cost of £25,000, and is admirably planned and appointed.” Its large airy rooms and cool verandahs, shaded with masses of passion flowers, its excellent food and iced American drinks, all combine to make it a capital resting-place.

In the streets Mr. Guillemard noted bevies of gaily-attired girls on horseback, their robes being gathered in at the waist with bright scarves, which fling their folds far over the horses’ tails. Their jaunty straw hats were wreathed with flowers, and now and then some dark-eyed beauty would be found wearing a necklace of blossoms. The girls rode astride up and down the main streets, making them ring again with their merry laughter. Mosquitoes were abundant, and, as some compensation, so also were delicious melons, guavas, mangoes, bananas, and commoner fruit.

The sugar-cane was first grown on these islands in 1820; now over 20,000,000 pounds of sugar are produced annually by the aid of Hawaiian and Chinese labour and steam-mills. Not a quarter of the land suitable for this purpose is yet under cultivation, though some of the plantations are of thousands of acres in extent. Hides and wool are staple exports.

[pg 47] A few hours’ sail from Honolulu some of the largest and most wonderful volcanoes in the world are to be found. Two of them, Mauna Loa and Mauna Kea, are each over 13,000 feet in elevation. The eruptions from the great crater of Kilauea, which is *ten miles* in circumference, are something fearful. One explosion ejected streams of red mud three miles, killing thirty-one people and 500 head of cattle. This was followed by several earthquakes, which destroyed a number of houses. These, again, were succeeded by a great earthquake wave, during the continuance of which three villages were swept away and seventy people killed. Next a new crater formed upon Mauna Loa, from which rose four fountains of red-hot lava to a height of 600 feet. A lava stream, eight to ten miles long, and half a mile wide in some places, carried all before it. In one place it tumbled, in a molten cataract of fiery liquid, over a precipice several hundred feet in height. The interior of Hawaii is a vast underground lake of fire, and were it not for the safety-valves provided by Nature in the form of craters, it would be shaken to pieces by successive earthquakes.



THE VOLCANOES OF MAUNA LOA AND MAUNA KEA, SANDWICH ISLANDS (FROM THE SEA).

And now the passenger has before him a fortnight of the most tranquil part of the ocean called the Pacific. He must not be surprised if the heat rises to 90° or so in the saloon. The distance from San Francisco to Sydney direct is 6,500 miles, and Fiji is naturally *en route*; the detour to New Zealand considerably increases the length of the voyage. It will be remembered that these islands were formally annexed to Britain in 1874, after vain attempts at a mixed native and European government. The population was then 140,000; in a year or two afterwards 40,000 of the poor natives fell victims to the measles, another of the importations apparently inseparable from civilisation. The Wesleyan missionaries, in particular, have worked with so much zeal in these islands that more than half the people are Christians. There are 600 chapels in the 140 islands comprising the Fiji group. Formerly the natives were the worst kind of cannibals. They not merely killed and ate the victims of their island wars, but no shipwrecked or helpless person was safe among them. Numbers were slain at the caprice of the chiefs, especially at the building of a house or canoe, or at the reception of a native embassy. Widows were strangled at the death of their husbands, and slaves killed on the decease of their masters. The introduction of Christianity and partial civilisation has changed all that for the better; and the natives of to-day are described as mild and gentle, and little given to quarrelling. Among their customs is that of powdering the hair (always closely cropped) with lime, which is often coloured. Their huts are of dried reeds, lashed to a strong framework of poles, and have lofty arched roofs, but are without windows or chimneys. Each has two low doors, through which one must crawl. The best native huts have a partition between the dwelling and bed room, and all are carpeted with mats. The only furniture consists of one article, a short piece of wood on two small legs, used for a pillow! Clay pots are used for cooking their principal diet, yams and fish. Many of them nowadays have houses well furnished with mats, curtains, baskets, jars, &c.

Mr. Guillemard describes a tropical dinner, served to himself and companions in one of these huts. A couple of banana-leaves formed the dishes, on which boiled fish and half a dozen yams, or sweet potatoes, were offered. A large block of rock-salt was handed them to use *à discretion*.
[pg 48] Then followed ripe cocoa-nuts. Dried leaves of somewhat tasteless wild tobacco, rolled up rapidly and neatly, and tied round with a fibre, formed the post-prandial cigars, which were lighted by the women at the fire, and passed from their lips to the guests'.

The natural productions of this group are extensive, and comprise bread-fruit, taro, cocoa-nuts, yams, bananas, plantains, guavas, oranges and lemons, wild and cultivated tobacco, sugar, cotton, and coffee. The india-rubber tree is cultivated, and among the leading exports are dried cocoa-nut and pearl-shell. As there are at the present time comparatively few white settlers—perhaps not over 2,500 in all the islands—there are innumerable openings for settlement, and Fiji, with many other neighbouring islands, will doubtless soon afford fresh examples of British enterprise.

The point touched by the steamers is Kandavu, on one of the southernmost islands, where Mount Washington, a fine mountain, rears its head 3,000 feet into the clouds. A visitor says:—"From the eastern point of land run out miles of coral reef, on which the ocean rollers are breaking grandly, and outside this barrier we take our pilot on board. The entrance to Kandavu harbour is narrow and intricate, and here the *Macgregor*, one of the mail steamers, struck on a submerged reef, and remained for several days hard and fast aground." The passage has been properly buoyed and lighted, and the New Company have built offices and stores, and established a coaling station here.

"The view of Port Ugaloa from the entrance is very beautiful. On our left the coral reef encloses a still lagoon of the softest, lightest green; before us hills and mountains, covered from base to summit with the richest vegetation, are tipped with fleecy cloud; and on our right, dividing the waters of the bay, is Ugaloa Island, its slopes feathery with the foliage of the cocoa-palm and banana, half hidden in which appear here and there the low brown huts of the natives.... The brothers L. accompany me ashore on Ugaloa, landing close to a small collection of huts scattered about just above the coral-strewn beach. It is Sunday afternoon, and a native missionary is preaching to some fifty men, women, and children, squatting on their hams on the mat-covered floor of a neat, white-washed mission house. Amongst the congregation is a tall native, with a thick cane, keeping silence by tapping the heads of the inattentive. The preacher is eloquent and energetic in gesture; but Fiji is hardly a pretty language to listen to, being decidedly characterised by queer guttural sounds, and spoken very fast. The sermon over, a hymn is read out and sung to a rather monotonous dirge-like chant, and the congregation disperse. We are at once surrounded by an olive-skinned crowd; the ladies' dresses are minutely examined, for a white lady has scarcely been seen in Kandavu before the present year. The gentlemen have to display their watches and chains, and by means of shouting and signs every one is soon carrying on a vigorous conversation. Why is it that one always elevates the voice when trying to make one's native tongue intelligible to a foreigner?

"We wander away into the bush, and are soon lost in a wilderness of ferns, creepers, bananas, cocoa-palms, and chestnut-trees. We meet with a young native, and make signs to him that we are thirsty, and wish to refresh ourselves with the juice of a green cocoa-nut. Clutching the trunk with both hands, he almost runs up a palm, and our wants are soon plentifully supplied. He receives his *douceur* with apparent nonchalance, and proceeds to tie it up in a corner of his sulu with a fibre of banana bark.

[pg 50] "Monday morning breaks fine and clear, and our slumbers are early disturbed by the chattering of a hundred natives, a whole squadron of whose fruit-laden canoes are alongside the steamer.

Queer crank-looking craft are these, roughly dug out of the trunk of a tree, and kept steady on the water by an outrigger consisting of a log half the length of the canoe, attached to it amidships by a few light poles projecting some four or five feet from its side. They are usually propelled by means of a long oar worked between the poles, after the fashion of sculling a boat from the stern; but sometimes we see the ordinary short paddle being plied at bow and stern. Some of the larger craft hoist a large long sail, but they do not seem very weatherly under canvas, which they use but little compared with the Society Islanders.

"The scene on deck is amusing enough. Forward, fifty natives, their olive skins blackened and begrimed with dust, are hard at work replenishing the coal bunkers from the hold, and thoroughly earning their shilling a day; on the poop as many more, laden with lemons, huge bunches of bananas, cocoa-nuts, shells, coral, matting, tappa—a soft, white fabric, called by the natives 'marse'—and a few clubs and other weapons, are driving a brisk trade with the passengers. Everything is to be had for a shilling. 'Shillin' is the only English word that all the natives understand; in fact, this useful coin seems to be the 'almighty dollar' of Kandavu. You take a lemon, and ask, 'How much?' 'Shillin' is the reply; but you can obtain the man's whole stock of sixty, basket and all, for the same money!"

Our next stopping place is one of particular interest to the British colonist. New Zealand, albeit one of the youngest, is now among the most promising of England's outposts. Auckland, in the North Island, is the port at which the steamers touch. The harbour is very fine, and residents compare it to the Bay of Naples.

Every schoolboy knows that New Zealand includes two large and one small island, respectively known as North, Middle, and Stewart's Island. One great feature of the coast line consists of its indentations; the colony is rich in fine natural harbours and ports. The area of the islands is nearly as great as that of Britain and Ireland combined, and about half of that area consists of excellent soil. The climate is that of England, with a difference: there are many more fine days, while winter is not so cold by half. The islands are volcanic; on the North Island, Mount Ruapahu, a perpetually snow-capped peak, rises to a height of 9,000 feet, while in the same range, the Tongariro mountain, an active volcano, rises to a height of 6,000 feet. The highest mountain range is on the Middle Island, where Mount Cook rises to a height of 14,000 feet. One can understand that in such a country there should be an abundance of evergreen forests of luxuriant growth. These are interspersed with charming fern-clad slopes and treeless grassy plains. Water is everywhere found; but none of the rivers are navigable by large vessels for more than fifty miles or so. One great advantage found in the country is the absence of noxious reptiles or insects: of the latter there is not one as offensive as an English wasp. The pigs, introduced by Captain Cook, run wild over the island, and there is plenty of large and small game: the red and fallow deer, the pheasant, partridge, and quail. Everything that grows in England will thrive there, while the vine, maize, taro, and sweet potato grow in many districts. A traveller[21] says of
[pg 51] the (Thames) gold fields:—"Mines here, like everywhere else, are now dull. At one time there was a population of 22,000, but now this is only 13,000. Everybody one sees seems to have lost in the gold-diggings, and it is a mystery to me who is the lucky person that wins—one never seems to meet him." This somewhat random statement may be taken *cum grano salis*, as the gold-fields have yielded largely at times. Nevertheless, mining is always more or less a lottery.

Mr. Anthony Trollope testifies to the intense British feeling in New Zealand, where he felt thoroughly at home. Australia he found tinged with a form of boasting Yankeeism. "The New Zealander," says he,[22] "among John Bulls is the most John Bullish. He admits the supremacy of England to every place in the world, only he is more English than any Englishman at home."

Discovered by Tasman in 1642, England only commenced to take an interest in the islands more than a century and a quarter later, when Cook surveyed the coasts. The missionaries came first, in 1814, and a British Resident was appointed in 1833. All this time a desultory colonisation was going on, and the natives were selling parcels of their best lands for a few cast-iron hatchets or muskets, shoddy blankets, or rubbishy trinkets. In 1840 a Lieutenant-Governor was appointed from home, and his presence was indeed necessary. The previous year a corporation, calling itself the New Zealand Company, had made pretended purchases of tracts of the best parts of the country, amounting to *one-third* of its whole area! The unscrupulous and defiant manner in which this company treated the natives and the Government brought about many complications, and led to very serious wars with natives not to be trifled with. The New Zealand Company was "bought out" by the Government in 1852 for £268,000. During 1843-7, and in 1861 and after, England had to fight the Maories—foes that she learned to respect. At last, weary of war, all our troops were withdrawn, and the colonists, who of course knew the bush and bush life better than nine-tenths of the soldiers, were left to defend their homes and property, and in the end to successfully finish the fight. The natives now are generally peaceful and subdued, while many are even turning their attention to agriculture and commerce. Nine years ago they numbered 37,500, but are fast dying out.

Physically and intellectually, the Maories are the finest semi-savage natives on the face of the earth. Mr. Trollope is an author and traveller whose words carry weight, and he has given us the following concise summary of their qualities and character:—"They are," says he, "an active people, the men averaging 5 feet 6½ inches in height, and are almost equal in strength and weight to Englishmen. In their former condition they wore matting; now they wear European clothes. Formerly they pulled out their beards, and every New Zealander of mark was tattooed;

now they wear beards, and the young men are not tattooed. Their hair is black and coarse, but not woolly like a negro's, or black like a Hindoo's. The nose is almost always broad and the mouth large. In other respects their features are not unlike those of the European race. The men, to my eyes, were better-looking than the women, and the men who were tattooed better-looking than those who had dropped the custom. The women still retain the old custom of tattooing the upper lip. The Maories had a mythology of their own, and believed in a future existence; but they did
[pg 52] not recognise one supreme God. Virtue with them, as with other savages, consisted chiefly in courage and a command of temper. Their great passion was revenge, which was carried on by one tribe against another to the extent sometimes of the annihilation of tribes. The decrease of their population since the English first came among them has been owing as much to civil war as to the injuries with which civilisation has afflicted them. They seem from early days to have acquired that habit of fighting behind stockades or in fortified pahs which we have found so fatal to ourselves in our wars with them. Their weapons, before they got guns from us, were not very deadly. They were chiefly short javelins and stones, both flung from slings. But there was a horror in their warfare to the awfulness of which they themselves seem to have been keenly alive. When a prisoner was taken in war he was cooked and eaten.

"I do not think that human beings were slaughtered for food in New Zealand, although there is no doubt that the banquet when prepared was enjoyed with a horrid relish.

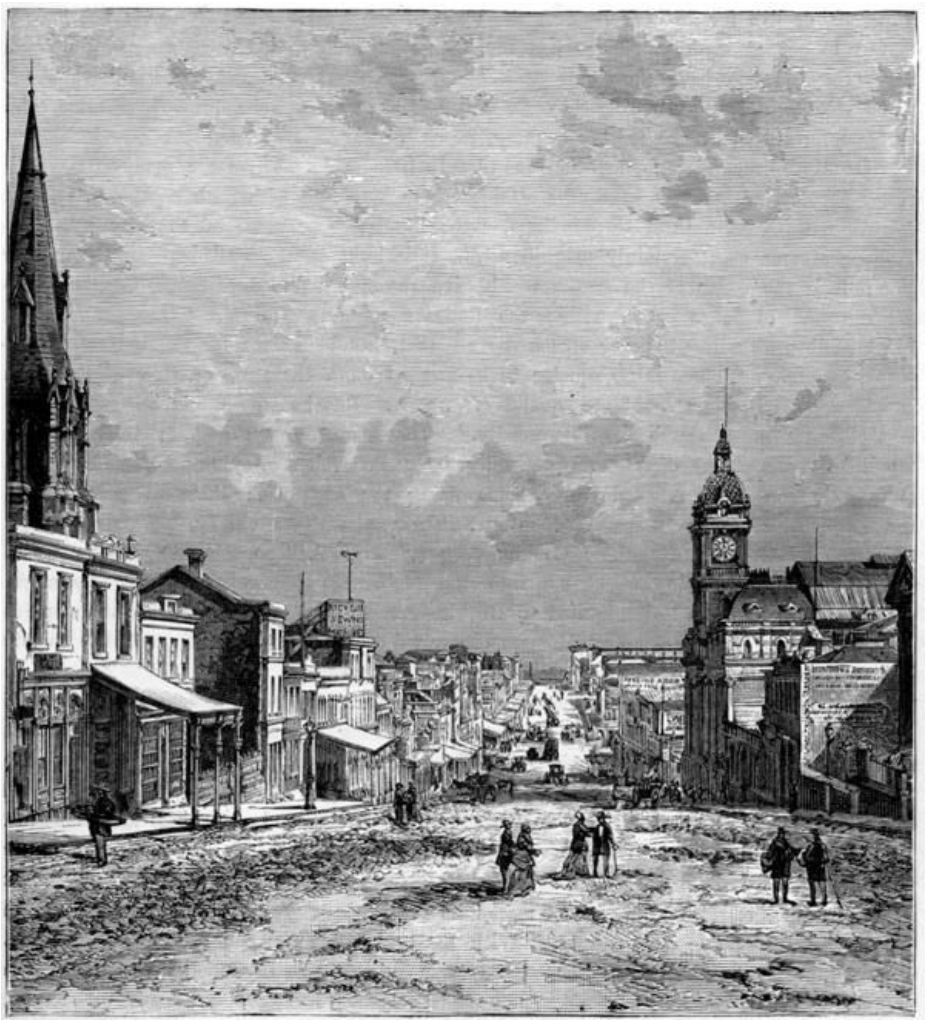
"I will quote a passage from Dr. Thompson's work in reference to the practice of cannibalism, and will then have done with the subject. 'Whether or not cannibalism commenced immediately after the advent of the New Zealanders from Hawaiki, it is nevertheless certain that one of Tasman's sailors was eaten in 1642; that Captain Cook had a boat's crew eaten in 1774; that Marion de Fresne and many other navigators met this horrible end; and that the pioneers of civilisation and successive missionaries have all borne testimony to the universal prevalence of cannibalism in New Zealand up to the year 1840. It is impossible to state how many New Zealanders were annually devoured; that the number was not small may be inferred from two facts authenticated by European witnesses. In 1822, Hougi's army ate three hundred persons after the capture of Totara, on the River Thames, and in 1836, during the Rotura war, sixty beings were cooked and eaten in two days.' I will add from the same book a translation of a portion of a war-song:—'Oh, my little son, are you crying? are you screaming for your food? Here it is for you, the flesh of Hekemanu and Werata. Although I am surfeited with the soft brains of Putu Rikiriki and Raukauri, yet such is my hatred that I will fill myself fuller with those of Pau, of Ngaraunga, of Pipi, and with my most dainty morsel, the flesh of the hated Teao.' "

Mr. Laird testifies to their cleanliness, but states that they are, like most savages, and for that matter, most white men, very improvident. If a bad potato or other crop occurred, they would eat it all at once, and half starve afterwards.

The same author tells a good story of the nonchalance of a leading Maori chief who was invited to dinner at Government House during the visit of H.R.H. the Duke of Edinburgh. After dinner the Duke's chief bagpiper came in and played. The chief was asked how he liked the music. He replied briefly: "Too much noise for me; but suit white man well enough."

And now we are approaching that great continent which has had, has, and will increasingly have, so much interest for the emigrant, who must be, more or less, a voyager and man of the sea. Australia, a country nearly as large as the United States, must be for many a day to come a very Paradise for the poor man.

The American steamers from San Francisco land one at Sydney, of which charming place Mr. Trollope says:—"I despair of being able to convey to my readers my own idea of the beauty of
[pg 53] Sydney Harbour;" he considers that it excels Dublin Bay, Spezzia, and New York. And the colonists, left to themselves—for England maintains no troops there now—have fortified it strongly. Mr. Trollope tells us of five separate armed fortresses, with Armstrong guns, rifled guns, guns of eighteen tons' weight, with loopholed walls and pits for riflemen, as though Sydney was to become another Sebastopol. "It was shown," says he, "how the whole harbour and city were commanded by these guns. There were open batteries and casemated batteries, shell-rooms
[pg 54] and gunpowder magazines, barracks rising here and trenches dug there. There was a boom to be placed across the harbour, and a whole world of torpedoes ready to be sunk beneath the water, all of which were prepared and ready for use in an hour or two. It was explained to me that 'they' could not possibly get across the trenches, or break the boom, or escape the torpedoes, or live for an hour beneath the blaze of the guns. 'They' would not have a chance to get at Sydney. There was much martial ardour, and a very general opinion that 'they' would have the worst of it." New South Wales and Victoria have about 8,000 volunteers and a training-ship for sailor boys; while an enormous monitor, the *Cerberus*, presented by the mother country, forms its war-fleet of one.



VIEW IN COLLINS STREET, MELBOURNE, AUSTRALIA.

Of Melbourne, Victoria, mention has already been made. There are many cities with larger populations, but few have ever attained so great a size with such rapidity. Though it owes nothing to natural surroundings, “the internal appearance of the city is,” Mr. Trollope assures us, “certainly magnificent.” It is built on the Philadelphian rectangular plan; it is the width of the streets which give the city a fine appearance, together with the devotion of large spaces within the limits for public gardens. “One cannot walk about Melbourne without being struck by all that has been done for the welfare of the people generally. There is no squalor to be seen—though there are quarters of the town in which the people no doubt are squalid.... But he who would see such misery in Melbourne must search for it specially.” There are no workhouses; their place is supplied in the colony of Victoria generally by “Benevolent Asylums.” In Melbourne about 12,000 poor are relieved yearly, some using the institution there as a temporary, and others as a permanent place of refuge. These places are chiefly, but not entirely, supported by Government aid. “Could a pauper,” says Trollope, “be suddenly removed out of an English union workhouse into the Melbourne Benevolent Asylum, he might probably think that he had migrated to Buckingham Palace,” so well are the inmates fed and cared for. There are no workhouses proper in any part of Australia, and the charity bestowed on these asylums is not given painfully or sparingly.

The wideness of the streets, however, and grandeur of general dimensions, have their drawbacks, among which the time consumed in reaching distant parts of the city counts first. Melbourne has a fine and entirely free Public Library and a University, as, indeed, has Sydney. Melbourne is the centre of a system of railways, and the well-to-do people all live out of town; in the south and east of the city there are miles of villas and mansions.

Mr. Trollope says:—“There is perhaps no town in the world in which an ordinary working man can do better for himself and for his family with his work than he can at Melbourne.” The rates of wages for mechanics are slightly greater than at home, and all the necessaries of life are cheaper. With meat at 4d. per pound, butter from 6d. upwards, bread, tea, and coffee about the same prices or rather under, coals the same or a trifle higher, potatoes, vegetables, and fruits generally considerably cheaper, all can live well and plentifully. Meat three times a day is common all over Australia, and in some parts the price is as low as 1½d. or 2d. per pound. Wages for good mechanics and artisans average about 10s. a day; gardeners receive about 50s., and labourers about 30s. per week; men-servants, in the house, £40 to £50 per annum; cooks, £35 to £45 per year; girls, as housemaids, &c., 8s. or 10s. per week. It is usual to hire the last named by this short term. Some of these prices rule all over the country, but are liable to rule lower, rather than higher, outside of Melbourne.

In the country sheep-shearers can earn 7s. to 14s. per day for about four months in the year; shepherds, £30 to £40 per year, with rations. The common labourer can count on 15s. to 20s. per week, with rations: these consist generally of 14 lbs. meat (usually mutton), 8 lbs. flour, 2 lbs. sugar, and a quarter of a pound of tea. Of course, where fruit or vegetables are plentiful they would be added. The meat, bread, and tea diet, however, is that characteristic of the whole country. In the great sheep runs and cattle ranges[23] it would be the shepherd's diet invariably.

Mr. Trollope advises the poor man to save for three or four years, and then invest in land, which in some places is to be had at 3s. 9d. an acre, payable to the Government in five instalments of ninepence per acre. Of course, he would require money for the erection of a house, farm implements, &c. The great trouble with most men working in the bush as shepherds or shearers, or at the mines, or elsewhere at distant points, is that the enforced absence from civilisation and social life makes them inclined for reckless living when they have accumulated a sum of money. The tavern-keepers of the nearest town or station reap all the benefit, and there are numbers of men who, for ten or eleven months of the year perfectly steady and sober, periodically give themselves up to drink until their earnings are melted, it is called "knocking down" one's cheque, and it is a common practice for them to hand such cheque to the publican, who lets them run on recklessly in drink and food until *he* considers it exhausted. A good story is told by Mr. Trollope of a man who had been accustomed to do this at regular intervals, but who on one occasion, having some loose silver, "planted" his cheque in an old tree, and proceeded to the usual haunt, where he set to work deliberately to get drunk. The publican showed evident doubt as to the propriety of supplying him freely. Why had not the man brought his cheque as usual? The tavern-keeper at last put him to bed; but the man, though drugged and stupefied, had his wits about him sufficiently to observe and remember that the host had examined his clothes, his hat, and boots, for the lacking cheque. Next morning he was ignominiously expelled from the house, but he didn't mind: the cheque was found by him safely in the tree by the roadside, and he surprised his master by returning to the station a week or two before he was expected richer than he had ever come home before. Let us hope he was cured of that form of folly for ever.

The gold yield of Australia for the twenty years between 1851 and 1871 was 50,750,000 ozs. But gold-fields die out sooner than most mines, and Australia has a more permanent source of prosperity for the future in its coal and iron-fields, which are in close proximity to each other. The coal is already worked to great profit, and is one of the principal steamship fuels of the Pacific.

The steamship route homeward from Australia is that by the Indian Ocean (usually touching at Ceylon), then reaching the Mediterranean *viâ* the Red Sea and Suez Canal. These points of interest have already been fully described in early chapters of this work.

[pg 56]

CHAPTER V.

Woman at Sea.

Poets' Opinions on Early Navigation—Who was the First Female Navigator?—Noah's Voyage—A Thrilling Tale—A Strained Vessel—A Furious Gale—A Birth at Sea—The Ship Doomed—Ladies and Children in an Open Boat—Drunken Sailors—Semi-starvation, Cold, and Wet—Exposed to the Tropical Sun—Death of a Poor Baby—Sharks about—A Thievish Sailor—Proposed Cannibalism—A Sail!—The Ship passes by—Despair—Saved at Last—Experiences of a Yachtswoman—Nearly Swamped and Carried Away—An Abandoned Ship—The *Sunbeam* of Service—Ship on Fire!—Dangers of a Coal Cargo—The Crew Taken off—Noble Lady Passengers—Two Modern Heroines and their Deeds—The Story of Grace Darling—The Longstone Light and Wreck of the *Forfarshire*—To the Rescue!—Death of Grace Darling.

"Hearts sure of brass they had who tempted first
Rude seas that spare not what themselves have nursed."

So sings Waller, and his words are only the repetition of a sentiment much more grandly expressed by Horace, who wrote now near two thousand years ago:—"Surely oak and threefold brass surrounded his heart who first trusted a frail vessel to the merciless ocean." And once more, just to show the unanimity of the poets on this point, Dr. Watts has said:—

"It was a brave attempt! advent'rous he
Who in the first ship broke the unknown sea."

Now, if all this is said of man, what shall be said of the woman who first trusted herself on the great deep? Who was she? It would be most difficult to satisfactorily answer this question, but there can be no doubt that "Noah's wife, and the three wives of his sons," whose voyage and enforced residence in the ark lasted no less than twelve months and three days[24] are the earliest females on record who embarked in a great vessel on a boundless expanse of waters.

These pages have already presented episodes in the lives of many seafaring ladies, but till now no chapter has been specially devoted to the subject. In these days of general travel ladies make, as we have often seen, long voyages to and from far distant parts. One of them, some nineteen years ago, underwent the horrors of shipwreck, and her subsequent sufferings were admirably told by her under the title of “Ten Terrible Days.” The account, which should be read in its entirety, is here, for obvious reasons, considerably condensed.

One day late in the year 1861 a grain-laden vessel, a fine clipper, might have been seen slowly and gracefully sailing out of the noble bay of San Francisco. On her as passengers were two or three ladies with children, among them Mrs. William Murray, the authoress, who had been recommended to take the long voyage home in a roving clipper, in preference to taking a passage in the over-crowded steamers running to Panama and New York. Let her open the story. “The
[pg 57] sun,” says she, “was shining as it always does in California, until the sea and the rocks and the vast city seemed literally glittering with sunlight. One long look back to the happy home of the last six years, to the home still of the husband and brothers obliged to remain behind, and at last I had only the sea that parted us to look at through my tears. Our friends had seen us set sail in what seemed a gallant ship. It had been chosen from all others as the one to send us home in for its show of perfectness. There were men in San Francisco who knew that the ship was unseaworthy (having been frightfully strained in her last voyage to China), and that she was in no fit condition to be trusted with the lives of helpless women and children, yet they let us sail without a word of warning.”

The dreaded Horn had been easily rounded in good weather, and on the evening of January 4th, 1862, they had been eighty-six days out; in ten more they expected to be in England. The sailors had predicted a stormy night, and a terrific gale followed closely on that prophecy. The wind increased in fury, and the ship rolled till those on board were often thrown from their feet. That night a child was born on board, and the kindly lady passengers did all in their power for the poor mother.

“At dawn,” says Mrs. Murray, “taking my little girl by the hand, I went on deck. The storm had in some measure abated, but the sea looked black and sullen, and the swell of the vast heavy waves
[pg 58] seemed to mock our frailty. The sailors had been up all night, and were as men playing at some ferocious game: some working in desperation at the pumps, and singing at the pitch of their voices wild sea-songs to time their common efforts; others employed in throwing hundreds of bags of grain into the sea, that they might thus lighten the ship. This, I think, more than all, showed me our peril. I wandered about, too miserable to remain in any one spot, till the captain assembled us all once more in the cabin to get some food, saying that it was impossible to save the ship, and that we should have need of all our fortitude. I remembered my own vain attempt to eat some bread, but the poor little children took their breakfast and enjoyed it.

“We were then each provided with a large bag made of sailcloth, and were advised by the captain to fill it with the warmest articles of clothing we possessed.

“All my worldly possessions were on board, comprising many memorials of dear friends, portraits of loved ones I shall never see again, and my money loss I knew would be no trifle. In perfect bewilderment I looked round, and filled my bag with stockings and a couple of warm shawls. On the top of a box I saw a little parcel that had been entrusted to me by a lady in California to deliver to her mother in Liverpool. I put that in my bag, and she got it.... There had been no thought of removing the breakfast, and with the rolling of the ship, which was every moment becoming worse, everything had fallen on the floor, and was dashing about in all directions. Boxes, water-jugs, plates, dishes, chairs, glasses, were pitching from one end of the saloon to the other. Children screaming, sailors shouting and cursing, and loud above all there was the creaking of timbers, and the sullen sound of water fast gaining upon us in the hold of the ship, which groaned and laboured like a living thing in agony.”

How the ridiculous will intrude even at such times is shown in the following. A little boy was discovered helping himself out of the medicine-chest, particularly busy with the contents of a broken calomel bottle! Lamp-oil served as an emetic in this emergency, and the youngster’s life was saved. And now the first mate, upon whose decision and firmness much depended, having lost his presence of mind, had drunk deeply of whisky. He was intoxicated, and so, too, were many of the sailors, who had followed his example. The captain, meantime, had been busily employed in ordering out food and water to supply the boats, collecting the ship’s papers, &c. The lowering of the boats he had entrusted to his officers. On hearing of the drunkenness on deck, his first thought was to get the women and children off at once, for should the sailors seize the boats, what would become of them? Two boats had already been smashed whilst lowering them into the sea, and there were only two remaining. Forty-seven people to cram into two frail boats, fifteen hundred miles from land: delicately-nurtured women, helpless children, drunken and desperate men.

“THE PASSENGERS WERE LET DOWN BY ROPES” (*p. 58*).

By the help of the most sober of the sailors, the captain’s own boat was lowered; some small mattresses, pillows, blankets, a cask of water, sacks of biscuit, and nautical instruments, were first put in; then the passengers were let down by ropes. “It seems marvellous,” says Mrs. Murray, “when I think of it now, that in our descent we were not dashed to pieces against the ship’s side. We had to wait for each descent a favourable moment while she was leaning over. Then the word of command was given, and we were slung down like sheep. My heart stood still whilst my little one was going down, and then I followed. It was a terrible sight for a woman to see that poor creature whose baby was born the night before, looking like a corpse in a long
[pg 59] dressing-gown of white flannel, with the poor little atom of mortality tightly clasped in her arms. I thought she would die before the day was over.”

At last they were all in the boat: four women, five children, the second mate, and sixteen sailors. The captain stayed on the ship, providing for the safety of the drunken creatures who could not take care of themselves, and then he came off. How small the boat looked by the side of the tall ship! And they had to get quickly out of her reach, for she was rolling so heavily that the waters near her boiled up like a maelström.

Away they drifted, a mere speck upon the ocean. Before night there came a storm of thunder, lightning, wind, and rain, that lasted through the darkness, and by which they were drenched through and through. “I sat up,” says the narrator, “for some twelve or fourteen hours on a narrow plank, with my child in my arms, utterly miserable, cold, and hopeless, soaked to the skin, blinded by the salt spray, my face and hands smarting intolerably with the unusual exposure.”

During the storm and confusion the greater part of their biscuit had been soaked with salt water, and made useless. It was also discovered that the food collected for the captain’s boat had been thrown by mistake into the other, therefore it was necessary at once to put them on allowance: half a pint of water and half a biscuit a day to each person. Except the biscuit, there were only a few small tins of preserved strawberries and Indian corn, and these were given to the ladies. “How the poor children cried with hunger as the days dragged on!”

The boat leaked from the beginning, and the sailors by turns baled the water out in little cans. Exposed to the glare of a tropical sun for hours together, nearly mad with thirst, bearing her child in her weak arms, for she was too much exhausted to stand, Mrs. Murray says that often she would sit for hours without any thought at all, vacantly gazing on the ocean.

“We had,” says she, “three days of dead calm. The sun glared down upon us pitilessly, and I thought how pleasant it would be to throw myself into the sea, and sink calmly to death beneath its waves. I lost all wish to live—for life seemed horrible. I cannot describe the days as they passed separately, one by one; when I look back upon them, they all seem to have been one misery. I remember that on the third day out poor Kitty’s baby died—indeed, it had been dying from the first. It never had a chance of living, for it had no fit attention and no sustenance. The poor mother cried bitterly when at last it became cold on her bosom, but its death was a merciful release. Wrapped in a shawl of bright colours, it was thrown overboard, but was so light that it could not sink, and floated for hours on a sea so calm in the hot sun that scarce a ripple could be seen. At last it disappeared suddenly, the prey of some hungry shark, and when afterwards the horrid monsters crowded round our boat they added to our misery. Hitherto the children had been plunged into the sea every morning to preserve them in health, but we dared not continue this practice with those horrid creatures on our lee.... I must not forget one incident, trifling in itself, but which might have caused the death of one of the sailors. On the day of the wreck I had

caused two or three bottles of ale and one of claret to be put in the boat, thinking it might be of great use to us. On the third or fourth night out, when we were shivering helplessly after a
[pg 60] drenching shower of rain, we thought that a bottle of ale should be opened for the women and children, but not a bottle of any sort was to be found." The rage of the captain was awful, and but for the intercession of the ladies, he swore that he would have thrown the man overboard.

It was on the morning of the tenth day that the frightful thought of eating the children came into the heads of three or four desperate men, and the captain and a few trustworthy companions had made up their minds to slay the would-be murderers that very night in their sleep. The last and fatal hour of their great agony seemed to be come. On the morning of the tenth day a sail was reported, and a white towel hoisted to attract her attention. She came near enough for the captain to make out that she carried the Hamburg flag, and then "passed by on the other side." Curses loud and deep came from the sailors' lips. Then the women looked into each other's faces and the children cried, and the wolfish eyes of the would-be cannibals were again fixed upon them.

But Heaven was merciful, and again a sail was reported. Nearer and nearer she came, faster rowed the hungry sailors, when there rose a wild shout, "She has stopped!" and surely there she was at rest in the water, waiting to see what manner of beings they were. "Row faster, my men,
[pg 61] and keep down the women and children," sang out the captain, for he was fearful that if their number was discovered the vessel might pass them, as had that seen in the morning.

"Oh, what a lovely afternoon," says Mrs. Murray, "that was when we were saved—such a blaze of sunshine, such blue skies, such a glistening, glowing sea, as if even the treacherous ocean were rejoicing with us. At length we were close alongside of the ship, and saw crowds of human beings clustering about to look at us—dark, swarthy faces, for they were all Spaniards, but full of pity, wonderment, and horror. They took us all in, one by one, and when they saw the women and little children they wept. They could not speak our language, and looked upon us with bewilderment, but when I (who fortunately could speak Spanish), kneeling down on deck, said 'Gracias a Dios' (Thank God), their tongues were loosened, and there was a flood of questions and crowding round us, with weeping and laughing and shaking of hands. How good were those kind-hearted men! How I thank them all, every one, now as I write, from the worthy captain down to the lowest of his crew. And they brought us bread and wine and water—precious water, how good it was!"

A few of Mrs. Brassey's experiences on her husband's yacht will be read with interest. One day, after their five o'clock dinner, she and some of her children very nearly met with a most serious accident. "We were all sitting," writes that lady, "or standing about the stern of the vessel, admiring the magnificent dark blue billows following us, with their curling white crests mountains high. Each wave, as it approached, appeared as if it must overwhelm us, instead of which it rushed grandly by, rolling and shaking us from stem to stern, and sending fountains of spray on board.... A new hand was steering, and just at the moment when an unusually big wave overtook us he unfortunately allowed the vessel to broach to a little. In a second the sea came pouring over the stern, above Allnut's head. The boy was nearly washed overboard, but he managed to catch hold of the rail, and with great presence of mind stuck his knees into the bulwarks. Kindred, our boatswain, seeing his danger, rushed forward to save him, but was knocked down by the return wave, from which he emerged gasping.

"The coil of rope on which Captain Lecky and Mabelle were seated was completely floated by the sea. Providentially, however, he had taken a double turn round his wrist with a reefing point, and, throwing his other arm round Mabelle, held on like grim death; otherwise, nothing could have saved them. She was perfectly self-possessed, and only said quietly, 'Hold on, Captain Lecky, hold on!' to which he replied, 'All right.' I asked her afterwards if she thought she was going overboard, and she answered, 'I did not *think* at all, mamma, but felt sure we were gone.' Captain Lecky, being accustomed to very large ships, had not in the least realised how near we were to the water in our little vessel, and was proportionately taken by surprise. All the rest of the party were drenched, with the exception of Muriel, whom Captain Brown held high above the water in his arms, and who lost no time in remarking, in the midst of the general confusion 'I'm not at all wet, I'm not!' Happily, the children don't know what fear is. The maids, however, were very frightened, as some of the sea had got down into the nursery, and the skylights had to be screwed down. Our studding-sail-boom, too, broke with a loud crack when the ship broached to, and the jaws of the fore-boom gave way.

[pg 62] "Soon after this adventure we all went to bed, full of thankfulness that it had ended as well as it did; but also not, so far as I am concerned, to rest in peace. In about two hours I was awakened by a tremendous weight of water suddenly descending upon me and flooding the bed. I immediately sprang out, only to find myself in another pool on the floor. It was pitch dark, and I could not think what had happened; so I rushed on deck, and found that, the weather having moderated a little, some kind sailor, knowing my love of fresh air, had opened the skylight rather too soon, and one of the angry waves had popped on board, deluging the cabin."

The *Sunbeam* encountered a wreck, and the account given of its inspection will be read with interest. Mrs. Brassey says:—"When I went on deck, at half-past six, I found a grey, steamy, calm morning, promising a very hot day, without wind.

"About 10.30 a.m. the cry of 'Sail on the port helm!' caused general excitement, and in a few

minutes every telescope and glass in the ship had been brought to bear upon the object which attracted our attention, and which was soon pronounced to be a wreck. Orders were given to starboard the helm and to steer direct for the vessel; and many were the conjectures hazarded and the questions asked of the fortunate holders of glasses. 'What is she?' 'Is there any one on board?' 'Does she look as if she had been long abandoned?' Soon we were near enough to send a boat's crew on board, whilst we watched their movements anxiously from the bridge. We could now read her name—the *Carolina*—surmounted by a gorgeous yellow decoration on her stern. She was of between two and three hundred tons burden, and was painted a light blue with a red streak. Beneath her white bowsprit the gaudy image of a woman served as a figure-head. The two masts had been snapped short off about three feet from the deck, and the bulwarks were gone, only the covering board and stanchions remaining, so that each wave washed over and through her. The roof and supports of the deck-house and the companions were still left standing, but the sides had disappeared, and the ship's deck was burst up in such a manner as to remind one of a quail's back.... We saw the men on board poking about, apparently very pleased with what they had found; and soon our boat returned to the yacht for some breakers, as the *Carolina* had been laden with port wine and cork, and the men wished to bring some of the former on board. I changed my dress, and putting on my sea-boots, started for the wreck.

"We found the men rather excited over their discovery. The wine must have been very new and very strong, for the smell from it as it slopped about all over the deck was almost enough to intoxicate anybody. One pipe had already been emptied into the breakers and barrels, and great efforts were made to get some of the casks out whole; but this was found to be impossible, without devoting more time to the operation than we chose to spare. The men managed to remove three half empty casks with their heads stove in, which they threw overboard, but the full ones would have required special appliances to raise them through the hatches. It proved exceedingly difficult to get at the wine, which was stowed underneath the cork, and there was also a quantity of cabin bulkheads and fittings floating about under the influence of the long swell of the Atlantic. It was a curious sight, standing on the roof of the deck-house, to look into the hold, full of floating bales of cork, barrels, and pieces of wood, and to watch the sea surging up in every direction through and over the deck, which was level with the water's edge. I saw an
[pg 63] excellent modern iron cooking-stove washing about from side to side; but almost every other movable article, including spars and ropes, had apparently been removed by previous boarders." It would have delayed them too long to tow her into port, or they might have recovered some £1,500 as salvage, while to blow her up would have required more powder than they had on board. So she was left helplessly drifting about, a danger to any vessel running into her full steam or sail almost as great as a sunken rock.

Later, the owner of the *Sunbeam* was of real service, for a fine vessel was encountered, under full sail and on fire, her cargo being smelting coal. Her red Union Jack was upside down, while her signals read the terrible announcement, "Ship on fire!" These were followed by the signal, "Come on board at once," and a boat's crew was at once despatched to the rescue. They were purposely well armed, and for the sufficient reason that there was little sign of fire or smoke on board, and it was thought that there might be a mutiny on board. In a few minutes the boat returned with the chief mate, a fine-looking Norwegian, who reported his vessel the *Monkshaven*, sixty-eight days from Swansea, and bound for Valparaiso. The fire had been discovered five days previously, and the morning following the first day the crew had got all their clothes and provisions on deck, and had thrown everything of a combustible nature—tar, oil, pitch, spare spars, and so forth—overboard. The hatches had then been battened down, but all efforts to subdue the fire were unavailing. The officers and men had been living on deck under a canvas screen, the water being a foot deep even there. When the hatches were opened for a moment, dense clouds of hot, suffocating yellow smoke immediately poured forth, driving back all who approached. In such cases it is often difficult to find the location of the fire, which may at any time burst open the deck or burn a hole through the hull. The dangerous nature of such cargoes may be inferred from the fact that of every three vessels going out to Valparaiso or Callao, one catches fire, although, of course, the flames are often got under control. They had encountered a terrific gale, and while burning had signalled a large American steamship, which had contemptuously steamed away from them. When the men had all been transferred to the yacht—for it was found impossible to save the barque—the poor fellows were almost wild with joy and excitement. Soon after the fated vessel was blazing like a tar-barrel, and the yacht steamed round her near enough for all on board to feel the heat. Fifteen extra mouths to feed was a serious addition to the passengers and crew of the *Sunbeam*, and the water ration had to be cut down, but otherwise they had all they could wish, and a week later were transferred to the Pacific Company's mail steamer *Illimani*, then homeward bound. The satisfaction which must have been felt by Mr. and Mrs. Brassey at having the ability as well as the will to save fifteen lives may well be imagined.

One of woman's noblest attributes is her readiness to help in the hour of need, and its exercise has been by no means confined to the land. Late in 1879 the British India Steam Navigation Company's steamer *Eldorado* had a hairbreadth escape from destruction in the Bay of Biscay. The rascally Lascar crew abandoned their posts and gave themselves up to despair, and the passengers "passed" coal to the stoke-hole and worked hard at baling; many ladies even volunteered to assist, and two American ladies acted as stewardesses and dispensed coffee and provisions to the rest.

THE RESCUE FROM THE ST. LAWRENCE RIVER.

[pg 64] How often of late years have female swimmers saved life? The case to be cited, and which occurred in fresh water, is only one of scores that might be recorded here. On the 5th December, 1879, two men had to cross the St. Lawrence River, from La Rue Island to a wharf on the main shore. It was an intensely cold day, and a heavy gale was blowing strongly from the north-east up the river. The men loaded their punt with a sleigh, and had managed to reach the middle of the channel, when a sudden and violent gust of wind swamped the punt and turned her over. The men clung to her while bottom upward, and tried to "tread" the water so as to get her to the shore, but in vain; the cold was so intense that their legs were benumbed above the knees, and they gave themselves up for lost. They remained in this perilous position for a considerable time, shouting loudly for help till their throats were sore. Making a final effort, they shouted again, and this time their cries were heard at the house of a Mr. Darling, who, with his family, resided close to the shore. That gentleman was ill in bed, but his wife and daughters, Maggie and Jessie, were at home, the men and boys being at work in the fields at a distance. On hearing the last painful shout of the drowning men, they quickly opened the door, to see them struggling in the great river—a stream the width and volume of which surpass anything in Europe. The first suggestion from the mother was to fetch the men from the fields, but before this could be done brave Maggie and Jessie—the latter a girl of sixteen years—had, without a word, launched the skiff, and were rowing with all their strength through the troubled waters and driving storm. They had the greatest difficulty in reaching the exhausted and helpless men, but at last their noble effort was rewarded, and in ten minutes the poor fellows were being chafed and warmed by their father's fire. Brave Maggie and Jessie! worthy successors, indeed, to your namesake, the heroine of the Longstone Light!

The story of Grace Darling must be familiar to our readers. The circumstances which called forth her courage and humanity were as follow:—

The *Forfarshire*, a steamer of moderate size, left Hull for Dundee on the evening of September 5th, 1838, having on board a considerable amount of freight and sixty-three passengers and crew. Soon after leaving the Humber the boilers began to leak, and on Thursday morning the weather became very tempestuous, while a thick mist enveloped the vessel. The steamer managed to pass the Fern Islands, on the way north, early on Thursday evening, but had all she could do to make headway in a very heavy sea, while the alarming fact was discovered that her boilers' leakage was increasing. As the night advanced the weather became more and more boisterous, and somewhere off Berwick it was found that the water from above was deluging the furnace fires. Off St. Abb's Head, the engineer reported that the machinery would work no longer; the sails were accordingly set, and the vessel allowed to drive before the wind, which took her southward. Before daybreak on Friday morning the roar of breakers near at hand was heard; and the captain tried hard to avert the appalling catastrophe which seemed inevitable, and steer the vessel between the islands and the mainland, through a channel known as the Fair Way. But the *Forfarshire* would not answer her helm, and was driven hither and thither by a furious sea. The scene at this juncture baffles description. Utter darkness enveloped the doomed vessel, over which the sea broke in tremendous waves, and the noise of which almost drowned the agonising shrieks of the passengers. The vessel, a few minutes later, struck a rock, her bows
[pg 65] banging and crashing upon it. At this moment a rush was made by eight of the crew to a boat, which they lowered successfully, one almost naked and frenzied passenger jumping into it after them. The ship was now at her last extremity.

"Then some leaped overboard with dreadful yell,
As eager to anticipate their grave;

And the sea yawned around her like a hell,
And down she sucked with her the whirling wave,
Like one who grapples with his enemy,
And strives to strangle him before he die.”

A moment or two after the first shock, another great sea struck her, raising her high in the air and then bringing her down with a terrific crash on the jagged reef, and with a shock so tremendous that she literally broke in two. The whole of the upper part of the vessel, including the chief cabin, filled with passengers, was swept away, and sank almost immediately. Every soul on that part of the vessel was engulfed in an ocean grave. Good George Herbert says truly, “He that will learn to pray, let him go to sea.”

The fore part of the vessel remained spitted on a rocky projection; and had the *Forfarshire* drifted a few yards further to the south-west she would have escaped her terrible fate, as the rock there descends almost precipitously into deep water. Meantime, at the Fern Lighthouse, a mile off, nothing had been seen of the actual occurrence, but at seven o’clock the vessel was noticed lying on the rock. The weather was so bad that the lighthouse-keeper, Mr. Darling, doubted the possibility of rendering assistance. But his daughter Grace entreated her father to go off in the boat at all risks, and offered herself to take one oar. Mr. Darling, thus urged, though knowing the danger of the attempt, agreed, and mother and daughter aided him in launching the boat. After a hard pull through the boiling foam, they reached the rock, where they found nine persons shivering in the cold and wet, and trembling for their lives. As illustrative of the heroism displayed in this rescue, it may be mentioned that had it not been ebb tide the boat could not have passed between the islands; and Darling and his daughter knew that the tide would be flowing on their return, and that their united strength would have been quite insufficient to pull back to the lighthouse. But for the assistance of the survivors all would have had to remain on the fatal rock. The joy of the rescued people may well be imagined, and their surprise, and indeed amazement, at finding that one of their deliverers was a young girl. At the lighthouse food and warmth soon restored their exhausted powers. Among those rescued was a bereaved mother, who had seen her two only children perish before her eyes.

Grace Darling’s name and fame are historic; she lived but a short time after the tragic event just recorded, but long enough to receive the honours due to her for an act of unparalleled heroism, even receiving the acknowledgments of the Queen and a handsome sum of money from the public.

“She who amid the tempest shone,
The angel of the wave,”

was not, as might be supposed, a robust girl, but, on the contrary, quite delicate. Her spirit peacefully passed away a few months after the event above recorded.

[pg 66]

CHAPTER VI.

Davy Jones’s Locker and its Treasures.

Clarence’s Dream—Davy Jones’s Locker—Origin of the Term—Treasures of the Ocean—Pearl Fishing—Mother o’ Pearl—Formation of Pearls—Art and Nature Combined—The Fisheries—The Divers and their *modus operandi*—Dangers of the Trade—Gambling with Oysters—Noted Pearls—Cleopatra’s Costly Draught—Scottish Pearls very Valuable—Coral—Its Place in Nature—The Fisheries—Hard Work and Poor Pay—The Apparatus Used—Coral Atolls—Darwin’s Investigations—Theories and Facts—Characteristics of the Reefs—Beauty of the Submarine Forests—Victorious Polyps—The Sponge a Marine Animal—The Fisheries—Harpooning and Diving—Value of Sponges.

“I saw a thousand fearful wracks:
A thousand men that fishes gnawed upon:
Wedges of gold, great anchors, heaps of pearl,
Inestimable stones, unvalued jewels,
All scattered in the bottom of the sea.
Some lay in dead men’s skulls; and in those holes
Where eyes did once inhabit there were crept,
As ’twere in scorn of eyes, reflecting gems,
That wooed the slimy bottom of the deep,
And mocked the dead bones that lay scattered there.”

So dreamed Clarence on a memorable night, and, indeed, what treasures, known and unknown, must not the ocean cover!

The well-known term which forms the heading of this chapter, with its popularly-understood meaning, is familiar to every schoolboy, yet its origin is most obscure. Mr. Pinkerton, an ingenious correspondent of that valuable medium of inquiry, *Notes and Queries*,[25] argues as follows, and his opinion is entitled to respect. He says:—"I have arrived at the conclusion that the phrase is derived from the Scriptural account of the prophet Jonah. The word *locker*, on board ship, generally means the place where any particular thing is retained or kept, as 'the bread locker,' 'shot locker,' &c. In the ode in the second chapter of the Book of Jonah, we find that the prophet, praying for deliverance, describes his situation in the following words:—'In the midst of the seas; and the floods compassed me about; the depth closed me round about; the earth with her bars was about me.'

"The sea, then, might not misappropriately be termed by a rude mariner Jonah's locker: that is, the place where Jonah was kept or confined. Jonah's locker, in time, might readily be corrupted to *Jones's* locker, and Davy, as a very common Welsh accompaniment of the equally Welsh name Jones, added; the true derivation of the phrase having been forgotten."

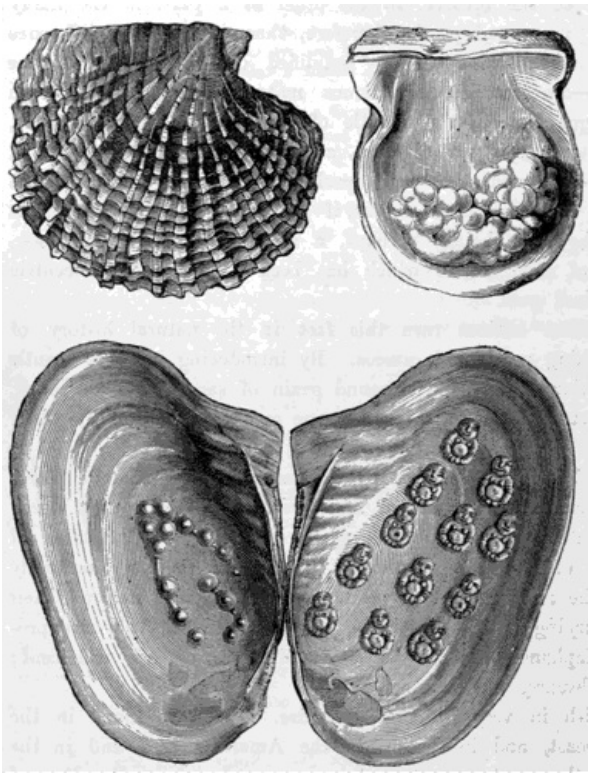
However this may be, it is of the hidden treasures of the ocean locker and its explorers we would now speak. And first let us take a glance at the pearl, coral, and sponge fisheries,[26] as they are somewhat incorrectly called, inasmuch as it will pave the way to the subject of divers and diving.

[pg 67] The pearl oyster (*Meleagrina margaritifera*) is the most valuable and interesting of all the nacre (mother-of-pearl) bearing shells. The shell is nearly round, and greenish in colour on the outside; it furnishes at once the finest pearls, under favourable circumstances, and the nacre so useful in many industrial arts. Fine pearl and nacre have, in short, the same origin. The nacre invests the whole interior of the shell, being the same secretion which, in the pearl, has assumed the globular form; in one state it is deposited as nacre on the walls of the bivalve, in the other as a pearl in the fleshy interior of the animal. Between nacre and pearls, therefore, there is only the difference of the form of the deposition. The finest pearls—"solidified drops of dew," as the Orientals poetically term them—are secretions of nacrous material spread over foreign bodies which have accidentally got beneath the mantle of the mollusc. The animal, if irritated by the intrusion of only a grain of sand, and being unable to remove it, covers it with a natural secretion, and the pearl gradually grows in size. Almost invariably some foreign body is found in their centre, if broken, which has served as a nucleus to this concretion, the body being, perhaps, a sterile egg of the mollusc, the egg of a fish, or a grain of sand, round which has been deposited in concentric layers the beautiful and much prized gem.

The Chinese and other Eastern nations turn this fact in the natural history of this bivalve to practical use in making pearls and cameos. By introducing into the mantle of the mollusc, or into the interior of its body, a round grain of sand, glass, or metal, they induce a deposit which in time yields a pearl, in the one case free, and in the other adhering to the shell.

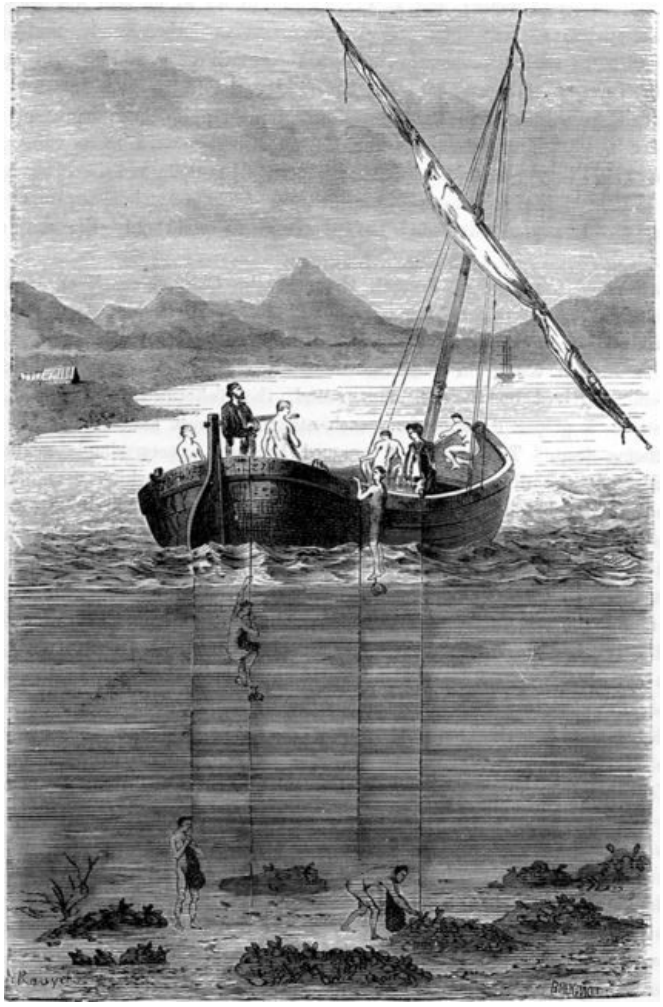
Pearls are sometimes produced in whole chaplets by the insertion of grains of quartz connected by a string into the mantle of a species of *Meleagrina*; in other cases, a dozen enamelled figures of Buddha seated have been produced by inserting small plates of embossed metal in the valves of the same species. The pearls are very naturally small at first, but increase by the annual layers deposited on the original nucleus, their brilliancy and shade of colour varying with that of the nacre from which they are produced. Sometimes they are diaphanous, silky, lustrous, and more or less iridescent; occasionally they turn out dull, obscure, and even smoky.

The pearl oyster is met with in very different latitudes. They are found in the Persian Gulf, on the Arabian coast, and in Japan, in the American seas, and in the islands of the South Sea; but the most important fisheries are found in the Bay of Bengal, Ceylon, and other parts of the Indian Ocean. The Ceylon fisheries are under Government inspection, and each year, before the fisheries commence, an official inspection of the coast takes place. Sometimes the fishing is undertaken on account of the State, at other times it is let to parties of speculators. In 1804 the pearl fishery was granted to a capitalist for £120,000; but, to avoid impoverishing all the beds at once, the same part of the gulf is not fished every year; and, indeed, sometimes the oysters disappoint the scientists and practical finders by migrating.



PEARL OYSTER (*Meleagrina margaritifera*).

The great fishery for mother-o'-pearl takes place in the Gulf of Manaar, a large bay to the north-east of Ceylon. It occupies 250 boats, which come from different parts of the coast; they reach
[pg 68] the ground at daybreak, the time being indicated by a signal gun. Each boat's crew consists of twenty hands and a negro. The rowers are ten in number. The divers divide themselves into two groups of five men each, who labour and rest alternately; they descend from forty to fifty feet, seventy being about the utmost they can accomplish, and eighty seconds the longest period the best diver can remain under water, the ordinary period being only thirty seconds. In order to accelerate their descent a large stone is attached to a rope. The oars are used to form a stage, across which planks are laid over both sides of the boat; to this stage the diving-stone is suspended. This stone is in the form of a pyramid, weighing thirty or more pounds; the cord which sustains it sometimes carries in its lower part a sort of stirrup to receive the foot of the diver. At the moment of his descent he places his right foot in this stirrup, or, where there is no such provision, he rests it on the stone with the cord between his toes. In his left foot he holds the net which is to receive the bivalves; then seizing with his right hand a signal cord conveniently arranged for this purpose, and pressing his nostrils with the left hand, he dives, holding himself vertically, and balancing himself over his foot. Each diver is naked, except for a band of calico which surrounds his loins. Having reached the bottom, he withdraws his foot from the stone, which ascends immediately to the stage. The diver throws himself on his face, and begins to gather all the proper shells within his reach, placing them in his net. When he wishes to ascend he pulls the signal cord, and is drawn up with all possible expedition. A good diver seldom remains more than thirty seconds under water at one time, although some can remain considerably longer, but he repeats the operation three or four, and, in favourable circumstances, even fifteen or twenty times. The labour is extremely severe, and they are short-lived. On returning to the boat they sometimes discharge water tinged with blood by the mouth, nose, and ears. They are also exposed to great danger from sword-fish and sharks, which lie in wait for and
[pg 69] frequently devour the unhappy victim. They continue to fish till mid-day, but are expected to return long before dark. Mrs. Brassey explains that when a boat with pearls reaches the shore the shells are divided into equal heaps, one-fourth going to the boat's crew and three-fourths to the Government inspector. They keep whichever heap he chooses to kick, so that, being
[pg 70] uncertain in which heap the best pearls are, the chances are good enough. The heaps are then divided and sold by auction in thousands, and then sub-divided again. Gambling is such an Oriental proclivity that the merest beggar will buy a few of the shells, hoping to find a pearl of great value; and should he fail to do so, he still has got his oyster! "Some of the oysters are taken in sealed-up sacks to Colombo, Kandy, and other inland places, in order to enable people to indulge their love of gambling and speculation." Sir Emerson Tennant tells us that the depleted pearl oyster-shells of the Condatchy fisheries, which date back two thousand years, form an immense bank on the beach, extending for miles. In past times the Ceylon fisheries were more valuable than at present. In 1797 they are said to have produced £144,000, and in 1798 as much as £192,000. In 1802 the fisheries were farmed for £120,000; but for many years the banks have been less productive, and are now said to yield only the sum of £20,000 per annum.



DIVING FOR PEARLS.

The natives of the Bay of Bengal, those of the Chinese coast, of Japan, and the Indian Archipelago, all devote themselves to the pearl fishery, the produce being estimated to realise at least £800,000. Fisheries analogous to those of Ceylon take place on the Persian coast, on the Arabian Gulf, along the coast of Muscat, and in the Red Sea. Arrived on their fishing-ground, the fishermen of the Red Sea range their barques at a proper distance from each other, and cast anchor in water from eight to nine fathoms deep. The process is pursued here in a very simple manner. When about to descend, the divers pass a cord, the extremity of which communicates with a bell placed in the barque, under the armpits; they put cotton in their ears, and press the nostrils together with a piece of wood or horn; they close their mouths hermetically, attach a heavy stone to their feet, and at once sink to the bottom of the sea, where they gather indiscriminately all shells within their reach, which they throw into a bag suspended round their haunches. When they require to breathe they sound the bell, and immediately they are assisted in their ascent. On the oyster-banks off the isle of Bahrein the pearl fishery produces about £240,000; and if we add to this the product of the other fisheries in the neighbourhood, the sum total yielded by the Arabian coast would probably not fall short of £350,000. In South America similar fisheries exist. Before the Mexican conquest the pearl fisheries were located between Acapulco and the Gulf of Tchuantepic; subsequently they were established round the islands of Cubagua, Margarita, and Panama. The results became so full of promise that populous cities were not slow to raise themselves round these several places. Under the reign of Charles V. America sent to Spain pearls valued at £160,000; in the present day the annual yield is estimated to be worth £60,000.

Pearls form, of course, the most important product of the animal. When they are adherent to the valves they are detached with pincers; but as a rule they are found in the oyster’s soft tissues. In this case the substance is boiled, and afterwards sifted, in order to obtain the most minute of the pearls; for those of considerable size are sometimes overlooked in the first operation. Months after the mollusc is putrefied miserable Indians may be observed busying themselves with the corrupt mass, in search of small pearls which may have been overlooked by the workmen.

[pg 71]

The pearls adherent to the valve are more or less irregular in their shape; they are sold by weight. Those found in the body of the animal, and isolated, are called *virgin pearls*. They are globular, ovoid, or pyriform, and are sold by the individual pearl. In cleaning them, they are gathered together in a heap in a bag, and worked with powdered nacre, in order to render them perfectly pure in colour and round in shape, and give them a polish; finally, they are passed through a series of copper sieves, in order to size them. These sieves, to the number of a thousand, are made so as to be inserted one within the other, each being pierced with holes, which determine the size of the pearl and the commercial number which is to distinguish it. Thus,

the sieve No. 20 is pierced with twenty holes, No. 50 with fifty holes, and so on up to No. 1,000, which is pierced with that number of holes. The pearls which are retained in Nos. 20 to 80, said to be *mill*, are pearls of the first order; those which pass and are retained between Nos. 100 and 800 are vivadoe, or pearls of the second order; and those which pass through all the others, and are retained in No. 1,000, belong to the class *tool*, or seed pearls, and are of the third order. They are afterwards threaded; the small and medium-sized pearls on white or blue silk, arranged in rows, and tied with ribbon into a top-knot of blue or red silk, in which condition they are exposed for sale in rows, assorted according to their colours and quality. The small or seed pearls are sold by measure or weight.

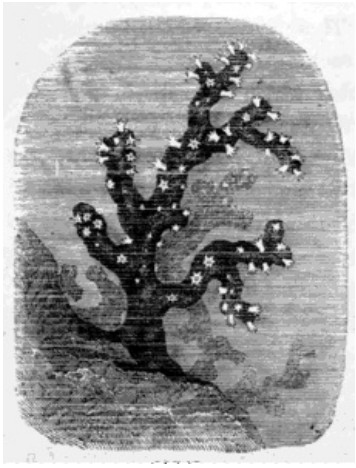
We cannot wonder at the estimation in which these beautiful productions of nature have always been held. Our Lord speaks of “a merchantman seeking goodly pearls,” and once of a “pearl of great price.” The ancients held them in great esteem. Ahasuerus had a chamber with tapestry covered with valuable pearls. Julius Cæsar offered to Servilia, the mother of Brutus, an “Orient pearl,” valued at money representing a million sesterces;[27] Cleopatra’s expensive draught is estimated by Pliny at the equivalent of £80,729; Lollia Paulina, wife of Caligula, used to put on about £200,000 sterling’s worth of them on high days and holidays.

In our own country Sir Thomas Gresham powdered up a pearl worth £65,000, in Queen Elizabeth’s time, and drank it up *à la* Cleopatra, excepting only that he took it in wine instead of in vinegar. It was done in vain-glory to outshine the Spanish ambassador, with whom he had wagered to give a more expensive entertainment than he could.

Scottish pearls, which are slightly bluish in tint, were much celebrated in the Middle Ages, and were sent to London from the rivers Tay and Isla; the trade carried on in the present century, the Rev. Mr. Bertram tells us, has become of considerable importance.

The pearl, according to the same authority, is found in a variety of the mussel which is characterised by the valves being united by a broad hinge. “The pearl fisheries of Scotland,” he adds, “may become a source of wealth to the people living on the large rivers, if prudently conducted.” Mr. Unger, a dealer in gems in Edinburgh, having discerned the capabilities of the Scotch pearl as a gem of value, has established a scale of prices which he gives for them, according to their size and quality; and the beautiful pearls of our Scottish streams are now admired beyond the Orient pearl. Empresses and queens, and royal and noble ladies, have made large purchases of these gems. Mr. Unger estimates the sum paid to pearl-finders in the summer of 1864 at £10,000. The localities successfully fished have been the classic Doon, the Forth, the Tay, the Don, the Spey, the Isla, and most of the Highland rivers of note.

[pg 72] Passing on to another of ocean’s beautiful treasures, coral, it must be understood that the valuable coral of commerce used for purposes of ornament has little in common with that of the coral islands, while in a scientific point of view it does not come under the same classification at all. The coral used in jewellery, carvings, and ornaments belongs to the group *Corallinæ*, of the order *Gorgonidæ*, while that of the reefs or islands belongs to the large group of Madrepores.

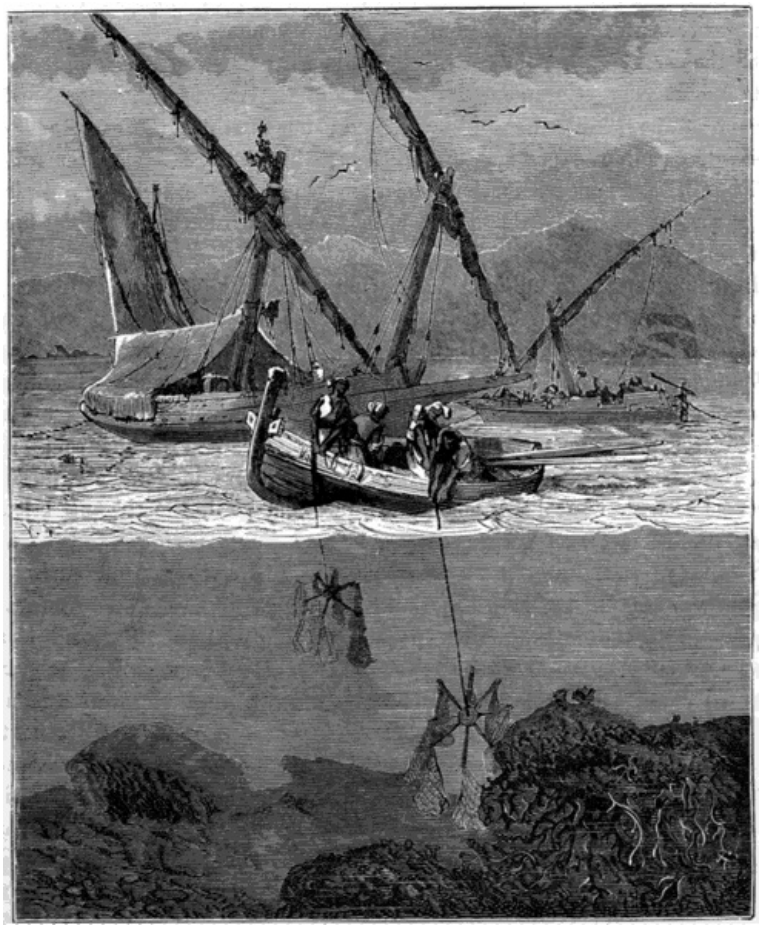


CORAL.

CORAL ISLAND.

The coral was long considered a sea-plant, but what was once taken for a flower is, in fact, a kind of polyp, which lives in colonies. A branch of living coral is an aggregation of animals united among themselves by a common tissue, yet seemingly enjoying a separate existence. The branch undoubtedly owes its origin to an egg, and consists of two distinct parts—the one hard, brittle, and stony; the other external, and soft and fleshy. The latter is a united family of polyps, animals having feelers or tentacles, and very sensitive, and further, possessing generative or budding powers. The subject is, however, of a nature too scientific to be fully treated here. The Greeks called it a “daughter of the sea,” and as in so many other things, they were right. The fisheries are principally confined to the Mediterranean, and the fishing is conducted mainly by sailors from Genoa, Leghorn, and Naples. It is so fatiguing that it is a common saying in Italy that a sailor obliged to go to the coral fishery must either be a thief or an assassin. The saying conveys a good idea enough of the occupation. The best men can only earn four to six hundred francs (£16 to £24) in the season of six months. They work eighteen hours per diem, and are allowed very little more rations than unlimited biscuit and water. “The barques sent to the fishing range from six to fifteen tons; they are strong, and well adapted for the labour; their rig is a great lateen sail and a jib or staysail. The stern is reserved for the capstan, the fishers, and the crew; the fore part of the vessel is reserved for the requirements of the padrone or master.

[pg 73] “The lines, wood, and irons employed in the coral fisheries are called the engine; it consists of a cross of wood formed of two bars strongly lashed or bolted together at their centre; below this a great stone is attached, which bears the lines, arranged in the form of a sac. These lines have great meshes, loosely knotted together, resembling the well-known swab.



CORAL FISHING.

“The apparatus carries thirty of these sacs, which are intended to grapple all they come in contact with at the bottom of the sea. They are spread out in all directions by the movement of the boat. The coral is known to attach itself to the summit of a rock, and to develop itself, forming banks there, and it is to these rocks that the swab attaches itself so as to tear up the precious harvest. Experience, which in time becomes almost intuitive, guides the Italian fisher in discovering the coral banks....

[pg 74] “When the padrone thinks he has reached a coral bank, he throws his engine overboard. As soon as the apparatus is fairly at the bottom the speed of the vessel is slacked, the capstan is manned by six or eight men, while the others guide the helm and trim the sails. Two forces are thus brought to act upon the lines, the horizontal action of the vessel and the vertical action of the capstan. In consequence of the many inequalities of the rocky bottom, the engine advances by jerks, the vessel yielding more or less according to the concussion caused by the action of the capstan or sail. The engine seizes upon the rugged rocks at the bottom, and raises them to let them fall again. In this manner the swab, floating about, penetrates beneath the rocks where the coral is found, and is hooked on to it. To fix the lines upon the coral and bring them home is a work of very great labour. The engine long resists the most energetic and repeated efforts of the crew, who, exposed half naked to the burning sun of the Mediterranean, work the capstan to which the cable and engine are attached, while the padrone urges and excites them to increased exertion; the sailors meanwhile trim the sails, and sing with a slow and monotonous tone a song, the words of which improvise in a sort of psalmody the names of the saints most revered among the seafaring Italian population.

“The lines are finally brought home, tearing or breaking blocks of rock, sometimes of enormous size, which are brought on board. The cross is now placed on the side of the vessel, the lines are arranged on the deck, and the crew occupy themselves in gathering the results of their labour. The coral is gathered together, the branches of the precious alcyonarian are cleansed and divested of the shells and other parasitic products which accompany them; finally, the produce is carried to and sold in the ports of Messina, Naples, Genoa, or Leghorn, where the workers in jewellery purchase them. Behold, fair reader, with what hard labour, fatigue, and peril, the elegant bijouterie with which you are decked is torn from the deepest bed of the ocean.” Coral is worth from as little as two or three shillings a *ton* to as high as £10 sterling per pound.

Although the corals of the so-called coral islands are merely good as curiosities, they are very interesting in a scientific and artistic point of view. Darwin[28] has reasoned very conclusively on the formation of the reefs. He says:—“The earlier voyagers fancied that the coral-building animals instinctively built up their great corals to afford themselves protection in the inner parts; but so far is this from the truth, that those massive kinds to whose growth on the exposed outer shores the very existence of the reef depends cannot live within the lagoon, where other delicately-branching kinds flourish.” Moreover, in this view, many species of distinct genera and

families are supposed to combine for one end; and of such a combination not a single instance can be found in the whole of Nature. The theory that has been most generally received is that atolls are based on submarine craters, but when the form and size of some of them are considered this idea loses its plausible character. Thus, the Suadiva atoll is forty-four geographical miles in diameter in one line by thirty-four in another; Rimsky is fifty-four by twenty miles across; Bow atoll is thirty miles long, and, on an average, six miles broad. This theory, moreover, is totally inapplicable to the Northern Maldivian atolls in the Indian Ocean, one of which is eighty-eight miles in length, and between ten and twenty in breadth.

[pg 75] The various theories which had been propounded as to the existence of the coral islands being unsatisfactory, Mr. Darwin was led to re-consider the whole subject. Numerous soundings taken all round the Cocos atoll showed that at ten fathoms the prepared tallow in the hollow of the sounding rod came up perfectly clean, and marked with the impression of living polyps. As the depth increased these impressions became less numerous, but adhering particles of sand succeeded, until it was evident that the bottom consisted of smooth mud. From these observations it was obvious to him that the utmost depth at which the coral polyps can construct reefs is between twenty and thirty fathoms. Now, there are enormous areas in the Indian Ocean in which every island is a coral formation, raised to the height to which the waves can throw up fragments and the winds pile up sand; and the only theory which seems to account for all the circumstances embraced is that of the subsidence of vast regions in this ocean. “As mountain after mountain and island after island slowly sank beneath the water,” he says, “fresh bases could be successively afforded for the growth of the corals. I venture to defy any one to explain in any other manner how it is possible that numerous islands should be distributed throughout vast areas, all the islands being low, all built of coral, absolutely requiring a foundation within a limited depth below the surface.”

Darwin’s description of the island of Cocos, or Keeling, is as follows:—“The ring-formed reef of the lagoon island is surmounted in the greater part of its length by linear islets. On the northern or leeward side there is an opening through which vessels can pass to the anchorage within. On entering, the scene was very curious and rather pretty; its beauty, however, entirely depended on the brilliancy of the surrounding colours. The shallow, clear, and still water of the lagoon, resting in its greater part on white sand, is, when illuminated by a vertical sun, of the most vivid green. This brilliant expanse, several miles in width, is on all sides divided, either by a line of snow-white breakers from the dark heaving waters of the ocean, or from the blue vault of heaven by the strips of land crowned by the level tops of the cocoa-nut tree. As a white cloud here and there affords a pleasing contrast to the azure sky, so in the lagoon bands of living coral darken the emerald-green water.

“The next morning I went ashore on Direction Island. The strip of dry land is only a few hundred yards in width; on the lagoon side there was a white calcareous beach, the radiation from which, under this sultry climate, was very oppressive. On the outer coast, a solid, broad, flat coral rock served to break the violence of the open sea. Excepting near the lagoon, where there is some sand, the land is entirely composed of rounded fragments of coral. In such a loose, dry, stony soil, the climate of the intertropical regions alone could produce so vigorous a vegetation.

“On some of the smaller islets nothing could be more elegant than the manner in which the young and full-grown cocoa-nut trees, without destroying each other’s symmetry, were mingled into one wood. A beach of glittering white sand formed a border to those fairy spots.”

Mrs. Brassey writes enthusiastically of some coral fields in the South Pacific. “It is really impossible to describe the beauty of the scene before us. Submarine coral forests of every colour, studded with sea-flowers, anemones, and echinidæ, of a brilliancy only to be seen in dreamland;
[pg 76] shoals of the brightest and swiftest fish darting and flashing in and out; shells, every one of which was fit to hold the place of honour in a conchologist’s collection moving slowly along with their living inmates: this is what we saw when we looked down from the side of the boat into the depths below. The surface of the water glittered with every imaginable tint, from the palest aquamarine to the brightest emerald, from the pure light blue of the turquoise to the deepest dark blue of the sapphire, and was dotted here and there with patches of red, brown, and green coral, rising from the mass below. Before us, on the shore, there spread the rich growth of tropical vegetation, shaded by palms and cocoa-nuts, and enlivened by the presence of native women in red, blue, and green garments, and men in motley costumes, bringing fish, fowls, and bunches of cocoa-nuts, borne, like the grapes brought back from the land of Canaan by the spies, on poles.

“At 5 p.m. we went for a row in the *Glance* and the *Flash* to the coral reef, now illumined by the rays of the setting sun. Who can describe these wonderful gardens of the deep, on which we now gazed through ten and twenty fathoms of crystal water! Who can enumerate or describe the strange creatures moving about and darting hither and thither amid the masses of coral forming their submarine home! There were shells of rare shape, brighter than if they had been polished by the hand of the most skilful artist; crabs of all sizes scuttling and sliding along; sea-anemones spreading their delicate feelers in search of prey, and many other kinds of zoophytes crawling slowly over the reef, and scarlet, blue, yellow, gold, violet, spotted, striped, and winged fish, short, long, pointed, and blunt, of the most varied shapes, were darting about like birds among the coral trees.”

Darwin speaks of the grandeur of the outer shore of these lagoon islands. He says:—“There is a

simplicity in the barrier-like beach, the margin of green bushes and tall cocoa-nuts, the solid flat of dead coral rock, strewed here and there with great loose fragments, and the line of furious breakers all rounding away towards either hand. The ocean, throwing its waters over the broad reef, appears an invincible, all-powerful enemy; yet we see it resisted, and even conquered, by means which at first seem most weak and insufficient. It is not that the ocean spares the rock of coral; the great fragments scattered over the reef and heaped on the beach whence the tall cocoa-nut-trees spring plainly bespeak the unrelenting power of the waves. Nor are any periods of repose granted; the long swell caused by the gentle but steady action of the trade-winds, always blowing in one direction over a wide area, causes breakers almost equalling in force those during a gale of wind in the temperate regions, and which never cease to rage. It is impossible to behold these waves without feeling a conviction that an island, though built of the hardest rock—let it be porphyry, granite, or quartz—would ultimately yield and be demolished by such an irresistible power. Yet these low, insignificant coral islets stand, and are victorious; for here another power, as an antagonist, takes part in the contest. The organic forces separate the atoms of carbonate of lime one by one from the foaming breakers, and unite them into a symmetrical structure. Let the hurricane tear up its thousand huge fragments, yet what will that tell against the accumulated labour of myriads of architects at work night and day, month after month? Thus do we see the soft and gelatinous body of a polyp, through the agency of the vital laws, conquering the great mechanical power of the waves of an ocean which neither the art of man nor the inanimate works of nature could successfully resist.” The poet summed the matter rightly when he wrote:—

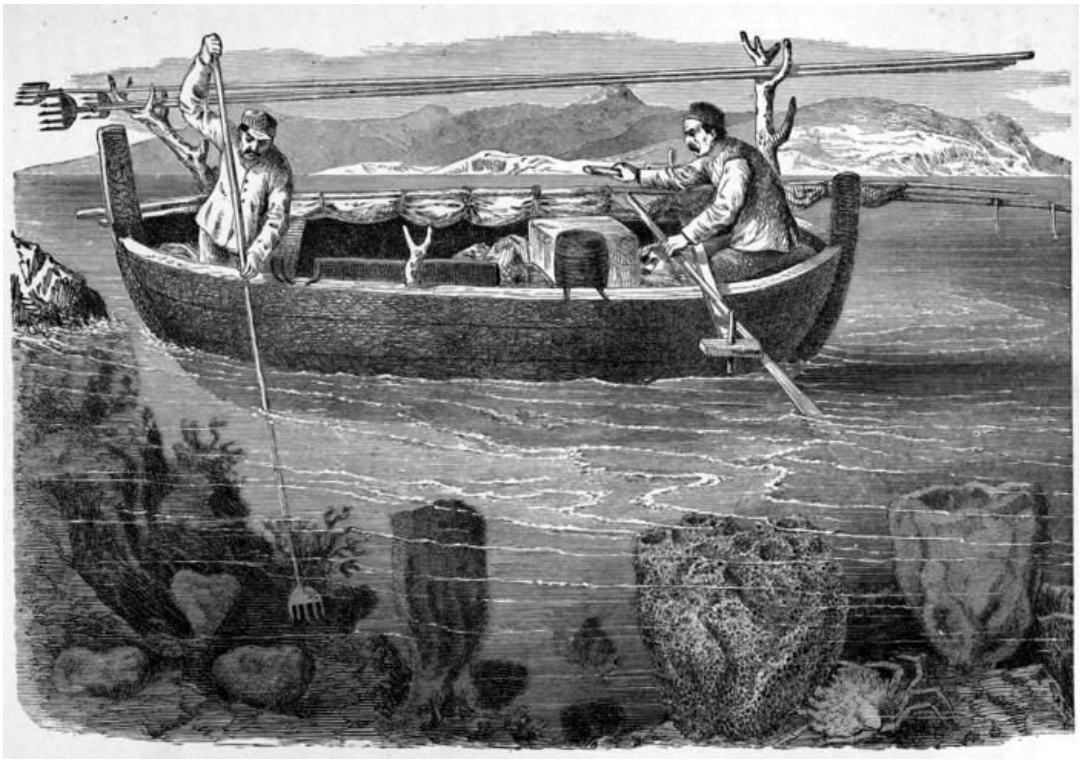
[pg 77]

“Millions of millions thus, from age to age,
With simplest skill and toil unwearyable,
No moment and no movement unimproved,
Laid line on line, on terrace terrace spread,
To swell the heightening, brightening, gradual mound,
By marvellous structure climbing towards the day....
I saw the living pile ascend,
The mausoleum of its architects,
Still dying upward as their labour closed....
Frail were their frames, ephemeral their lives,
Their masonry imperishable. All
Life’s needful functions, food, exertion, rest,
By nice economy of Providence
Were overruled to carry on the process
Which out of water brought forth solid rock.”

And now we arrive at the last of the valuable fisheries in which divers are concerned—that of the sponge. The ancients recognised the fact that the sponge exhibited vitality, but were rather undecided as to whether it should be counted animal or vegetable. Rondelet—the friend of the celebrated Rabelais, whom the merry curate of Meudon designated under the name of *Rondibilis*—himself a physician and naturalist of Montpellier, long promulgated the idea that these productions belonged to the vegetable kingdom. Linnæus late in life withdrew the sponges from among the vegetables, for he had satisfied himself, in short, that they fairly belonged to the animal kingdom. Sponges live at the bottom of the sea in from 500 to 1,250 fathoms of water, among the clefts and crevices of the rocks, always adhering and attaching themselves, not only to inorganic bodies, but even growing on algæ and animals, spreading, erect, or pendent, according to the body which supports them and their natural habit.

[pg 78]

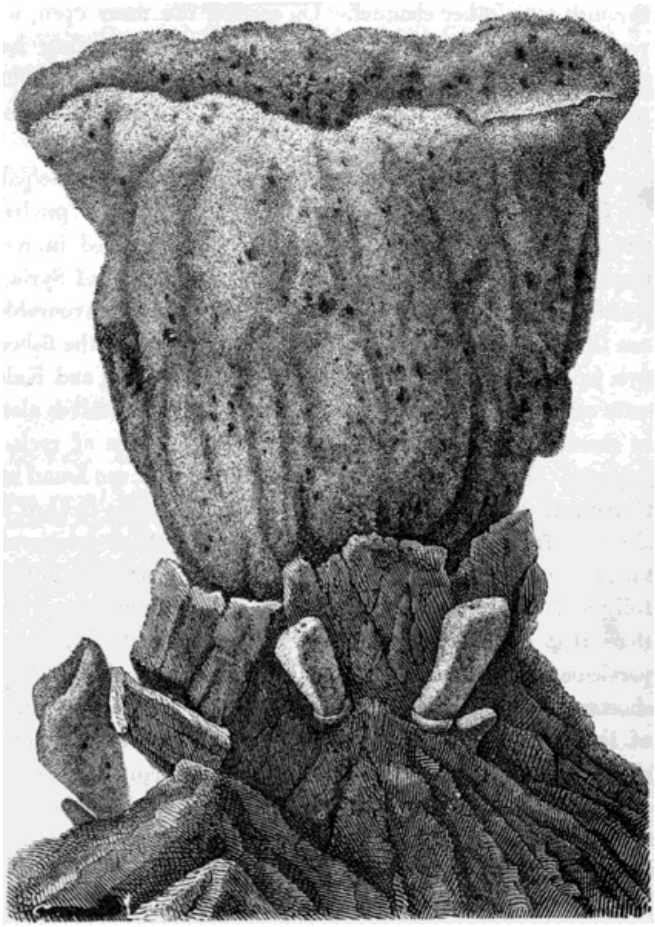
Figuier tells us that all naturalists are now satisfied of the animal nature of sponges, although they once were thought to represent the lowest and most obscure grade of animal existence, and that so close to the confines of the vegetable world that it was considered difficult to some species to determine whether they were on the one side or the other. “Several of them, however,” says Mr. Gosse, “if viewed with a lens under water while in a living state, display vigorous currents constantly pouring forth from certain orifices, and we necessarily infer that the water thus ejected must be constantly taken in through some other channel. On tearing the mass open, we see that the whole substance is perforated in all directions by irregular canals leading into each other, of which some are slender, and communicate with the surface by minute but numerous pores, and others are wide, and open by ample orifices; through the former the water is admitted, through the latter it is ejected.”



SPONGE FISHING OFF THE COAST OF GREECE.

At the present time sponge fishing takes place principally in the Grecian Archipelago and the Syrian coasts. The Greeks and Syrians sell the product of their fishing to the western nations, and the trade has been immensely extended in recent times. Fishing usually commences towards the beginning of June on the coast of Syria, and finishes at the end of October. But the months of July and August are peculiarly favourable to the sponge harvest, if we may use the term. Latakia furnishes about ten boats to the fishery, Batoum twenty, Tripoli twenty-five to thirty, Kalki fifty, Simi about 170 to 180, and Kalminos more than 200. The boat's crew consists of four or five men, who scatter themselves along the coast for two or three miles, in search of sponges under the cliffs and ledges of rock. Sponges of inferior quality are gathered in shallow waters. The finer kinds are found only at a depth of from twenty to thirty fathoms. The first are fished for with three-toothed harpoons, by the aid of which they are torn from their native rock, but not without deteriorating them more or less. The finer kinds of sponges, on the other hand, are collected by divers; aided by a knife, they are carefully detached. Thus the price of a sponge brought up by diving is much more considerable than that of a harpooned sponge. Among divers, those of Kalminos and of Psara are particularly renowned. They will descend to the depth of twenty-five fathoms, remain down a shorter time than the Syrian divers, and yet bring up a more abundant harvest. The fishing of the Archipelago furnishes few fine sponges to commerce, but a great quantity of very common ones. The Syrian fisheries furnish many of the finer kinds, which find a ready market in France; they are of medium size. On the other hand, those which are furnished from the Barbary coast are of great dimensions, of a very fine tissue, and much sought for in England. Sponge fishing is carried on at various other stations in the Mediterranean, but without any intelligent direction, and in consequence it is effected without any conservative foresight. At the same time, however, the trade in this product goes on yearly increasing; but it is only a question of time when the trade shall cease, the demand which every year clears the submarine fields of these sponges causing such destruction that their reproduction will soon cease to be adequate.

The finer varieties of toilet sponge produce a high price, often as much as forty shillings the pound weight for very choice specimens, a price which few commercial products obtain, and which prohibits their use, in short, to all but the wealthy. It is, therefore, very desirable that attempts should be made to carry out the submarine enterprise of M. Lamiral. With the assistance of the Acclimatisation Society of Paris, some experiments have already been made in this direction.



SPONGE, GROWING.

On the Bahama banks and in the Gulf of Mexico the sponges grow in water of small depth. The fishermen—Spanish, American, and English—sink a long mast or perch into the water moored near the boat, down which they drop upon the sponges; by this means they are easily gathered.

The fine, soft Syrian sponge is distinguished by its lightness, its fine flaxen colour, its form, which is that of a cup, its surface convex, voluted, pierced by innumerable small orifices, the concave part of which presents canals of much greater diameter, which are prolonged to the exterior surface in such a manner that the summit is nearly always pierced throughout in many places. This sponge is sometimes blanched by the aid of caustic alkalies; but this preparation not only helps to destroy its texture, but also changes its colour. This sponge is specially employed for the toilet, and its price is high. Specimens which are round-shaped, large, and soft, sometimes produce very large prices. There are many other varieties known to the commercial world.

CHAPTER VII.

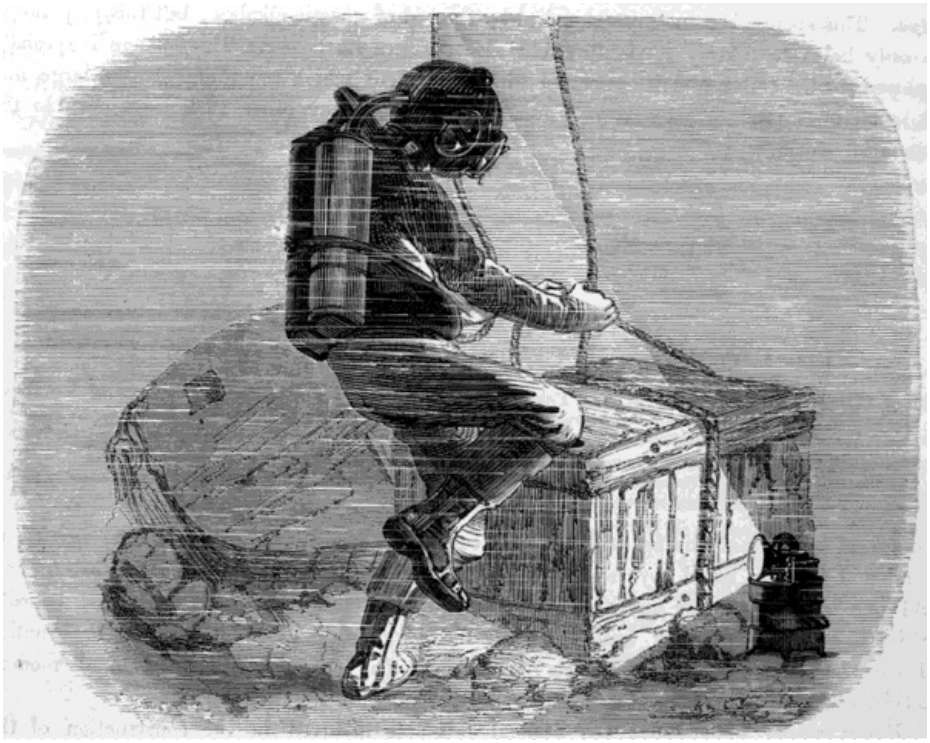
Davy Jones's Locker, and those who Dive into it.

Scientific Diving—General Principles—William Phipps and the Treasure Ship—Founder of the House of Mulgrave—Halley's Wooden Diving-bell and Air Barrels—Smeaton's Improvements—Spalding's Death—Operations at Plymouth Breakwater—The Diver's Life—"Lower away!"—The Diving-*Belle* and her Letter from Below—Operations at the Bottom—Brunel and the Thames Tunnel—The Diving Dress—Suffocation—Remarkable Case of Salvage—The "Submarine Hydrostat"—John Gann of Whitstable—Dollar Row—Various Anecdotes—Combat at the Bottom of the Sea—A Mermaid Story—Run down by the *Queen of Scotland*.

The art of unassisted diving having been considered, the reader's attention is invited to divers and diving aided by scientific appliances. But for these developments, how could one hope to recover anything large or valuable that had once disappeared beneath the waves? How properly build gigantic breakwaters, piers, and bridges, or examine and clear choked ports and channels? [29] Some of the grandest achievements of modern practical science would have been impossible without their aid.

Every reader understands the general principle involved in the construction of the diving-bell.

Invert a tumbler in a deep vessel of water, and the liquid will only ascend to a certain height inside, however far down you place the glass. Insert a tube in a hole drilled in your tumbler, and blow downwards, and the water recedes still lower. This is what happens when the air is pumped down into the modern diving-bell. In descending in a diving-bell and remaining under water you will feel a slight inconvenience in breathing, and perhaps a tingling in the ears; this comes, not from scarcity of air, but from the fact that the atmosphere of the interior of the bell is really *denser* than it is outside; the air, forced downwards by the powerful air-pump, is pressed
[pg 80] *upwards* by the water. Readers may remember that Robert Fulton and his friends remained under water in his submarine boat for over two hours, the air in that case being supplied from a large globe containing highly condensed air, which was allowed to escape as required. The foul air passed off from tubes in bubbles to the surface.



A DIVER AT WORK (WITH SUBMARINE LAMP).

As early as the year 1663 an Englishman named William Phipps, the son of a blacksmith, invented a plan for recovering from the bottom of the sea the treasures out of a Spanish vessel which had sunk on the coast of Hispaniola. Charles II. lent him a ship and all that was necessary for his enterprise, but the matter did not turn out successfully, and William Phipps fell into a state of the greatest poverty. Notwithstanding this nothing could discourage his ardour, and to set himself afloat again he opened a subscription list in England, of which the Duke of Albemarle was one of the subscribers. In 1667 Phipps embarked in a ship of 200 tons burden, having undertaken beforehand to divide the profits between the twenty shareholders who represented the associated capital. At first starting his search proved altogether unavailing, and he was just beginning to despair, when he fell in with the golden vein. The fortunate diver returned to England with £200,000; £20,000 he kept for himself, and no less than £90,000 came to the share
[pg 81] of the Duke of Albemarle. Phipps was knighted by the king, and became the founder of the noble house of Mulgrave, which has played no inconsiderable part in the affairs of the United Kingdom.

It is little more than a century and a half ago since the celebrated astronomer, Halley—about the first to commence those experiments in submarine exploration which have been continued to the present epoch—descended to a depth of fifty feet in a diving-bell which he had constructed. It was built of wood, and covered with sheet lead. The air that was vitiated by respiration escaped from the chamber through an air-cock, while the pure element was supplied by barrels, which descended and ascended alternately on both sides of the bell, like buckets in a well. These barrels, lined with metal, each contained some thirty-six gallons of condensed air; they were connected with the interior of the bell by leathern tubes. As soon as one of these air receptacles was exhausted another was let down. Halley himself relates that in 1721, by the aid of this apparatus, he was able to descend with four other persons to a depth of nine or ten fathoms, and to remain under water an hour and a half.

It is to Smeaton, the celebrated engineer of the famed Eddystone Lighthouse, that the diving-bell owes its leading characteristics, as he was the first to abolish Halley’s rather clumsy contrivance and apply the power of the air-pump; he also constructed the first cast-iron bell. In 1779 he made use of the diving-bell to repair the piles of Hexham Bridge, in the north of England, the foundations of the structure having been undermined by the violence of the current. A few years after a sad accident occurred from the use of Halley’s barrel apparatus.

In 1783, Mr. Spalding, of Edinburgh, who had made some improvements upon the mechanical arrangements of Halley's bell, but had retained the barrel air service, engaged to recover some of the cargo of an East-Indiaman which had been sunk on the Kish Bank, Ireland. He and his assistant went down, and after the first supply of air was exhausted the barrels were sent down as usual. No signal having been given for some time, the bell was drawn up, and Mr. Spalding and his assistant were found to be dead. It is supposed that by some means they failed to discharge the air from the barrels into the bell, and were consequently suffocated. The barrel service was always more or less dangerous, from its liability to get out of gear, and if Spalding had adopted the invention of Smeaton, he would not have lost his life in the manner he did.

The improved diving-bell was soon generally adopted by engineers, and played an important part in the works which have so altered the port of Ramsgate. The great engineer Rennie made constant use of the diving-bell in fixing the foundations of the eastern jetty, and in protecting it in parts against the attacks of the sea by a shield of solid masonry. It was extensively used in the construction of the Plymouth Breakwater. M. Esquiros, who visited the divers during the progress of that great work, gave an interesting account of their *modus operandi*:—

"But we now," says he, "approached the breakwater—that causeway of giants—by the side of which we soon discovered an old dismasted ship. This vessel is rough in appearance, and covered over with a kind of pent-house roof. In it live, as in a floating house, the operatives who are still working at the breakwater. They pass, alternately, one month on board ship and one month on
[pg 82] shore. One of their little sources of profit consists in the sale of small fancy articles, which they say that they cut out with the blades of their pocket-knives from the rocks which they bring up from the bottom of the sea. Very soon I heard the loud throbbing of machinery, snorting and puffing like so many marine monsters; it was the wheezy noise of the air-pumps which supply the bells when buried under water....

"I then noticed a small boat managed by a sailor rowing it, which glided under the mouth of the bell, and from this hollow I saw emerge a pair of large loose boots, reaching above the knees, which, being followed by another pair of large boots, convinced me that two men were jumping down into the skiff. The boat itself, in fact, at once got clear of the dome, under which it had been half hidden, and I saw it come back to the vessel with two workmen on board, wet up to the waist and covered with mud. They had just finished making their half-day under the water, and appeared to be fatigued. Their swarthy complexions were tinged on the cheeks and forehead with a bright sanguine hue. The position of the bell was not at all altered; it was as if they wished to give it an opportunity to dry itself and breathe a little fresh air. It was then dinner hour for the men employed at the works. I had just been a spectator of the process of raising the bell to the surface; I now had to see it let down again to the bottom of the sea.

"The same little boat which brought the two workmen to the great floating house took them back again, after an hour's rest, to the vicinity of the diving-bell, which, hung just over the water, looked very much like an immense iron box open at the bottom. The procedure in making ready for the descent has really something rather imposing about it, and to an excited imagination might very well suggest the preparations for the execution of a sentence of death. Nothing is wanting for the purpose; the scaffold, the secret cell, and the gulf of the menacing waves are all there. The divers, thank goodness! do not in the least anticipate such a fate, but, on the contrary, seem proud to walk safely over the bottom of the sea, where so many others have found their grave. Be this as it may, the boat soon places itself underneath the bell, raised as it is three or four feet above the surface. The two workmen climb one after the other up into the inside, helped by an iron ring hung to the arched roof, which can easily be laid hold of by the hands. They take their places on two wooden benches fixed at a certain height in the hollow of the bell. Sometimes four, or even six, workmen have to find seats in this curious vehicle. When all this is done the boat goes away, and in another moment the voice of the foreman gives the order, 'Lower away.'...

"In places where the water is troubled by sand, the diver often passes through a kind of twilight or submarine fog, which compels him to light his lamp. More often, on the contrary, the light is sufficiently strong to enable him to read a newspaper in small type. A story is told even of a lady who wrote a letter in the diving-bell, and dated it thus: '16th June, 18—, at the bottom of the sea.' Her courage obtained for her among the divers the *sobriquet* of the Diving *Belle*.

"I also wished to make my mind easy as to the lot of the poor workmen whom I had seen descending in the bell. The foreman assured me that they enjoyed every comfort in it. Have they not seats to rest themselves on, a wooden ledge on which to place their feet, an assortment of
[pg 83] tools and necessary utensils suspended on a cord or hooked on to the walls of their hut, which is nearly as well furnished as that of Robinson Crusoe's? From all this explanation I was bound to conclude, unless the foreman was mixing up a little irony in what he told me, that the divers were quite 'at home' in the bell. The fact is, that really they pass in it a great part of their existence. Almost all of them suffer a great deal at first from a violent pain, which they themselves define as 'a toothache gone into the ears,' and they have a humming in the head, 'as if some one had let fly a swarm of bees there;' but these troublesome symptoms disappear after the second or third descent. Their confidence in this dry chamber, almost isolated in the midst of the turmoil of the ocean, approaches sometimes to temerity. In 1820, Dr. Collodon, of Geneva, who had gone down in a diving-bell on the coast of Ireland, bethought himself that at the depth at which he then was, a stone, or any other trifling cause obstructing the action of the air-valve, would be sufficient to enable the water to invade the bell. He confided this not very reassuring reflection to one of the divers who was with him. The latter, smiling, answered him by merely pointing out with his finger

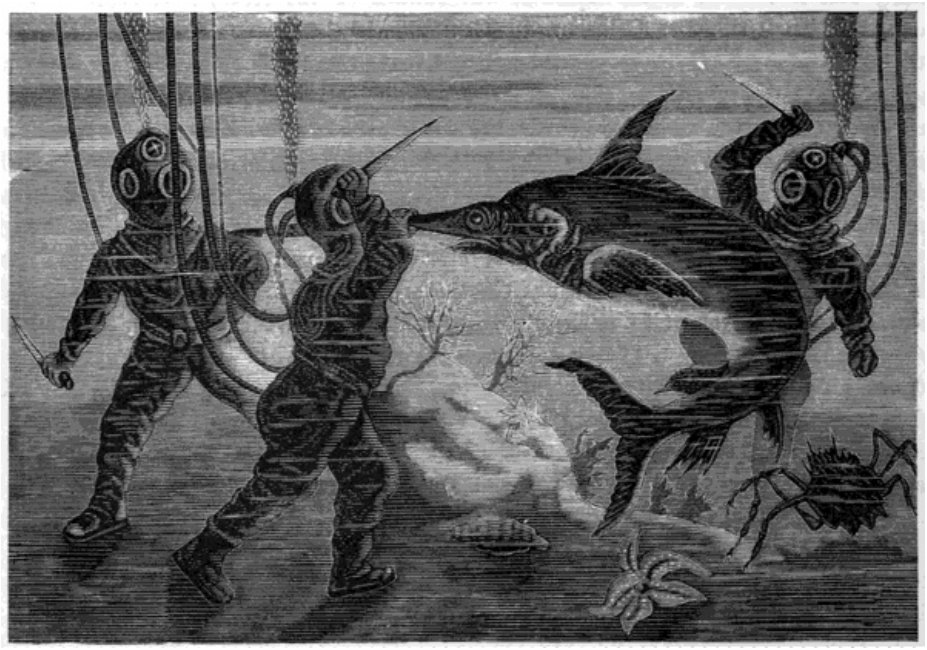
one of the glazed loopholes which were over their heads. The doctor examined it attentively, and ascertained, in fact, that the glass was cracked sufficiently to allow bubbles of air to escape pretty freely. This was a very different and more serious cause of uneasiness than the rather improbable contingency of an obstruction of the air-valve. The diver was well aware of the cracked glass, and cared nothing about it."

Some time since, when the present writer descended in the diving-bell exhibited in London, a seal which then disported in the tank would rub its nose outside against the little glass windows, and look in, as though wondering what on earth a visitor was doing there in *his* element! The same poor animal afterwards came to grief in a very sad way. When the water was drained off out of the tank the seal got into the pipes below, and thence to the sewers. It was found, still alive, some time after, in the sewers of the Euston Road, a considerable distance away, but succumbed later to the mephitic influences of the filthy stream.

M. Esquiros continues:—" 'They are just beginning to work' was soon remarked to me by the superintendent, who followed, even under the waves, every movement of his labourers. The nature of their operations varies, of course, very much according to the undertaking in which they are engaged. The two divers who had just gone down had for their task to clear away round the adjacent portion of the foundation of the breakwater. As soon as they reach the bottom they jump off their seat, and, armed with a pickaxe, begin to dig into the moist sand in order to get out the stones. It often happens that the movement of the tide or some other cause disturbs the water round the rocky base of the breakwater. The workmen have then much trouble in seeing clearly, and complain that 'the water is muddy.' Generally, however, the water is so transparent, that even a cloud passing across the sky is visible at the bottom of the sea. The workmen also can labour with nearly as much ease and quite as much energy as if they were on land. The movements they themselves make in conjunction with the circumstances which surround them occasionally cause something like a thick mist to rise before their eyes, hiding from them the
[pg 84] nearest objects; they get quit of it by calling for an 'air bath.' The air-pump redoubles its pace in working, and sends down to them through the pump an extra current of air, which soon blows away the mist.

"I was very soon enabled to judge for myself as to their industry; sacks which they had filled with muddy sand, and buckets laden with stones, came up to the surface every moment, drawn by cords. One might have fancied it to be the mouth of a mine, to which invisible arms were constantly sending up fragments of rock; but here the mine was the sea. The nature of their digging did not allow them to work very long together in the same place. The divers had already requested by signal to have their position shifted on the bed of the sound. How would they manage to comply with their wish? As regards air and locomotion, the men shut up in the bell depend entirely on the apparatus working on the surface. The chief organ of movement is a sort of *traveller* on four wheels, running over two tramways, allowing it to come and go in every direction. Immediately on the signal being given from below, the bell was raised from the bottom of the sea, like a heavy balloon. This operation was, of course, carried out by means of chains, and the diving-bell remained for a minute or two motionless in mid-water, like the pendulum of a stopped clock. But the traveller begins to move, and as it also acts as a crane, the pulley on the surface and the bell under water shift their position at the same time. The divers call this 'travelling.' They can thus move from north to south, from east to west, backwards and forwards. As they are in motion, if they come upon a piece of rock which encumbers the bed of the sound, they give the signal to stop, and the bell becomes stationary, and then descends again slowly
[pg 85] towards the block of stones. If they have been carried on a little too far, and want to retrace their steps, they communicate afresh with the men working on the surface, and the obliging machinery soon brings them to the exact point desired."

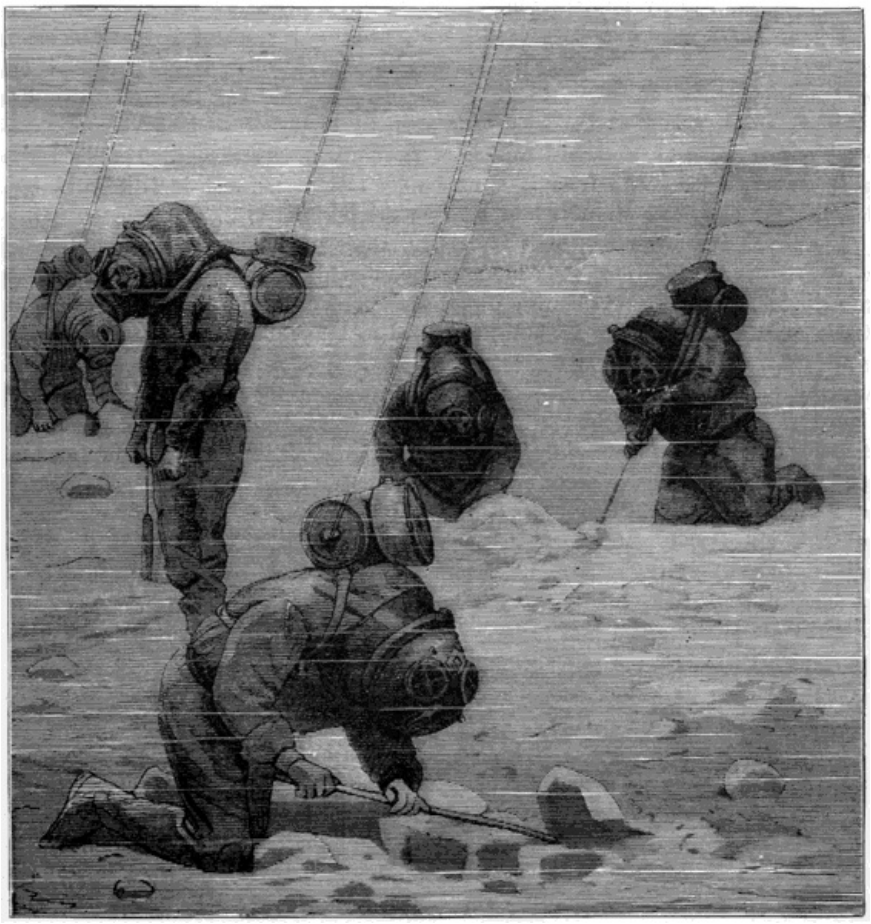
The diving-bell has many times rendered service to engineers, by enabling them to descend and ascertain the nature of damages going on, which might otherwise have ruined their work. When Brunel was building the famous Thames Tunnel, and the current had broken through its arched roof, he went down in a diving-bell to see for himself the extent of the disaster. After a descent of nearly thirty feet, he reached a serious opening in the masonry, but the hole was too narrow to allow the bell to enter. It was therefore necessary for some one to dive into it, and brave Brunel
[pg 86] immediately declared his intention of doing it. Taking hold of the end of a rope, he plunged into the hole, where it is said he remained nearly two minutes, mentally noting the damage done. So intent was he on this examination that he let go the rope just as his companions above, alarmed at his long stay below, were hauling it up. He had just time to catch hold of it again, and was happily drawn safely into the bell.



DIVERS ATTACKED BY A SWORD-FISH.

The diving dress was a later development, and owed much of its present practical shape to French men of science. The object of the dress, which is of canvas or india-rubber and metal, is, of course, to give each individual wearing it the utmost liberty of motion, while having at the same time a proper supply of vital air. The condensed air-reservoir is made of steel, and capable of resisting great pressures. The diver carries this apparatus on his back; from it a respiratory tube issues, and is terminated by an india-rubber mouth-piece, which is held between the lips and teeth of the diver.

The diver's is a rough life, most assuredly. During the diving business on the *Royal George*, Private John Williams, early in the season, tore his hands very severely in attempting to sling a mass of the wreck with jagged surfaces and broken bolts. After a few days' rest he reappeared in his submarine habit, and dived as before, but from excessive pain in the ears was again *hors de combat* till the 11th of July, when, on re-descending, he was grievously injured by the bursting of his air-pipe a few inches above the water. This casualty was indicated by a loud hissing noise on deck. A few seconds elapsed before the rupture could be traced and the opening temporarily stopped. With great alertness he was drawn up, and on being relieved of his helmet, presented a frightful appearance. His face and neck were much swelled and very livid, blood was flowing profusely from his mouth and ears, and his eyes were closed and protruding. Though partially suffocated, he possessed sufficient sensibility to speak of the mishap. A sudden shock, it seems, struck him motionless, and then followed a tremendous pressure, as if he were being crushed to death. A month in the Haslar Hospital restored him to health, and on returning to the wreck he at once recommenced his laborious occupation.



DIVERS AT WORK.

The following is a remarkable example of a salvage effected by the help of divers. “The packet boats *Ganges* and *l’Impératrice* came into collision in the outer port of Marseilles. The *Impératrice* had one of her wheels broken and the officers’ quarters damaged. One of the cabins contained a chest full of gold, which fell into the thick mud which forms the bottom of the port of Marseilles. It was important that this precious package should be recovered the next day. The sea was rough, and the exact spot where the accident occurred unknown. The box was not strong; its colour was black. At the supposed spot a plumb of sixty kilogrammes was sunk. This plumb carried two cords divided into metres; two divers dragged them in separate directions, and taking each the knot corresponding to one metre, they described consecutive circles, examining the ground at each step. After searching three hours, the gold was found, and restored to its owner, who had watched the operations with intense anxiety. This salvage was effected on February 19th, 1867, by M. Barbotin, contractor for submarine work at Marseilles.”

The diving-bell proper has been much improved by another Frenchman, M. Payerne. His “Submarine Hydrostat” will descend or fall at the will of those inside. Thirty men may work in it
[pg 87] with ease for a number of hours without inconvenience. It is, therefore, of great service in clearing ports, and in facilitating the execution of other submarine work. “The principle of the machine is very ingenious. Externally, it has the appearance of one large rectangular box, surmounted by another smaller one, completely closed in except at the bottom. The interior consists of three principal compartments. The *hold* communicates by a large shaft with the upper compartment. Between these is a third compartment, or *orlop deck*, which only communicates with the others by means of stop-cocks. The hydrostat is twenty feet in height, and its base, which has the bottom of the sea for a floor, covers an area of 625 square feet. It may be made to rise and fall at will, and it will readily float about like a raft.” This ingenious machine has proved of much service. The port of Fécamp was choked up with shingle, which closed it against all vessels beyond a certain tonnage. The hydrostat was employed, and the port cleaned, and again opened to commerce.

The old divers are fond of recounting the glories of their craft, and are specially impressed with any information as to the fate of the vessels of the Armada. This spirit has been fostered no less by the successes of the ancestor of the Mulgraves than by the good fortune of John Gann, of Whitstable. The old diver was, many years since, employed on the Galway coast, and used to pass his evenings in a public-house frequented by fishermen. One of these men, repeating a tradition which had long existed in the district, told Gann that one of the Spanish vessels had been wrecked not far from that coast, and intimated that he himself could point out the spot. Gann, having finished his special job, made terms with the fisherman, and they were both out for many weeks dragging the spot indicated for any traces of the wreck. They were at last rewarded by coming upon obstructions with their grapnels. Gann brought out his diving apparatus, and sure enough the truth of the tradition was vindicated by the finding of a number of dollars, which had originally been packed in barrels. The barrels, however, had rotted away, and left the gold

stacked in barrel shape. With the money so recovered John Gann built at Whitstable, his native place, a row of houses, which, to commemorate the circumstance, he called Dollar Row.

Corporal Harris, almost entirely by his own diligence, removed in little more than two months the wreck of the *Perdita*, mooring lighter, which was sunk in 1783, in the course of Mr. Tracy's unsuccessful efforts to weigh the *Royal George*. It was about sixty feet in length, and embedded in mud fifty fathoms south of that vessel. The exposed timbers stood only two feet six inches above the level of the bottom, so that the exertions of Harris in removing the wreck were Herculean. Completely overpowered by fatigue, he claimed a respite for a day or two to recruit his energies, and then resumed work with his accustomed assiduity and cheerfulness.

There was a sort of abnegation, an absence of jealousy, in the character of Harris which, as the rivalry among the divers made them somewhat selfish, gave prominence to his kindness. He met a comrade named Cameron at the bottom, who led him to the spot where he was working. For a considerable time Cameron had fruitlessly laboured in slinging an awkward timber of some magnitude, when Harris readily stood in his place, and in a few minutes, using Cameron's breast-line to make the necessary signals, sent the mass on deck. It was thus recorded to Cameron's credit; but the circumstance, on becoming known, was regarded with so much satisfaction that honourable mention was made of it in the official records.

[pg 88] Lance-Corporal Jones, engaged on the wreck of the *Royal George*, one day lodged on deck from his slings a crate containing eighty 12-pounder shot. With singular success he laid the remainder of the kelson open for recovery, and then, sinking deeper, drew from the mud, in two hauls, nearly thirty-five feet of the keel. He also weighed a small vessel of six tons burden, belonging to a Mr. Cussell, which drove, under a strong current, upon one of the lighters. Becoming entangled, the craft soon filled and foundered, grappling, in her descent, with the ladder of one of the divers, grounding at a short distance from the interval between the lighters. Jones was selected to try his skill in rescuing her. At once descending, he fixed the chains under her stern, and while attempting to hold them in position, by passing them round the mast, the tide turned, the vessel swung round, and the mast fell over the side, burying Jones under her sails and rigging. Perilous as was his situation, his fearlessness and presence of mind never for a moment forsook him. Working from under the canvas, and carefully extricating himself from the crowd of ropes that ensnared him, he at last found himself free. A thunderstorm now set in, and, obedient to a call from above, he repaired to the deck; but as soon as the squall had subsided he again disappeared, and cleverly jamming the slings, the boat was hove up; but she had become a complete wreck, and was taken on shore.

A dangerous but curious incident occurred on the *Royal George* diving operations between Corporal Jones and Private Girvan, two rival divers, who, in a moment of irritation, engaged in a conflict at the bottom of the sea, having both got hold of the same floor timber of the wreck, which neither would yield to the other. Jones, at length, fearful of a collision with Girvan, who was a powerful man, got his bull-rope fast, and attempted to escape by it, but before he could do so Girvan seized him by the legs and tried to draw him down. A scuffle ensued, and Jones succeeded in extricating himself from the grasp of his antagonist. He then took a firmer hold of the bull-rope and gave a kick at Girvan, which broke one of the lens of Girvan's helmet, and as
[pg 89] water instantly rushed into his dress, he was likely to have been drowned, had he not at once been hauled on board. Two or three days, however, at Haslar Hospital restored him; and the two submarine combatants resumed work together with the greatest cordiality.

A diver's "Nursery Tale" must not be omitted. The hero, "Jack" (this is the name of a diver who "lived once upon a time"), had been busy for some weeks in gathering up the relics of a shipwreck, when on a certain day he saw appear at one of the windows of his bell the pale face of a woman, with long hair intertwined with sea-weed. He had often heard tell of the beauty of mermaids, who are, as every one knows, lovelier than the most lovely of women; but Jack never believed that any creature so perfect as this could have existed. With a voice softer than the murmuring of the waves under a gentle breeze, she said to him, "I am one of the spirits of the sea. On account of your kind disposition I have marked you out among the rest of your companions, and I will protect you, but on one condition only, and that is, that you shall be sure to recognise me under any shape into which I may be pleased to change myself." The beautiful spirit disappeared, and Jack remained very much surprised, but with a strong feeling of joy thrilling within him. He prospered exceedingly in all that he undertook. But at last prosperity spoiled him. He kicked and ill-treated a polyp, a kind of devil-fish, but still an animal, and one that had done him no harm, not knowing that the beautiful spirit was disguised under that mass of ugliness. A few days afterwards an accident occurred and Jack was drowned. Moral: Take the advice of kindly mermaids—when you meet them.

And now for our last yarn, a true one. Some years ago a large vessel, having on board a valuable cargo, including gold bars, was run down and sunk by a steamship in the Thames between
[pg 90] Northfleet and Gravesend. She was afterwards successfully raised by Captain George Wilson, of Milton, the famous oyster place, near Sittingbourne, in Kent, and which is also famous for its divers. It is principally, however, to the names of the vessels concerned that attention is directed. The *United Kingdom* was run down by the *Queen of Scotland*!

CHAPTER VIII.

The Ocean and Some of its Phenomena.

The Saltness of the Sea—Its Composition—Tons of Silver in the Ocean—Currents and their Causes—The Great Gulf Stream—Its Characteristics—A Triumph of Science—The Tides—The Highest Known Tides and Waves—Whirlpools—The Maelström—A Norwegian Description—Edgar Allan Poe and his Story—Rescued from the Vortex—The "Souffleur" at the Mauritius—The Colour of the Sea—Its Causes—The Phosphorescence of the Ocean—Fields of Silver—Principally Caused by Animal Life.

Many features and phenomena of the ocean have been incidentally noted in the foregoing pages; but there are points, hitherto untouched, which deserve our attention.

Its saltness is due, not merely to the presence of chloride of sodium, or what we call common salt, but to a large number of other minerals, including the chlorides of magnesium and potassium, the sulphates of magnesia and lime, carbonate of lime, sulphuretted hydrogen, bromide of magnesia, hydrochlorate of ammonia, iodine, iron, copper, and even silver, varying in proportion according to locality. The copper plates of a ship examined at Valparaiso showed unmistakable traces of silver deposits. Calculations have been made showing that the ocean contains 2,000,000 tons of silver. In 1,000 grains of sea-water there are thirty-eight grains of these ingredients and some little organic matter. The saltness of the sea is generally greater towards the poles, but to this statement there are exceptions. In parts of the Irish Channel the water contains salts equal to the fortieth of its weight, the saline matter rising to one-sixteenth of its weight off the coast of Spain. In many places the ocean is less salt at the surface than at the bottom. Its saltness increases its density and its buoyancy.

Maury, a recognised authority, finds in the saline properties of the sea one of the principal forces from which the currents in the ocean proceed. "The brine of the ocean," says he, "is the ley of the earth; from it the sea derives dynamical powers, and the currents their main strength." Let us suppose a long tank or, say, swimming-bath, divided in the middle by a water-tight wall, on one side of which should be fresh and on the other salt water, at equal levels. It is obvious that were the division removed the waters would not stand side by side as before, for the denser water would have a tendency not merely to mingle with the lighter, but to form a current *under* it. So salt waters of different densities.

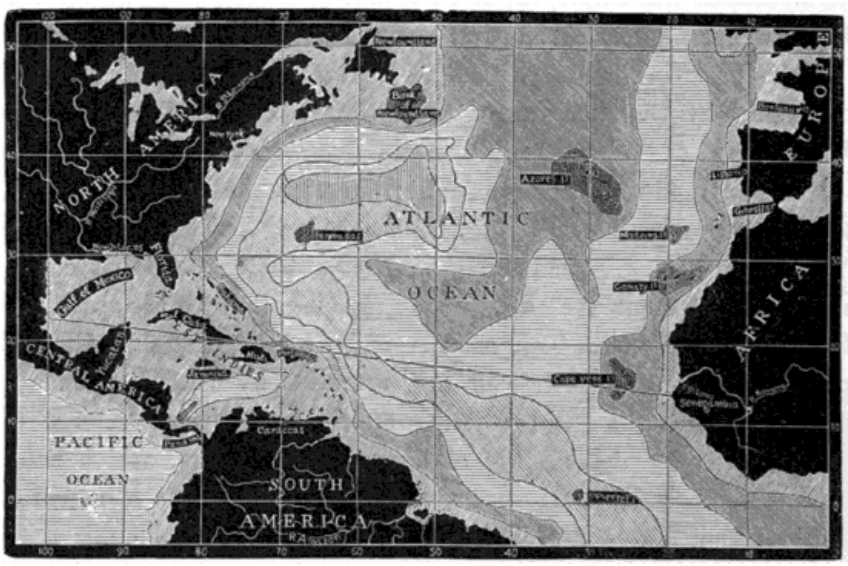


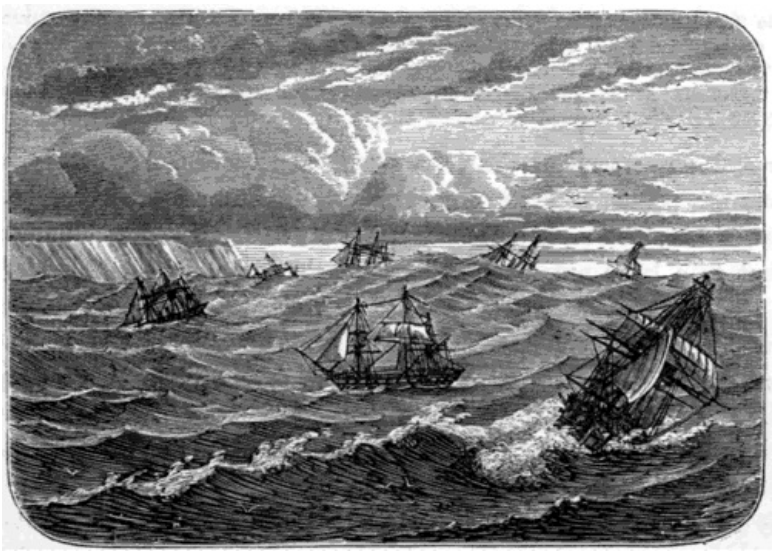
CHART OF THE ATLANTIC OCEAN.

"The ocean," says Figuier, "is a scene of unceasing agitation; 'its vast surface rises and falls,' to use the image suggested by Schleiden, 'as if it were gifted with a gentle power of respiration; its movements, gentle or powerful, slow or rapid, are all determined by differences of
[pg 91] temperature.' " Heat increases its volume, and therefore lightens it; cold increases its density, and it will naturally descend. These are, then, among the obvious reasons of its currents. The duration and force of winds and the tides are both disturbing influences. Such an oceanic marvel as the great *Gulf Stream* could only be explained after a careful study of all the operating causes of its existence. Dr. Maury has well described it. He says:—"There is a river in the bosom of the ocean: in the severest droughts it never fails, and in the mightiest floods it never overflows; its banks and its bottom are of cold water, while its current is of warm; it takes its rise in the Gulf of Mexico, and empties itself into the Arctic seas; this mighty river is the Gulf Stream. In no other part of the world is there such a majestic flow of water; its current is more rapid than the

Amazon, more impetuous than the Mississippi, and its volume is more than a thousand times greater." This great current of water particularly influences the climates of Northern Europe, and especially those of Britain and Ireland.

The Gulf Stream, as it issues from the Florida Channel, has a breadth of thirty-four miles, a depth of 2,200 feet, and moves at the rate of four and a half miles an hour. "Midway in the Atlantic, in the triangular space between the Azores, Canaries, and Cape de Verd Islands, is the great Sargassum Sea, covering an area equal to the Mississippi Valley; it is so thickly matted over with the Gulf weed (*Sargassum bacciferum*) that the speed of vessels passing through it is actually retarded, and to the companions of Columbus it seemed to mark the limits of navigation: they became alarmed. To the eye, at a little distance, it seemed sufficiently substantial to walk upon." The difference of temperature between the Gulf Stream and the waters it traverses constantly gives birth to tempests and cyclones. In 1780 a terrible storm ravaged the Antilles, in which 20,000 persons perished. The ocean quitted its bed, and inundated whole cities; the trunks of great trees and large parts of buildings were tossed wildly in the air. Numerous catastrophes of this kind have earned the Gulf Stream the title of the "King of the Tempests." So well had Maury studied the Gulf Stream and its storms, that he was enabled to point out the exact position of a vessel overtaken by a terrible gale. "In the month of December, 1859," says Figuier, "the American packet *San Francisco* was employed as a transport to convey a regiment to California. It was overtaken by one of these sudden storms, which placed the ship and its freight in a most dangerous position—a single wave, which swept the deck, tore out the masts, stopped the engines, and washed overboard 129 persons, officers, and soldiers. From that moment the unfortunate steamer floated upon the waters, a waif abandoned to the fury of the wind. The day after the disaster the *San Francisco* was seen in this desperate situation by a ship, which reached New York, although unable to assist her. Another ship met her some days after, but, like the other, could render no assistance. When the report reached New York two steamers were despatched to her assistance; but in what direction were they to go? what part of the ocean were they to explore? The authorities at the Washington Observatory were appealed to. Having consulted his charts as to the direction and limits of the Gulf Stream at that period of the year, Dr. Maury traced on a chart the spot to which the disabled steamer was likely to be driven by the current, and the course to be taken by the vessels sent to her assistance." The steamers went straight to the exact spot, and found the wreck; and although by that time the crew and passengers had been taken off by three passing vessels, it was certainly a triumph of science.

[pg 92]



WAVES OFF THE CAPE OF GOOD HOPE.

The tides are produced by two pairs of great waves which travel round the earth each day—a greater pair caused by the attraction of the moon, a lesser pair caused by the sun. The moon, by reason of its nearness to the earth, produces by far the greater influence, but the tides are also subject to all kinds of local influences. The eastern coast of Asia and western side of Europe are exposed to extremely high tides; while in the South Sea Islands they scarcely reach the height of twenty inches. There is hardly any tide in the Mediterranean, separated as it is from the ocean by a narrow strait. "The highest tide which is known occurs in the Bay of Fundy, which opens up to the south of the isthmus uniting Nova Scotia and New Brunswick. There the tide reaches forty, fifty, and even sixty feet, while it only attains the height of seven or eight in the bay to the north of the same isthmus. It is related that a ship was cast ashore upon a rock during the night so high, that at daybreak the crew found themselves and their ship suspended in mid-air, far above the water." The winds have an immense influence on the height of tides, and also on the waves. The highest known waves are found off the Cape of Good Hope (p. 89) at the period of high tide, under the influence of a strong north-west wind which has traversed the Atlantic, pressing its waters round the Cape. "The billows there," says Maury, "lift themselves up in long ridges, with deep hollows between them. They run high and fast, tossing their white caps aloft in the air, looking like the green hills of a rolling prairie capped with snow, and chasing each other in sport. Still, their march is stately and their roll majestic. Many an Australian-bound trader, after

doubling the Cape, finds herself followed for weeks at a time by these magnificent rolling swells, furiously driven and lashed by the ‘brave west winds.’ These billows are said to attain the height of thirty, and even forty feet; but no very exact measurement of the height of waves is recorded.” Those off Cape Horn are rather less in height. *Spray* is dashed over the Eddystone Light, 130 feet high. After a great storm in Barbadoes in 1780, some old and heavy cannons were found on the shore, which had been thrown up from the bottom of the sea. If waves in their reflux meet with obstacles, whirlpools result, such as those in the Straits of Messina, between the rocks of Charybdis and Scylla made famous by Homer, Ovid, and Virgil, and once much dreaded, but now little feared.

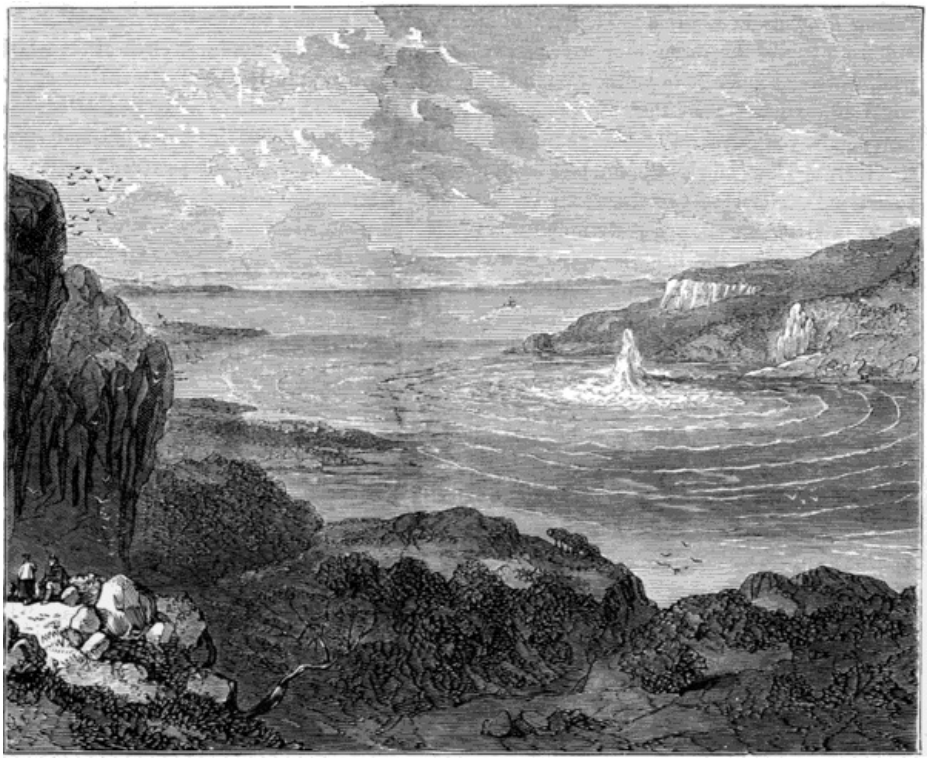
The best known whirlpool, the Maelström, off Lofoden, in Norway, is the result of opposing currents. One of the most circumstantial accounts of it is that of a Norwegian, Jonas Ramus, who calls it the Moskoe-strom (channel or stream):—“Between Lofoden and Moskoe,” says he, “the depth of the water is between thirty-six and forty fathoms; but, on the other side, towards Ver (Vurrgh), this depth decreases so as not to afford a convenient passage for a vessel without the risk of splitting on the rocks, which happens even in the calmest weather. When it is flood the stream runs up the country between Lofoden and Moskoe with a boisterous rapidity; but the roar of its impetuous ebb to the sea is scarcely equalled by the loudest and most dreadful cataracts, the noise being heard several leagues off; and the vortices or pits are of such an extent and depth that if a ship comes within its attraction it is inevitably absorbed and carried down to the bottom, and there beaten to pieces against the rocks; and when the water relaxes the fragments thereof are thrown up again. But these intervals of tranquillity are only at the turn of the ebb and flood
[pg 93] and in calm weather, and last but a quarter of an hour, its violence gradually returning. When the stream is most boisterous, and its fury heightened by a storm, it is dangerous to come within a Norwegian mile of it. Boats, yachts, and ships have been carried away by not guarding against it before they were within its reach. It likewise happens frequently that whales come too near the stream, and are overpowered by its violence, and then it is impossible to describe their howlings and bellowings, in their fruitless struggles to disengage themselves. A bear once attempting to swim from Lofoden to Moskoe, was caught by the stream and borne down, while he roared terribly, so as to be heard on shore. Large stocks of firs and pine-trees, after being absorbed by the current, rise again, broken and torn to such a degree as if bristles grew upon them. This plainly shows the bottom to consist of craggy rocks, among which they are whirled to and fro. This stream is regulated by the flux and reflux of the sea, it being constantly high and low water every six hours. In the year 1645, early in the morning of Sexagesima Sunday, it raged with such noise and impetuosity that the very stones of the houses on the coast fell to the ground.” Kuchu and others promulgated the idea that the maelström is a watery abyss penetrating the globe, and
[pg 94] issuing in some very remote part. This is the view held by most of the Norwegian peasantry and fishermen to-day.

Who that has read the works of Edgar Allan Poe will ever forget his thrilling and detailed story of a descent into the maelström?[30] It bears the impress of close study, and is founded largely on recorded facts. Two brothers, the most daring fishermen of their coast, were accustomed to fish in closer proximity to the maelström than all the rest, because, although a desperate speculation, they would get more fish in a day than the others could at the distant fishing grounds in a week. The risk of life stood for labour, and courage for capital.

In a terrible hurricane they were driven through the surf into the inner circle of the whirlpool, where (as is likely to be the case in actual fact) the wind nearly ceased, the surface of the water being lower than that of the surrounding ocean. “If you have never been at sea in a heavy gale, you can form no idea of the confusion of mind occasioned by the wind and spray together. They blind, deafen, and strangle you, and take away all power of action or reflection.” Now the two fishermen brothers were in a measure respited, as death-condemned felons in prison are allowed petty indulgences forbidden them while their doom is yet uncertain. Round and round the belt the vessel flew rather than floated, getting nearer and nearer to the fatal inner vortex, and making wild lurches towards the abyss. “The boat appeared to be hanging, as if by magic, midway down, upon the interior surface of a funnel vast in circumference, prodigious in depth, and whose perfectly smooth sides might have been mistaken for ebony, but for the bewildering rapidity with which they spun round, and for the gleaming and ghastly radiance they shot forth as the rays of the full moon ... streamed in a flood of golden glory along the black walls, and far away down into the inmost recesses of the abyss.” Round and round they swept in dizzying swings and jerks. Above and below them were whirling fragments of vessels, timbers, boxes, barrels, and trunks of trees. And now a hope arose from the recollection of one circumstance: that of the great variety of buoyant matter thrown up by the moskoe-strom on the coast of Lofoden, some articles were not disfigured or damaged at all. Further, light and cylindrical articles were the least likely to be absorbed into any watery vortex: for the last statement there are good scientific reasons. “I,” says the survivor, “no longer hesitated what to do. I resolved to lash myself securely to the water-cask upon which I now held, to cut it loose from the counter, and to throw myself with it into the water. I attracted my brother’s attention by signs, pointed to the floating barrels that came near us, and did everything in my power to make him understand what I was about to do. I thought at length that he comprehended my design, but whether this was the case or not, he shook his head despairingly, and refused to move from his station by the ring-bolt. It was impossible to reach him; the emergency admitted of no delay; and so, with a bitter struggle, I resigned him to his fate, fastened myself to the cask by means of the lashings which secured it to the counter, and precipitated myself with it into the sea without another moment’s hesitation.” The smack soon after made a few gyrations in rapid succession, then sank

to the bottom for ever, bearing with it the unfortunate brother. “The barrel to which I was attached had sunk very little farther than half the distance between the bottom of the gulf and
[pg 95] the spot at which I leaped overboard before a great change took place in the character of the whirlpool. The slope of the sides of the vast funnel became momentarily less and less steep. The gyrations of the whirl grew gradually less and less violent.” By degrees the waters rose, and he found himself in full view of the shores of Lofoden, and above the spot where the pool of the moskoe-strom *had been*. He was picked up by a boat; those on board were old mates and daily companions, but they knew him no more than they would have known a traveller from the spirit-land. His hair, which had been raven black the day before, was now as white as snow.

Thus far Poe. It shows how the vivid imagination of a great poet, dealing with facts, can put those facts before the reader in artistically life-like and graphic form.



WHIRLPOOL OF CORRIEVRECKAN, OFF THE HEBRIDES.

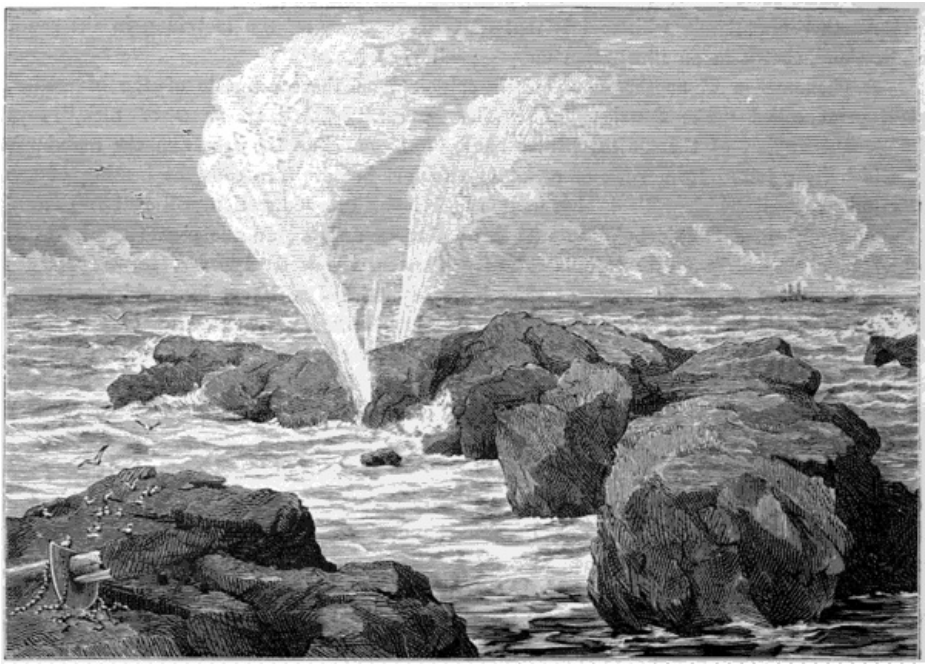
Another remarkable whirlpool is that of Corrievreckan, off the Hebrides, in the south of Scotland, shown in an illustration on page 93.

A phenomenon of another character is exhibited on the south side of the Mauritius, at a point called “The Souffleur,” or “The Blower.” “A large mass of rock,” says Lieutenant Taylor, of the United States navy, “runs out into the sea from the mainland, to which it is joined by a neck of rock not two feet broad. The constant beating of the tremendous swell which rolls in has undermined it in every direction, till it has exactly the appearance of a Gothic building with a number of arches. In the centre of the rock, which is about thirty-five or forty feet above the sea, the water has forced two passages vertically upward, which are worn as smooth and cylindrical as if cut by a chisel. When a heavy sea rolls in, it of course fills in an instant the hollow caverns underneath; and finding no other egress, and being borne in with tremendous violence, rushes up these chimneys, and flies, roaring furiously, to a height of full sixty feet. The moment the wave recedes, the vacuum beneath causes the wind to rush into the two apertures with a loud humming noise, which is heard at a considerable distance.

“My companion and I arrived there before high water; and, having climbed across the neck of rock, we seated ourselves close to the chimneys, where I proposed making a sketch, and had just begun, when in came a thundering sea, which broke right over the rock itself, and drove us back much alarmed.

“Our negro guide now informed us that we must make haste to re-cross our narrow bridge, as the sea would get up as the tide rose. We lost no time, and got back dry enough; and I was obliged to make my sketches from the mainland.

“In about three-quarters of an hour the sight was truly magnificent. I do not exaggerate in the least when I say the waves rolled in, long and unbroken, full twenty-five feet high, till, meeting the headland, they broke clear over it, sending the spray flying over to the mainland; while, from the centre of this mass of foam, the Souffleur shot up with a noise which we afterwards heard distinctly between two and three miles. Standing on the main cliff, more than a hundred feet above the sea, we were quite wet.”



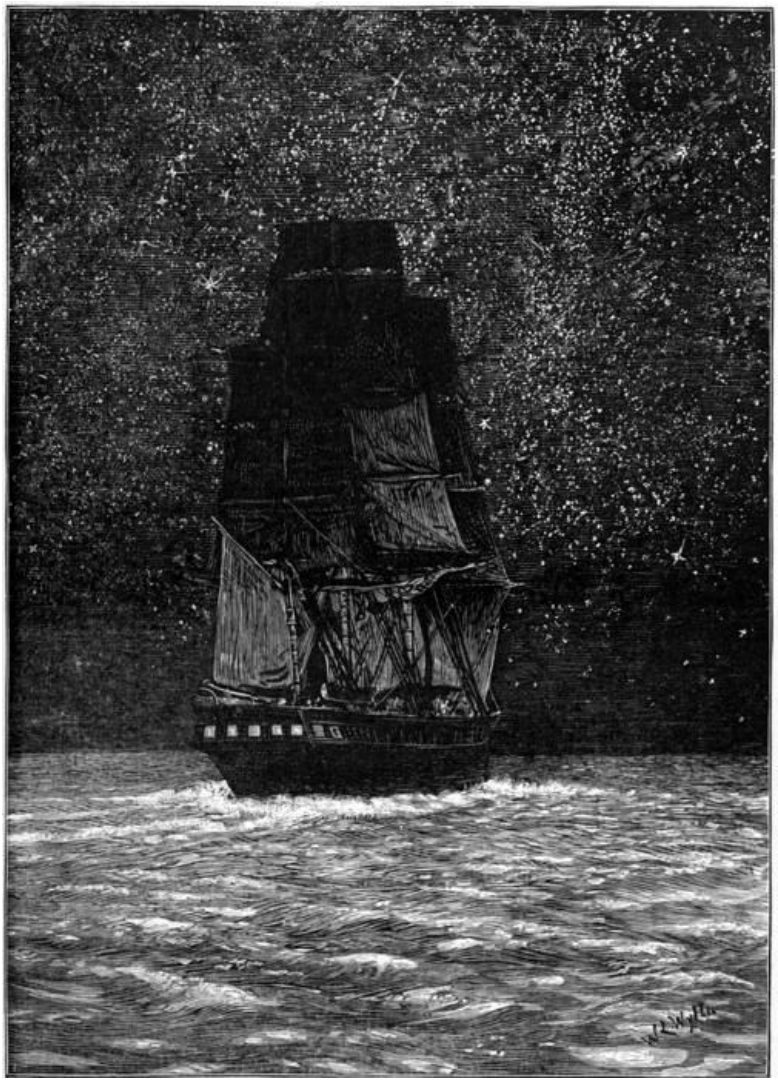
“THE SOUFFLEUR,” ISLAND OF MAURITIUS.

To the combined influences of tides and waves may also be attributed the monsoon hurricanes which so often visit the Indian Ocean. The air may have been just previously without a breath, when immense waves, accompanied by whirlwinds, come rolling in. “At the period of the changing monsoons, the winds, breaking loose from their controlling forces, seem to rage with a fury capable of breaking up the very foundations of the deep,” and ships are often literally whirled round, or bodily lifted up, their crews being utterly impotent.

[pg 96] Turning to another subject, partially discussed before—the colour of the sea—it may be remarked that by itself as sea water it is really colourless. Its varying colours are caused by reflection, by the varied bottoms it covers, or by the presence of actual animal, vegetable, and mineral bodies. The ocean,

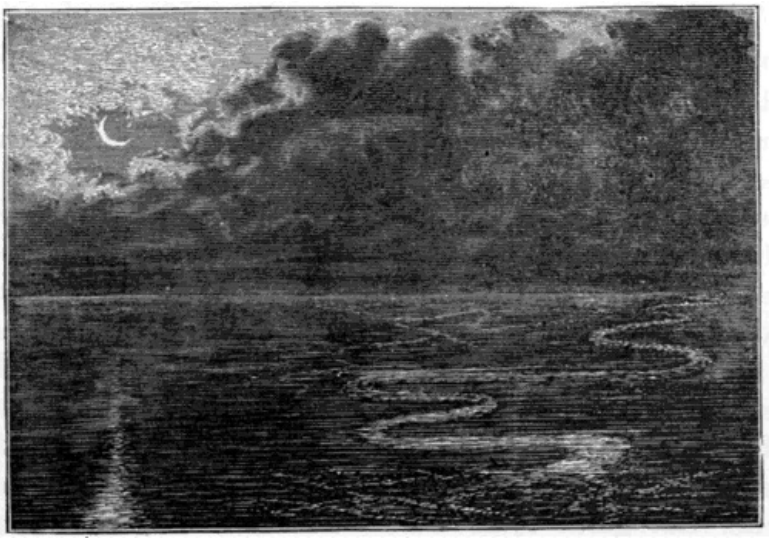
“When winds breathe soft along the silent deep,”

is azure blue or ultramarine, becoming greener in-shore. There are some days when it is generally green, others sombre and grey. A bottom of white sand will give a greyish or apple-coloured green; of chalk, a pure clear green; if the bottom is brownish-yellow sand, the green is naturally duller in character. In the Bay of Loango the waters appear of a deep red, from the red bottom. The Red Sea owes its colour to actual floating microscopic algæ and to red coral bottoms. Sea water, concentrated in the salt marshes of the south of France by the heat of the sun, is also red: this is due to the presence of a red-shelled animal of microscopic size. These minute creatures do not appear till the salt water has attained a certain concentration, while they die when it has reached a further density. Navigators often traverse patches of green, red, white, or yellow-coloured water, their coloration being due to the presence of microscopic crustaceans, medusæ, zoophytes, and marine plants.



A SHIP SAILING IN PHOSPHORESCENT SEA.

[pg 97] The pleasing phenomenon known as the phosphorescence of the sea is generally, though by no means entirely, due to myriads of minute globular creatures, called *Noctiluca*. Captain Kingman reported having traversed a zone twenty-three miles in length, and so filled with phosphorescent matter that during the night it presented the appearance of a vast field of snow. “There was scarcely a cloud in the heavens,” he tells us; “yet the sky for about 10° above the horizon appeared as black as if a storm were raging; stars of the first magnitude shone with a feeble light, and the ‘milky way’ of the heavens was almost entirely eclipsed by that through which we were sailing.” Several varieties of molluscs and acalephes shine by their own light, while phosphorescence is often due to the decomposition of animal matter.



PHOSPHORESCENCE ON THE SURFACE OF THE SEA.

A French author thus describes the effect produced by the molluscs known to scientists as

Pyrosoma, on a voyage to the Isle of France. He says:—"The wind was blowing with great violence, the night was dark, and the vessel was making rapid way, when what appeared to be a vast sheet of phosphorus presented itself, floating on the waves, and occupying a great space ahead of the ship. The vessel having passed through this fiery mass, it was discovered that the light was occasioned by organised bodies swimming about in the sea at various depths around the ship. Those which were deepest in the water looked like red-hot balls, while those on the surface resembled cylinders of red-hot iron. Some of the latter were caught; they were found to vary in size from three to seven inches. All the exterior of the creatures bristled with long thick tubercles, shining like so many diamonds, and these seemed to be the principal seats of their luminosity. Inside also there appeared to be a multitude of oblong narrow glands, exhibiting a high degree of phosphoric power. The colour of these animals when in repose is an opal yellow, mixed with green; but on the slightest movement the animal exhibits a spontaneous contractile power, and assumes a luminous brilliancy, passing through various shades of deep-red, orange-green, and azure-blue." A ship plunging through these phosphorescent fields seems to advance through a sheet of white flame, a field of luminous silver, scattering a spray of sparks in all directions.

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CHAPTER IX.

Davy Jones's Locker.—Submarine Cables.

The First Channel Cable—Nowadays 50,000 Miles of Submarine Wire—A Noble New Englander—The First Idea of the Atlantic Cable—Its Practicability Admitted—Maury's Notes on the Atlantic Bottom—Deep Sea Soundings—Ooze, formed of Myriads of Shells—English Co-operation with Field—The First Cable of 1857—Paying Out—2,000 Fathoms down—The Cable Parted—Bitter Disappointment—The Cable Laid and Working—Another Failure—The Employment of the *Great Eastern*—Stowing Away the Great Wire Rope—Departure—Another Accident—A Traitor on Board—Cable Fished up from the Bottom—Failure—Inauguration of the 1866 Expedition—Prayer for Success—A *Lucky* Friday—Splicing to the Shore Cable—The Start—Each Day's Run—Approaching Trinity Bay—Success at Last—The Old and the New World Bound Together.

In the year 1850 a copper wire, insulated with gutta-percha, was submerged between England and France, and that connecting link between the two greatest countries of Europe was the first considerable success of its kind. To-day Great Britain is connected with the European continent by a dozen cables, and there are over 50,000 miles of submerged wires silently conveying their messages over the face of the globe. Thirty years of practical scientific labour has united the whole world. You can telegraph or "wire" your commands to distant China or Japan; you can ask the market rates of wheat in the farthest west of the New World; you can correspond with your wife in England if you are at the Antipodes. Puck's idea of putting the "girdle round the earth" has been more than accomplished. The story of the successes won at the very bottom of the ocean would take long to tell; here we can only follow the story of one of the grandest—that of the Atlantic cable.

In the month of November, 1819, a noble American, whose career deserves to be put on record, first saw the light. Cyrus W. Field has deservedly earned an honourable and honoured name in two worlds for indomitable perseverance and pluck.[31]

The New Englander has to-day, and has always had, many of the best qualities of the Old Englander. In Field they were conspicuously displayed. In his "bright lexicon" there was—

> "No such word as *fail*,"

for the worst disappointment only stirred him to fresh exertion.

> "'Tis not in mortals to command success;
> But we'll do more, Sempronius—we'll deserve it."

Field was born in Stockbridge, Massachusetts, a rural village nook which lies calmly and peacefully cradled among the green Berkshire hills, a spot which would delight the eyes of a true artist. He was the son of a country pastor, who, in spite of a paltry stipend of a hundred and fifty pounds a year, and thanks to the scholastic advantages offered to every one in the United States, gave nine children a superior education. Several of these children distinguished themselves in after life, but none more than the subject of this sketch.

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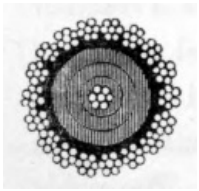
While to this energetic man is due the actual success, it is to Professor Morse, who had said that "telegraphic communication might with certainty be established across the Atlantic Ocean," and to an excellent Roman Catholic bishop, that the idea is to be fairly credited. Bishop Mullock, of Newfoundland, while lying becalmed in his yacht off Cape North, the extreme point of the

province of Cape Breton, bethought himself how his poor neglected island might reap some advantage from being taken into the track of communication between Europe and America, for he saw that Nature had provided an easy approach to the mainland for a cable. Fired with the idea, he wrote to one of the St. John's papers, and his letter is to-day a model of lucid explanation. About the same time Mr. Frederick N. Gisborne, a practical telegraph operator, promulgated the idea of connecting St. John's with the mainland, and one evening interested Mr. Cyrus Field, then just retired from business on a competency, in his scheme. "After he left," writes his brother, "Mr. Field took the globe which was standing in the library, and began to turn it over. It was while thus studying the globe that the idea first occurred to him that the telegraph might be carried further still, and be made to span the Atlantic Ocean." Maury, the distinguished marine scientist, and Professor Morse, had also come to the same conclusion, and at about the same time as had others in England. The history of the financial difficulties and ultimate triumphs connected with the inauguration of the first cable would not interest the reader; suffice it to say that half-a-dozen New York millionaires subscribed the first capital—a million and a half dollars. The cable across the Gulf of St. Lawrence was successfully laid in 1856, after one previous failure.

And now Field began to clear the way by consulting the highest scientific authorities on both sides of the Atlantic. Was it possible to carry a cable across the ocean? If laid, would it be able to convey messages? The first query related to mechanical difficulties only, such as the depth of the ocean, the nature of the ocean bed, the influence of currents and winds. The second referred to pure science and the conditions under which the electric fluid acts—Would the lightning flash from shore to shore across an intervening waste of sea? The answer to the first question was supplied by Maury, who pointed out that between Ireland and Newfoundland the bottom of the sea formed a plateau, or elevated table-land, which, as he said, seemed to have been placed there especially for the purpose of supporting the wires of an electric telegraph, and protecting them from injury. Its slope, he said, was quite regular, gradually increasing from the shores of Newfoundland to the depth of from 1,500 to 2,000 fathoms as you approach the Irish coast. It was neither too deep nor too shallow: deep enough to protect the cable from danger by ships' anchors, icebergs, and currents; shallow enough to secure that the wires should be readily lodged upon the bottom. From Professor Morse an equally satisfactory answer was obtained. He declared his faith in the undertaking as a practicable one: that it might, could, and would be achieved.

The Company undertook to make a series of careful soundings to ascertain the exact nature of the ocean bottom over which the cable connecting Newfoundland with Ireland would have to be laid. Mr. Field applied for this purpose to the American Government, who immediately despatched the *Arctic*, under Lieutenant Berryman, on this useful and most necessary service. She sailed from New York on the 18th of July, 1856; and on the following day Mr. Field left in the steamship *Baltic* for England, to organise the Atlantic Telegraph Company. The *Arctic* proceeded
[pg 100] to St. John's, and thence went on her way across the deep, in three weeks reaching the coast of Ireland, and clearly demonstrating, as the result of her survey, the existence of a great plateau under the ocean, extending all the way from the New World to the Old. To make assurance doubly sure, Mr. Field solicited the British Admiralty "to make what further soundings might be necessary between Ireland and Newfoundland, and to verify those made by Lieutenant Berryman." In response to this appeal the Admiralty sent out the *Cyclops*, under Lieutenant Dayman, a very capable officer, who executed his task with great zeal and success. He showed that the depth of the water on the so-called telegraphic plateau—the elevated table-land which Providence had raised between the two continents—nowhere exceeded 2,500 fathoms, or 15,000 feet. Such a depth is almost trivial compared with the enormous depths in other parts of the Atlantic, where you might hide from all human eyes the loftiest snow-clad peak of the Himalayas, yet no inconsiderable depth if you reflect that the peak of Teneriffe, were it here "cast into the sea," would sink out of sight, island, mountain, and all; and even the coloured crest of Mont Blanc would rise but a few hundred feet above the waves. The single exception to this uniform depth occurs about 200 miles off the Irish coast, where within an area of about a dozen miles the depth sinks from 550 to 1,750 fathoms. In 14° 48′ W., says Dayman, we have 550 fathoms rock, and in 150° 6′ W. we have 1,750 fathoms ooze. In little more than ten miles of distance a change of depth takes place amounting to fully 7,200 feet. It was supposed that this tremendous declivity would be the chief point of danger in laying down the cable; and to remove, if possible, the anxiety which existed, Lieutenant Dayman made a further survey. The result showed that the dip was not a sudden one; the precipitous bank or submarine cliff turned out to be a gradual slope of nearly sixty miles. Over this long slope, said a writer in the *Times*, the difference between its greatest height and greatest depth is only 8,760 feet, so that the average incline is, in round numbers, about 145 feet per mile. A good gradient on a railway is now generally considered to be 1 in 100 feet, or about 53 feet in a mile; so that the incline on this supposed bank is only about three times that of an ordinary railway. It was found upon these surveys that the ocean bed consisted of a soft ooze, as soft as the moss which clings to old damp stone on the river's brink. And of what does this ooze consist? The microscope revealed the astonishing fact that it is made up of myriads of shells, too minute to be discovered by the naked eye, yet each perfect in itself, unbroken and uninjured. These organisms live near the surface of the water, but in death sink down to the bottom, and there find a calm and peaceful resting-place. Well has it been said that a mighty work of life and death has for ages been going on in the tranquil bosom of ocean. Myriads upon myriads, ever since the morning of creation, have been falling—falling like snow-flakes, till their remains cover with a thick stratum of beautiful organisms the ocean bed. "The bearing of this discovery," says Dr. Field, "on the problem of a submarine telegraph was obvious. For it, too,

was to lie on the ocean bed, beside and among those relics that had so long been drifting down upon the watery plain. And if these tiny shells slept there unharmed, surely an iron cord might rest there in safety. There were no swift currents down there; no rushing waves agitated that sunless sea. There the waters moved not, and there might rest the great nerve that was to pass
[pg 101] from continent to continent. And so far as injury from the surrounding elements was concerned, there it might remain, whispering the thoughts of successive generations of men, till the sea should give up its dead." Everything showed that the project of an Atlantic cable was feasible. All that remained was to raise the capital necessary for its development. But this could be done only by the formation of a large and influential company, the enterprise having outgrown the resources of Mr. Field and his little band of New York merchants. While engaged in submitting his scheme to the consideration of the capitalists of London, Mr. Field found counsel and encouragement from many men distinguished in the world of science, and among his principal supporters had the good fortune to rank Glass and Elliot, now so well known as manufacturers of sea-cables, and the celebrated engineers whose names are associated with the scientific marvels of the age—Brett, Bidder, Robert Stephenson, and Brunel. The last-named was then building the colossal ship afterwards called the *Great Eastern*; and one day taking Mr. Field down to see her gigantic hull as it lay in the yard at Blackwall, he exclaimed—and, as results have proved, prophetically—"There is the ship to lay your Atlantic cable!"



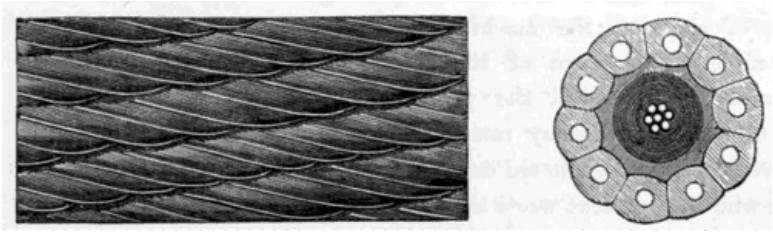
SECTION OF THE FIRST ATLANTIC CABLE.

The Atlantic Telegraph Company was formed; and 2,500 miles of cable were manufactured and stowed on board the English naval vessel *Agamemnon* and the United States ship *Niagara*. It was on the evening of August 7th, 1857, that the squadron sailed; and according to arrangement the *Niagara* at once began to pay out the cable very slowly; but before five miles had been accomplished the heavy shore end of the cable got entangled with the machinery through the carelessness of one of the men in charge, and parted. The *Niagara* put back, and the cable was "under run" the whole distance. At last the end was raised from the water and "spliced" to the gigantic coil, and as it dropped safely to its resting-place among the "salt sea ooze" the noble ship once more went on her way. Saturday, we are told, was a day of beautiful weather. The squadron made good progress at a rate of from four to five miles an hour, and the cable was paid out at a speed somewhat exceeding that of the ship, to allow for any irregularities of surface on the bottom of the sea. Meantime a constant communication was kept up with the land. Every moment the electric fluid flashed between ship and shore. Not only did the electricians wire back to Valentia the progress they were making, but the officers on board sent messages to their friends in America to go out by the steamer from Liverpool. The very heavens seemed to regard the enterprise with favour. All went merrily as a marriage bell. Without a kink the coil came up from the vessel's hold, and unwinding easily, passed over the stern into the sea. Once or twice,
[pg 102] however, a momentary alarm was caused by the cable being thrown off the wheels, an accident due to the insufficient width and depth of the sheaves and to the fact that they were filled with tar, which hardened in the air. This defect was remedied in later expeditions. Still it worked well, and as long as the terrible brakes withheld their iron grasp might work through to the end. On the following day, Sunday, the course of affairs was not less smooth; and on Monday the expedition was upwards of 200 miles from land. The shallow water of the coast had been safely traversed. The ships had passed over the submarine declivity which has been already described, and had reached the deeper waters of the Atlantic, where the cable sank to a depth of not less than 2,000 fathoms. Still the iron cord buried itself in the profound silence, and every instant the flash of light in the telegraph room recorded the continuous passage of the mysterious electric current. About four o'clock on Tuesday morning, however, a sudden interruption occurred. It seems from the published narrative that the cable was running cut fully at the rate of six miles an hour, while the ship was making only four. To check this waste, the engineer applied the brakes very firmly, with the effect of stopping the machine. Hence a heavy strain told on the submerged portion of the cable. The stern of the ship was down in the trough of the sea, and as it rose upward on the swell the pressure became too great, and the cable parted. Instantly a cry of grief and dismay ran through the ship. She was checked in her onward career, and in five minutes all gathered on deck with feelings which can be better imagined than described. One who was present wrote:—"The unbidden tear started to many a manly eye. The interest taken in the enterprise by all—every one, officers and men—exceeded anything I ever saw, and there is no wonder that there should have been so much emotion at our failure." Captain Hudson says:—"It made all hands of us through the day like a household or family which had lost their dearest friend, for officers and men had been deeply interested in the success of the enterprise." The cable broke in 2,000 fathoms water, when about 330 nautical miles were laid, at a distance of 280 miles from Valentia. This was the first of a series of disappointments, ending, however, in eventual triumph.

The same vessels sailed again in June of the next year, and as arranged before starting, reached a

point of junction in mid-stream, where the ends of the two cables were spliced, and the ships parted, the *Agamemnon* steering for Valentia, and the *Niagara* for Trinity Bay, Newfoundland. Both vessels arrived at their ports of destination on August 5th, and the fact of the completion of the enterprise was for the first time “cabled” under the wide Atlantic two days later, to the great rejoicing, it may fairly be said, of two worlds. Congratulatory messages were flashed from either end, and success seemed secured. Alas! less than a month later all communication ceased; the electric current would not pass through the great wire-rope; there was a leakage somewhere. But it had been shown conclusively that messages *could* be transmitted under the given conditions. This was something.

Passing over all the financial arrangements connected with a new attempt, which was not made till 1865, we find Brunel’s prediction fulfilled. The largest ship in the world was chartered to lay another cable.

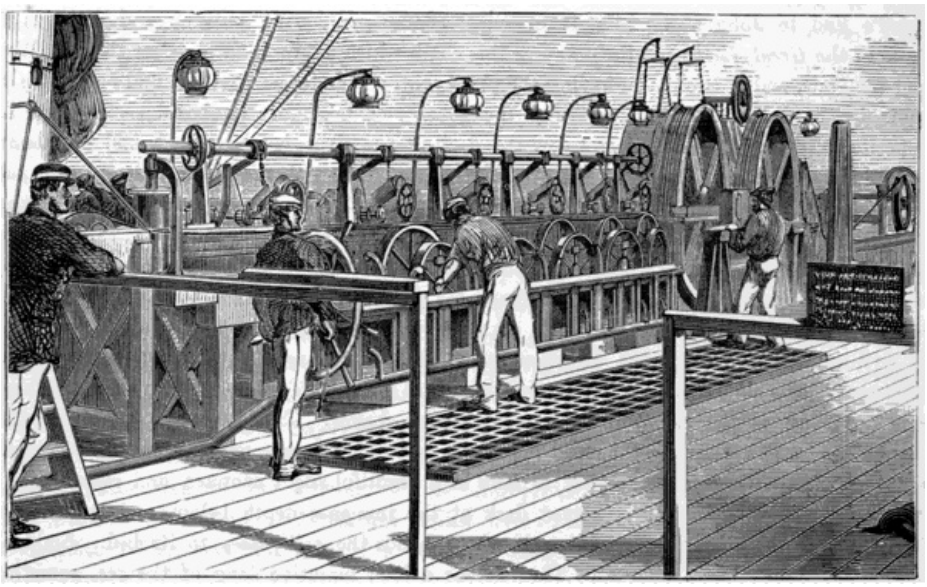


EXTERIOR AND SECTION OF THE 1865 ATLANTIC CABLE.

[pg 103] The work of stowing away the cable on board the *Great Eastern*, where it was coiled up in three immense tanks—one aft, one amidships, and one forward—began in January and was not completed until June. It will give the reader an idea of the enormous size and capacity of the *Great Eastern* when he is told that though the cable measured 2,700 miles, a visitor to the mammoth ship was at first unaware of its being on board! Here is the account given by a writer who went to see the ship and its novel cargo. Its details are interesting. “It is time,” he says, after a general survey of the wonders of the huge vessel—“it is time we should look after what we have mainly come to see—the telegraph cable. To our intense astonishment we beheld it—nowhere, although informed that there are nearly 2,000 miles of it already on board, and that the remaining piece, which is long enough to stretch from Land’s End to John o’ Groat’s, is in course of shipment. We walk up and down on the deck of the *Great Eastern* without seeing this chain which is to bind together the Old World and the New, and it is only on having the place pointed out to us that we find out where the cable lies.” The writer then describes the process of taking it on board:—“On the side opposite to where we landed, deep below the deck of our giant, is moored a vessel surmounted by a timber structure resembling a house, and from this vessel the wonderful telegraph cable is drawn silently into the immense womb of the *Great Eastern*. The work is done so quietly and noiselessly, by means of a small steam-engine, that we scarcely notice it. Indeed, were it not pointed out to us, we would never think that that little iron cord, *about an inch in diameter*, which is sliding over a few rollers and through a wooden table, is a thing of world-wide fame—a thing which may influence the life of whole nations, nay, which may affect the march of civilisation. Following the direction in which the iron rope goes, we now come to the most marvellous sight.... We find ourselves in a little wooden cabin, and look down over a railing at the side into an immense cavern below. This cavern is one of the three ‘tanks’ in which the two-thousand-mile cable is finding a temporary home. The passive agent of electricity comes creeping in here in a beautiful silent manner, and is deposited in coils, layer above layer. It is almost dark at the immense depth below, and we can only dimly discern the human figures through whose hands the coil passes to its bed. Suddenly, however, the men begin singing. They intone a low, plaintive song of the sea, something like Kingsley’s

> “Three fishers went sailing away to the west,
> Away to the west, as the sun went down,”

the sounds of which rise up from the dark deep cavern with startling effect, and produce an indescribable impression. We move on; but the song of the sailors who are taking charge of the Atlantic telegraph cable is haunting us like a dream. In vain that our guide conducts us all over the big ship, through miles of galleries, passages, staircases, and promenades; through gorgeous saloons full of mirrors, marbles, paintings, and upholstery, made ‘regardless of expense’; and through buildings crowded with glittering steam apparatus of gigantic dimensions, where the latent power of coal and water creates the force which propels this monster vessel across the seas. In vain our attention is directed to all these sights; we do not admire them; our imagination is used up. The echo of the sailors’ song in the womb of the *Great Eastern* will not be banished from our mind. It raises visions of the future of the mystic iron coil under our feet: how it will roll forth again from its narrow berth; how it will sink to the bottom of the Atlantic or hang from
[pg 104] mountain to mountain far below the stormy waves; and how two great nations, the offspring of one race and the pioneers of civilisation, will speak through this wonderful coil, annihilating distance and time. Who can help dreaming here on the spot where we stand? For it is truly a marvellous romance of civilisation, this *Great Eastern* and this Atlantic telegraph cable. Even should our age produce nothing else, it alone would be the triumph of our age.”



THE PAYING-OUT MACHINERY ON BOARD THE “GREAT EASTERN.”

The *Great Eastern* left the Thames on July 13th, 1865. After sundry mishaps, she turned her mighty prow towards the sunset, and proceeded on her stately way. All went well until the 29th of July, when a little after noon a new cry of alarm was raised. And well it might be, for the insulation was completely destroyed and the electric current overflowing uselessly into the sea. As the faulty piece had gone overboard, it was necessary once more to reverse the vessel’s course, and haul in the cable until the defective part was recovered. This was a difficult task, for they were in water two miles deep. Difficulties did not, however, daunt the pioneers of this great enterprise, and after working all the afternoon, the injured cable was got on board about ten o’clock at night. It was at once stowed away, and the next morning, Sunday, was welcomed with an eager feeling of relief and delight after the suspense of the preceding four-and-twenty hours. On Monday the miles of cable which had been hauled up and were coiled in huge heaps upon the deck were closely examined to discover the origin of the mischief. This was soon detected. Near the end a piece of wire was thrust through the very core, as if driven into it. The recurrence of such a mishap actually suggested suspicions of treachery. It was observed that the same gang of workmen were in the tank as at the time of the first fault. Mr. Canning sent for the men, and
[pg 105] showing them the cable and the wire, asked for an explanation. All replied that it must have been done intentionally, and regretted that there was a traitor among them—the unknown traitor, of course, being one of those who thus expressed their sorrow. It seemed difficult to believe that any person could be base enough to plot in this stealthy way against the success of a beneficent enterprise, but such a thing had been done before in a cable in the North Sea, when the perpetrator of the crime was discovered and punished. In the present case there were not wanting motives to prompt the commission of such an act. The fall in the stock, we are told, on the London Exchange, caused by a loss of the cable, could hardly be less than half a million sterling. It was, however, found impossible to fix the deed on any one, for nothing was proved; and the instigator and the perpetrator both remaining unknown, of course a painful feeling of suspicion was left in the minds of Mr. Field and his colleagues. They saw that they must be on their guard; and it was agreed, therefore, that the gentlemen on board should take turn in keeping watch in the tank. The *Great Eastern* continued her voyage, and for three days, during which they accomplished 500 miles, no further trouble occurred. A few days later, however, a defect was found in the cable, and it became necessary to haul in a short portion of that last paid out. Unfortunately the machinery proved too weak for the purpose, and a breeze springing up, the cable chafed until it snapped right asunder. With one bound it flew through the stoppers, and plunged into the sea. “The shock of the instant,” Dr. Russell tells us, “was as sharp as the snapping of the cable itself,” so great was the disappointment felt on board.

The apparently wild attempt was immediately made to *recover* the cable. It was settled that the *Great Eastern* should steam to windward, and eastward of the position she occupied when the cable went down, lower a grapnel, and slowly drift across the track in which the lost treasure was supposed to be lying. So the leviathan ship stood away some thirteen or fourteen miles, and then lay-to in smooth water. The grapnel consisted of two five-armed anchors, of several hundredweight, one of which was shackled and secured to wire rope, of which there were five miles on board, and committed to the deep. “Away slipped the rope, yard after yard, fathom after fathom; ocean, like the horse-leech’s daughter still crying for ‘more’ and ‘more,’ still descending into the black waste of waters. One thousand fathoms—still more! One thousand five hundred fathoms—still more! Two thousand fathoms—more, still more! Two thousand five hundred fathoms (15,000 feet)—aye, that will do; the grapnel has reached the bed of the Atlantic; the search has commenced.” Next morning these efforts bore fruit, for the great sea-serpentine cable was caught, and raised seven hundred fathoms (4,200 feet), towards the surface, unhappily to again fall to the bottom. A second attempt resulted in raising it a mile and a half, when a swivel gave way, and it again sank to the bottom. These experiments had used up a considerable quantity of the wire rope, and every expedient had to be adopted to patch up and strengthen the

fishing apparatus, which gave full employment to the mechanics on board. Great forge-fires were made on deck, which at night illumined the ocean for a distance round, and helped to make a striking and effective scene. A third and fourth attempt was made to raise the cable; but in spite of the indomitable perseverance of Field and his associates, without success, and the bows of the great ship were sorrowfully directed towards home.

[pg 106] In spite of these failures no abatement of public confidence in the eventual success of the enterprise was shown on the return of the expedition to England. Nearly a quarter of a million pounds sterling was subscribed *privately* towards the next attempt, and when the subscription books were thrown open to the public, the whole capital required was furnished in a fortnight. Some minor improvements were introduced in the successful 1866 cable; among other points, it was galvanised.

When the day arrived for the final great effort, the undertaking was inaugurated solemnly by special prayer and supplication. Dr. Field says of that moment:—

"Was there ever a fitter place or a fitter hour for prayer than here, in the presence of the great sea to which they were about to commit their lives and their precious trust? The first expedition ever sent forth had been consecrated by prayer. On that very spot, nine years before, all heads were uncovered and all forms bent low at the solemn words of supplication; and there had the Earl of Carlisle—since gone to his honoured grave—cheered them on with high religious hopes, describing the ships which were sent forth on such a mission as 'beautiful upon the waters as were the feet upon the mountains of them that publish the gospel of peace.'

"Full of such a spirit, officers and directors assembled at Valentia on the day before the expedition sailed, and held a religious service. It was a scene long to be remembered. There were men of the closet and men of the field, men of science and men of action, men pale with study and men bronzed by sun and storm. All was hushed and still. Not a single gun broke the deep silence of the hour, as, with humble hearts, they bowed together before the God and Father of all. They were about to 'go down to the sea in ships,' and they felt their dependence on a higher Power. Their preparations were complete. All that man could do was done. They had exhausted every resource of science and skill. The issue now remained with Him who controls the winds and waves. Therefore was it most fit that before embarking they should thus commit themselves to Him who alone spreadeth out the heavens and ruleth the raging sea.

"In all this there is something of antique stamp, something which makes us think of the sublime men of an earlier and better time: of the Pilgrim Fathers kneeling on the deck of their little ship at Leyden, as they were about to seek a refuge and a home in the forests of the New World, and of Columbus and his companions celebrating a solemn service before their departure from Spain. And so with labour and with prayer was this great expedition prepared to sail once more from the shores of Ireland, bearing the hopes of science and of civilisation, with courage and skill looking out from the bows of the ship across the stormy waters, and a religious faith, like that of Columbus, standing at the helm.

"On Friday the 13th of July, 1866, the fleet finally bade adieu to the land. Was Friday an unlucky day? Some of the sailors thought so, and would have been glad to leave a day before or after. But Columbus sailed on Friday, and discovered the New World on Friday; and so this expedition put to sea on Friday, and, as a good Providence would have it, reached land on the other side of the Atlantic on the same day of the week! As the ships disappeared below the horizon, Mr. Glass and Mr. Varley went up on their watch-tower, not to look, but to listen for the first voice from the sea.

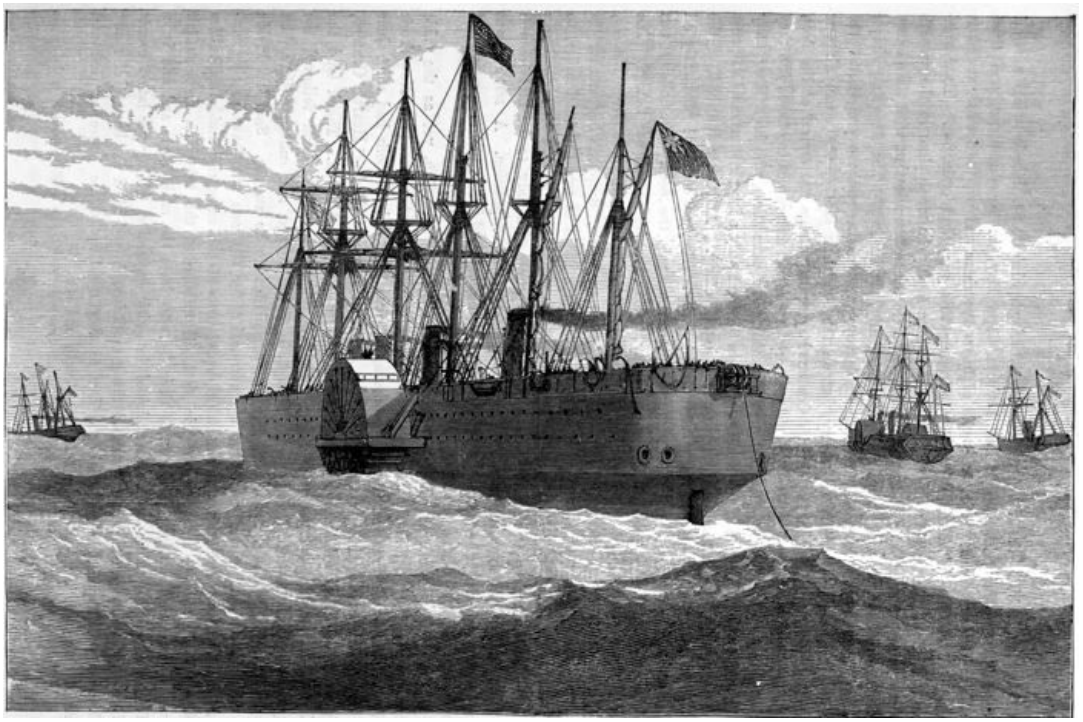
[pg 107] The ships bore away for the buoy where lay the end of the shore line, but the weather was thick and foggy, with frequent bursts of rain, and they could not see far on the water. For an hour or two the ships went sailing round and round, like sea-gulls in search of prey. At length the *Medway* caught sight of the buoy tossing on the waves, and firing a signal gun, bore down straight upon it. The cable was soon hauled up from its bed, 100 fathoms deep, and lashed to the stern of the *Great Eastern*; and the watchers on shore, who had been waiting with some impatience, saw the first flash, and Varley read, 'Got the shore-end all right; going to make the splice.' Then all was still, and they knew that that delicate operation was going on. Quick, nimble hands tore off the covering from a foot of the shore-end and of the main cable till they came to the core, then swiftly unwinding the copper wires they laid them together as closely and carefully as a silken braid. Then this delicate child of the sea was wrapped in swaddling clothes, covered up with many coatings of gutta-percha and hempen rope and strong iron wires, the whole bound round and round with heavy bands, and the splicing was complete. Signals are now sent through the whole cable on board the *Great Eastern* and back to the telegraph house at Valentia, and the whole length, 2,440 nautical miles, is reported perfect, and so with light hearts they bear away. It is nearly three o'clock. As they turn to the west, the following is the 'order of battle': the *Terrible* goes ahead, standing off on the starboard bow, the *Medway* is on the port, and the *Albany* on the starboard quarter. From that hour the voyage was a steady progress. Indeed, it was almost monotonous from its uninterrupted success. The weather was variable, alternating with sunshine and rain, fogs and squalls; but there was no heavy sea to interrupt their course, and the distance run was about the same from day to day, as the following table will show:—

	Distance Run. Miles.	Cable Paid Out. Miles.
Saturday, 14th	108	116
Sunday, 15th	128	139

Monday, 16th	115	137
Tuesday, 17th	117	138
Wednesday, 18th	104	125
Thursday, 19th	112	129
Friday, 20th	117	127
Saturday, 21st	121	136
Sunday, 22nd	123	133
Monday, 23rd	121	138
Tuesday, 24th	120	135
Wednesday, 25th	119	130
Thursday, 26th	128	134
Friday, 27th	100	104.”

This table shows the speed of the ship to have been exactly according to the “running time” fixed before she left England. On the last voyage it was thought that she had once or twice run too fast, and thus exposed the cable to danger. It was therefore decided to go slowly but surely. Holding her back to this moderate pace, her average speed from the time the splice was made until they saw land was a little less than five nautical miles an hour, while the cable was paid out at an average of not quite five and half miles. Thus the total slack was about eleven per cent., showing that the cable was laid almost in a straight line, allowing for the swells and hollows at the bottom of the sea. “Friday, July 27.—Shortly after 2 p.m. yesterday two ships, which were soon made out to be steamers, were seen to the westward; and the *Terrible*, steaming on ahead, in about an hour signalled to us that H.M.S. *Niger* was one of them, accompanied by the *Albany*. The *Niger*, Captain Bunce, sent aboard to the *Terrible* as soon as he came up with her. The *Albany* shortly
[pg 108] afterwards took up her position on our starboard quarter, and signalled that she spoke the *Niger* at noon, bearing E. by N., and that the *Lily* was anchored at the station in the entrance of Trinity Bay, as arranged with the Admiral. The *Albany* also reported that she had passed an iceberg about sixty feet high. At twenty minutes after 4 p.m. the *Niger* came on our port side, quite close, and Captain Bunce, sending the crew into the rigging and manning the yards, gave us three cheers, which were heartily returned by the *Great Eastern*. She then steamed ahead towards Trinity Bay. The *Albany* was signalled to go on immediately to Heart’s Content, clear the N.E. side of the harbour of shipping, and place a boat with a red flag for Captain Anderson to steer to for anchorage. Just before dinner we saw on the southern horizon, distant about ten miles, an iceberg, probably the one that the *Albany* had met with. It was apparently about fifty or sixty feet in height. The fog came on very thickly about 8 p.m., and between that and 10 we were constantly exchanging guns and burning blue lights with the *Terrible*, which, with the *Niger*, went in search of the *Lily* station-ship. The *Terrible* being signalled to come up and take her position, informed us that they had made the *Lily* out, and that she bore then about ENE., distant about four miles. Later in the night Captain Commerell said that if Captain Anderson would stop the *Great Eastern* he would send the surveyor, Mr. Robinson, R.N., who came up in the *Niger*, aboard of us; and about 3 the engines were slowed, and the *Terrible* shortly afterwards came alongside with that officer. Catalina Light, at the entrance of Trinity Bay, had been made out three hours before this, and the loom of the coast had also been seen. Fog still prevailing! According to Mr. Robinson’s account, if they had got one clear day in seven at the entrance of Trinity Bay they considered themselves fortunate. Here we are now (6 a.m.) within ten miles of Heart’s Content, and we can scarcely see more than a ship’s length. The *Niger*, however, is ahead, and her repeated guns tell us where we are with accuracy. Good fortune follows us, and scarcely has 8 o’clock arrived, when the massive curtain of fog raises itself gradually from both sides of Trinity Bay, disclosing to us the entrance of Heart’s Content, the *Albany* making for the harbour, the *Margaretta Stevenson*, surveying vessel, steaming out to meet us, the pre-arranged pathway all marked with buoys by Mr. T. H. Kerr, R.N., and a whole fleet of fishing boats fishing at the entrance. We could now plainly see that Heart’s Content, so far as its capabilities permitted, was prepared to welcome us. The British and American flags floated from the church and telegraph station and other buildings. We had dressed ship, fired a salute, and given three cheers, and Captain Commerell, of H.M.S. *Terrible*, was soon on board to congratulate us on our success. At 9 o’clock, ship’s time, just as we had cut the cable and made arrangements for the *Medway* to lay the shore end, a message arrived, giving us the concluding words of a leader in this morning’s *Times*: ‘It is a great work, a glory to our age and nation, and the men who have achieved it deserve to be honoured amongst the benefactors of their race.’ ‘Treaty of peace signed between Prussia and Austria!’ It was now time for the chief engineer, Mr. Canning, to make preparations for splicing on board the *Medway*. Accompanied by Mr. Good, M.P., Mr. Clifford, Mr. Willoughby Smith, and Messrs. Temple and Deane, he went on board; the *Terrible* and *Niger* having sent their paddle-box boats to assist. Shortly afterwards the *Great Eastern* steamed into the harbour and anchored on the NE. side, and was quickly surrounded by boats
[pg 110] laden with visitors. Mr. Cyrus Field had gone on shore before the *Great Eastern* had left the offing, with a view of telegraphing to St. John’s to hire a vessel to repair the cable unhappily broken between Cape Ray, in Newfoundland, and Cape North, in Breton Island. Before a couple of hours the shore end will be landed, and it is impossible to conceive a finer day for effecting this our final operation. To-morrow Heart’s Content will awaken to the fact that it is a highly-favoured place in the world’s esteem, the western landing-place of that marvel of electric communication with the eastern hemisphere which is now happily, and we hope finally, established.” The foregoing simple record tells the great story of this memorable voyage. In England the progress of the expedition was known from day to day, but on the American side of the ocean all was uncertainty. Some had gone to Heart’s Content hoping to witness the arrival of the fleet, but not so many as the year before, for the memory of the last failure was too fresh, and

they feared another disappointment. But still a faithful few were there who kept their daily watch. The correspondents of the American papers reported only a long and anxious suspense till that morning when the first ship was seen in the offing. And now the hull of the *Great Eastern* looms up all glorious in that morning sky. They are coming! Instantly all was wild excitement on shore. Boats put off to row towards the fleet. The *Albany* was the first to round the point and enter the bay. The *Terrible* came close behind. The *Medway* stopped an hour or two to join on the heavy shore end, while the *Great Eastern*, gliding calmly in as if she had done nothing remarkable, dropped her anchor in front of the telegraph house, having trailed behind her a chain of two thousand miles, to bind the Old World to the New. That same afternoon, as soon as the shore end was landed, Captain Anderson and the officers of the fleet went in a body to the little church of Heart's Content to render thanks for the success of the expedition. A sermon was preached on the text, "There shall be no more sea," and all joined in the sublime prayers and thanksgivings of the Church of England. Thus the voyage ended as it began.



THE "GREAT EASTERN" LAYING THE ATLANTIC CABLE.
(*From Cassell's "Illustrated History of England."*)

Although the expedition reached Newfoundland on Friday the 27th, yet as the cable across the Gulf of St. Lawrence was broken, the news was not received in New York until the 29th. It was early Sunday morning, before the Sabbath bells had rung their call to prayer, that the tidings came. The first announcement was brief—"Heart's Content, July 27th.—We arrived here at nine o'clock this morning. All well. Thank God the cable is laid, and is in perfect working order.—Cyrus W. Field." Soon followed the despatch to the Associated Press, giving the details of the voyage, and ending with a just tribute to the skill and devotion of all who had contributed to its success. Said Mr. Field: "I cannot find words suitable to convey my admiration for the men who have so ably conducted the nautical, engineering, and electrical departments of this enterprise, amidst difficulties which must be seen to be appreciated; in fact, all on board of the telegraph fleet, and all connected with the enterprise, have done their best to have the cable made and laid in a perfect condition." Other despatches followed in quick succession, giving the latest events of the war in Europe. All this confirmed the great triumph, and filled the breasts of many with wonder and gratitude that Sabbath day as they went up to the house of God and rendered thanks to Him who is Lord of the earth and sea.

[pg 111]

CHAPTER X.

The Ocean and its Living Wonders.

Perfection in Nature's Smallest Works—A Word on Scientific Classification—Protozoa—Blind Life—Rhizopoda—Foraminifera—A Robbery Traced by Science—Microscopic Workers—Paris Chalk—Infusoria—The "Sixth Sense of Man"—Fathers of Nations—Milne-Edwards' Submarine Explorations—The Salt-water Aquarium—The Compensating Balance Required—Brighton and

Pliny says that "Nature is nowhere more perfect than in her smaller works." How gradually, yet beautifully, do the lower forms of life ascend to the higher! Here we may well remember the following: Scientific naturalists, men of logical minds arranging the facts of Nature with methodical and almost mathematical precision, have distributed the forms of animal life into divisions, classes, orders, families, genera, and species. These divisions, however convenient, are, it must be noted, merely of human invention, subject to alteration as knowledge increases—subject even to positive mistake. Linnæus tells us that *Natura non facit saltus*—Nature does not jump or leap from one stage to another, but passes almost insensibly, life merging into other life.

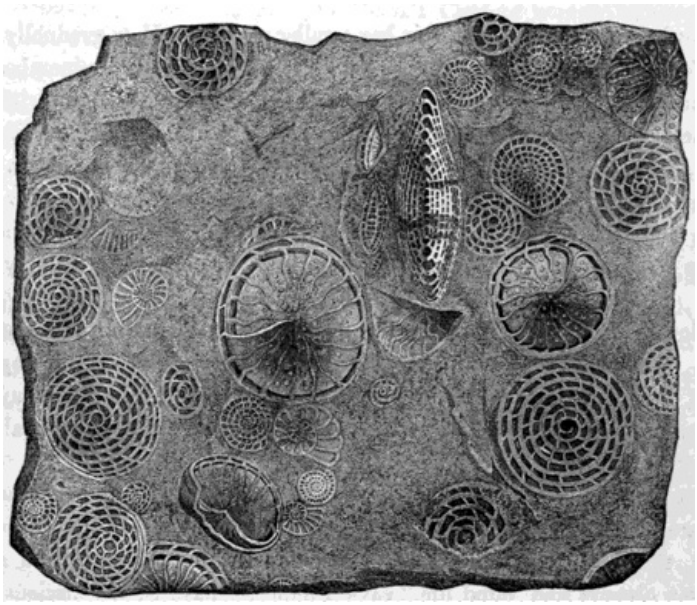
A word commonly employed in connection with the lower forms of marine life also requires some passing notice. The term *zoophyte*, derived from two Greek words signifying respectively *animal* and *plant*, would seem appropriate enough in describing generally many of the organisms found in the great deep. But the term as now used signifies an animal, and nothing but one, however plant-like it may appear.

The simplest forms of marine animal life are found in the extensive group known as the Protozoa. Varied as they are, they may be generally described as devoid of articulate skeleton, or nervous system; they are animals, a large part of them microscopic, with a vegetative existence. "In their obscure and blind life," says Figuier, "have they consciousness or instinct? Do they know what takes place at the three-thousandth part of an inch from their microscopic bodies? To the Creator alone does the knowledge of this mystery belong."

The limits of this work preclude the possibility of details. To the division Protozoa belong the sponges, already described, the Rhizopods (*Rhizopoda*), *root-footed* animals, and the *Infusoria*, animalcules so small that a drop of water may contain millions.

The Rhizopods are found both in fresh and salt water, but the marine forms are by far the more numerous. They are simply minute lumps of diaphanous jelly, the quantity of matter in them being so infinitesimal, and their transparency so great, that the eye, assisted by the powers of the microscope, can only take cognisance of them by the most careful arrangement of light. But for all that, they are known to have feet or feelers, to have digestive apparatus—some of them being, for their size, quite voracious feeders—which may be seen stuffed with microscopic *algæ*, or sea-weeds. It is believed that they are multiplied by parting with portions of their bodies, which become separate beings.

[pg 112] The *Reticulosa*, or *Foraminifera*, form an order of this group. They are small calcareous shells, as a rule, nearly invisible to the naked eye, and enclosing, or once having enclosed, a living organism. The sand of the sea-shore is often one-half composed of them. M. d'Orbigny found in three grammes (forty-six grains troy) of sand from the Antilles no less than 440,000 of these minute shells. Ehrenberg, the German microscopist, was once invited by the Prussian Government to assist in tracing the robbery of a special case of wine. It had been packed in sand only found in an ancient sea-board of Germany, and from this fact and knowledge of locality the thief was detected. The *Foraminifera*, small as they are, have helped to form enormous deposits, obstruct navigation in gulfs and straits, and fill up ports, as may be seen at Alexandria. In various geological strata they are found; they exist in immense quantities in the chalk cliffs of this country. In the Paris chalk their remains are so abundant that a block of little more than a cubic yard has been computed to contain *three thousand millions*! "As," says Figuier, "the chalk from these quarries has served to build Paris, as well as the towns and villages of the surrounding departments, it may be said that Paris, and other great centres of population which adjoin it, are built with the shells of these microscopic animals."



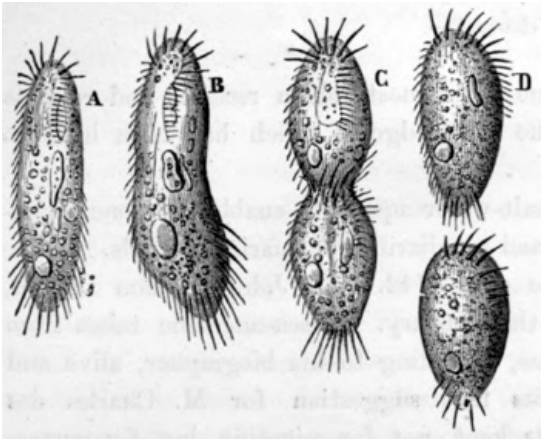
FORAMINIFERA IN A PIECE OF ROCK.

The *Infusoria* almost baffle the attempts of naturalists to classify them, while their very existence would have escaped us but for the discovery of the microscope, “the sixth sense of man,” as Michelet happily termed it. In the tropics, water collected at a great depth was found to contain 116 species; in the Antarctic regions the very ice was found to contain nearly fifty different species. The very largest kinds can hardly be seen by the naked eye. They are generally nearly colourless, but some of them are nevertheless green, blue, red, brown, and even blackish. Some of those most commonly noted, on account of their superior size, are furnished with hairy *cilia*, which act as paddles, while certain of them appear to be employed in conveying food to the mouth.

INHABITANTS OF THE BRITISH SEAS.

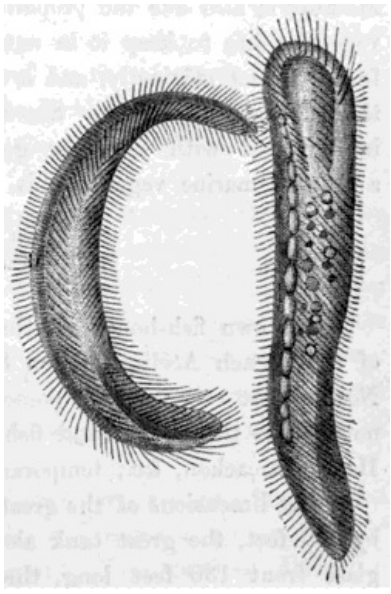
1. Pilot fish,
2. Piper,
3. Eagle Ray,
4. Oysters,
5. Spotted Ray,
6. Star fish,
7. Hermit Crab,
8. Common shore Crab,
9. Common Lobster,
10. Sea Anemones (various)
11. Corals,
12. Conger Eel,
13. Octopus,
14. Sea weeds.

The *Infusoria* reproduce their species in several ways: by a kind of budding, like plants, by sexual reproduction, and by fission—*i.e.*, the spontaneous division of the animal into two parts. “By this mode of propagation,” says Dujardin, “an Infusorian is the half of the one which preceded it, the fourth of the parent of that, the eighth of its grandparent, and so on.” The process is represented
[pg 113] in the accompanying figures, A and B being the adult, C the same in course of separation, and D after completion. “This mode of generation, however,” says Figuier, “enables us to comprehend the almost miraculous multiplication of these beings. The amount defies calculation, if we wished to be at all precise. We may, however, arrive at a proximate estimate of the number which may be derived from a single individual by this process of fission. It has been found that at the end of a month two *Stylonichiæ* would have a progeny of more than 1,048,000 individuals, and that in a lapse of forty-two days a single *Paramecium* could produce much more than 1,364,000 forms like itself.” In a year it would have the proud satisfaction of being the father of an Infusorian nation!



PROPAGATION OF AN INFUSORIAN BY SPONTANEOUS DIVISION.

Many of the *Infusoria* are subject to metamorphoses, while others can remain long periods, and in a dried and torpid state, and then awake to action. One of the largest of these curious organisms, which sometimes actually attains to the size of the twelfth of an inch, is the *Kondylostoma patens*, remarkable for its voracity. It lives upon sea-weed, and is common to every shore, from the Mediterranean to the Baltic.



KONDYLOSTOMA PATENS (MAGNIFIED 300 TIMES).

The inhabitants of the sea are, there can be no doubt, much more numerous than those of the earth. Charles Darwin has remarked that our terrestrial forests do not maintain nearly so many living beings as do marine forests in the very bosom of the ocean. Its surface and its depths, its plains and its mountains, its valleys and precipices, teem with organisms, the like of which have no counterpart on the land, and which are only partly understood to-day, although the invention and adoption of the aquarium have greatly facilitated the study of them.

Many years ago Dr. Milne-Edwards, in a voyage round the coast of Sicily, employed a diver's apparatus to enable him to descend and examine the bottom of the sea. It included a metallic casque and helmet, with visor or window of glass fitting closely by means of water-tight packing round the neck. It communicated with an air-pump above by a flexible tube; the diver had a rope attached by which he could be hoisted immediately, and a signal cord to give alarm in case of need; he wore heavy lead shoes, which gave him steadiness and enabled him to maintain his upright position in the water. Milne-Edwards made the descent in several fathoms of water, and with perfect safety. Ariel's song had not to be applied to him:—

[pg 114]

"Full fathoms five thy father lies;
Of his bones are coral made;
Those are pearls that were his eyes.
Nothing of him that doth fade
But doth suffer a sea change"—

for he was enabled safely and successfully to examine in the most hidden recesses and retreats of the rocks and sea many wonderful creatures, the knowledge of which had been hitherto hidden from the scientific world.

The invention, or introduction rather, of the salt-water aquarium enables any one nowadays to study in comfort and at leisure the habits and peculiarities of marine animals. There is a drawing extant of an aquarium bearing the date 1742. Sir John Graham Dalyell, a well-known author, had a modest one early in this century. A sea-anemone taken from the sea in 1828, and placed in this glass tank, was, according to his biographer, alive and well in 1873; so that M. Figuier in claiming its first suggestion for M. Charles des Moulins is wrong. The fact is that the ancients kept, not for scientific, but for gastronomic purposes, fish and molluscs in tanks, and fed and studied their habits and needs in order to fit them for the table. These were practical aquaria.

M. des Moulins, however, and, in our own country, Gosse and Warington, deserve full credit for advocating the establishment of these beautiful sources of rational pleasure and improvement, and for showing how they might best be kept in working order. To Des Moulins is also due the proposition that the animal life therein required the presence of vegetable life to keep it in natural condition. In the fresh-water aquarium duckweed was found to act efficiently, and a similar idea is now adopted in regard to marine plants in the salt-water aquarium. Sea-weeds do not usually bear transplanting, but sea water is so impregnated with seeds or germs, that by placing a few stones or rocks in the tank a crop of marine vegetation is ensured.

"On shell or stone is dropped the embryo seed,
And quickly vegetates a vital breed."

Our own fish-houses at the Zoological Gardens were first opened in 1853, while those of the French Acclimatisation Society in the Bois de Boulogne were inaugurated in 1861. Now almost every capital possesses one on a grand scale. That at Naples is especially noted. At the Continental fishery exhibitions, held at Amsterdam, The Hague, Boulogne, Havre, Arcachon, &c., temporary aquaria always form part of the attractions.

The dimensions of the great aquarium at Brighton are as follows: Its area is 716 feet by 100 feet, the great tank alone containing 110,000 gallons of water, and having a plate glass front 130 feet long, through which the habits of very large fish may be studied. The rock-work of the tanks is artificial, and admirably adapted to give shelter to the fish and crustaceans which disport in them. The management of a large aquarium involves constant care, and it is quite possible to kill its inhabitants by too frequently changing the water—by over-kindness, in fact.

[pg 115]

The aquaria at Brighton and the Crystal Palace are very differently constructed and managed. At the former there is no actual circulation of water from one tank to another, but it can, if necessary, be renewed from the sea; the mass of the water in the reserve tanks is small as compared with that in the show tanks, and aëration is effected by pumping air into the tanks through tubes of large diameter. At the Crystal Palace aquarium a constant circulation is maintained from one tank to another; the bulk of water in the reservoir is five times as much as that in the show tanks, while aëration is accomplished by carrying a main over their entire length, from which, under pressure, a small stream of water pours from a tap into each, breaking the surface of the water, and carrying down to the bottom of the tanks and distributing over the body of their contents myriads of minute bubbles of air, which present an enormous oxydising surface to the water, rendering it bright and sparkling. It does not answer to change the water too constantly, while some obnoxious specimens, like the flat-fish, foul it greatly, the remedy for which is found in putting animals in who in the economy of Nature act as scavengers. Various

small animals have to be supplied as food for the larger ones. “As the animal life and vegetable life mutually support each other, the kind of material necessary for maintaining the ‘compensating system’ must be watchfully supplied. Mr. W. R. Hughes, of Birmingham, recommends the growth of sea lettuce (*Alva latissima*) in tanks, as suitable both for oxygenating the water and for food for the fishes; the stock plants being introduced in the autumn months, when they are loaded with spores.” The writer of the article in the “Encyclopædia Britannica,” from which most of the above is taken, ventures to hope that the aquarium may become useful in a practical sense, and may determine many questions in regard to fish life and growth concerning which we are ignorant to-day. “It would,” says he, “tend to the better regulation of our fisheries and to the augmentation of our food supplies, if we knew as much about the herring or the haddock as we do about the salmon.” It is well known that fish, valuable as food, are too often captured at improper seasons and in a wasteful manner.

Passing on to higher forms of animal life, the polyps and acalephæ of the older authors, now classified as the *Cœlenterata*, we find creatures of a superior organisation to those lately under notice. Regarded generally, their bodies are soft and gelatinous, they possess alimentary canals and digestive apparatus, and in nearly all cases the sexes are separate, generation being sometimes sexual and sometimes by gemmation or budding. This brief introduction to the subject must be taken only in a general, not a special sense, for there are numerous exceptions to be found among the animals classified as Cœlenterata.

“The sub-kingdom Cœlenterata naturally divides itself into two groups—that of the *Hydrozoa*, and that of the *Actinozoa*. The fresh-water hydra will serve as an example of the first, and the common sea-anemone of the second group. The essential difference between the two is, that in the former the stomachal cavity is not separated from the general cavity of the body, and the reproductive buds are external; while in the latter the stomachal cavity is let down, as it were, as a partially-closed sac, into the general cavity of the body, and the reproductive buds make their appearance between the walls of the general cavity of the alimentary or stomachal sac, and consequently internally. But in both there is a free communication between these two cavities—a communication obvious in the Hydrozoa, and which may be often verified in the case of the sea-
[pg 116] anemones, by the young anemones making their appearance at the mouth of the parent anemone, having just escaped from the general cavity out into the alimentary cavity of its body.”

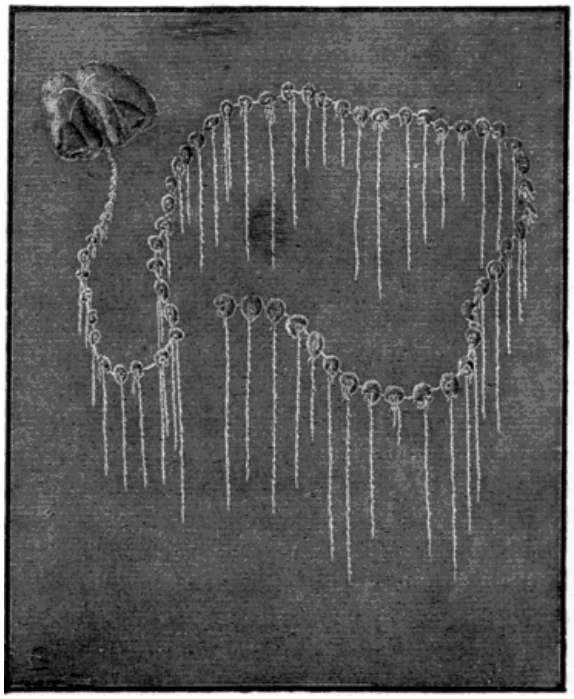
MEDUSÆ.

The class Hydrozoa includes seven orders, first and principally of which let us speak of the Medusæ, of which the ordinary “jelly-fish” is a familiar example. This great order (*Medusidæ*) is characterised by having a disc, more or less convex above, resembling a mushroom or expanded umbrella, the edges of the umbrella, as well as the mouth and suckers, commonly having tentacula, or feelers, and cilia. Taken from the sea, a Medusa weighing fifty ounces will rapidly dissolve away to a few grains of solid matter. These floating umbrellas or mushrooms, as they

might be termed, are of many forms, but they are all to be counted among the most beautiful works of the Creator. Sometimes the animal is transparent as crystal, sometimes opaline, now of a delicate rose or azure-blue colour, now yellow, now violet, and now, again, reflecting the
[pg 117] prismatic colours. “The Medusæ are animals without much consistence, containing much water, so that we can scarcely comprehend how they resist the agitation of the waves and the force of the currents; the waves, however, float without hurting them, the tempest scatters without killing them. When the sea retires, or they are withdrawn from their native waters, their substance dissolves, the animal is decomposed, they are reduced to nothing; if the sun is strong this disorganisation occurs in the twinkling of an eye, so to speak.” If they are touched ever so lightly while swimming, they contract their tentacula, fold up their umbrella, and sink into the depths of the sea. At one period of the year the Medusæ are charged with numbers of minute eggs, which are suspended in festoons—crystalline roes they might be termed—from their bodies, and which in due time become living organisms.

After all, it is to the poets we must go if we would describe the beauties of Nature aright. Michelet, speaking of the Medusa, says:—“Why was this name, of terrible associations, given to a creature so charming? Often have I had my attention arrested by these castaways, which we see so often on the shore. They are small, about the size of my hand, but singularly pretty, of soft light shades, of an opal-white, where it lost itself as in a cloud of tentacles; a crown of tender lilies—the wind had overturned it; its crown of lilac hair floated about, and the delicate umbel, that is, its body proper, was beneath; it had touched the rock—dashed against it; it was wounded, torn in its fine locks, which are also its organs of respiration, absorption, and even of love.... The delicious creature, with its visible innocence and the iridescence of its soft colours, was left like a gliding, trembling jelly. I paused beside it, nevertheless; I glided my hand under it, raised the motionless body cautiously, and restored it to its natural position for swimming. Patting it in the neighbouring water, it sank to the bottom, giving no sign of life. I pursued my walk along the shore, but at the end of ten minutes I returned to my Medusa. It was undulating under the wind; it had really moved itself, and was swimming about with singular grace, its hair flying round it as it swam; gently it retired from the rock, not quickly, but still it went, and I soon saw it a long way off.”

The Medusæ are found in all seas, and usually inhabit the depths, although often seen on the
[pg 118] surface. They voyage usually in considerable battalions, and sometimes cover miles and miles of sea. They constitute one of the principal supports of the whale. They are themselves singularly voracious, and snap up their prey—small molluscs, young crustaceans, and annilids—at a mouthful. Their mouths are in the centre of the lower side of the umbrella. They vary from a very small size to as much as a yard in diameter, while to describe the known varieties would occupy the remainder of this volume, so numerous are they. It has been ascertained that these jelly-like creatures breathe through the skin, have a distinct circulation and some nervous sensations. Most of them produce a stinging pain when they touch the human body, and until lately they were, adopting Cuvier’s classification, designated *Acalephæ*, or “sea-nettles,” in consequence.



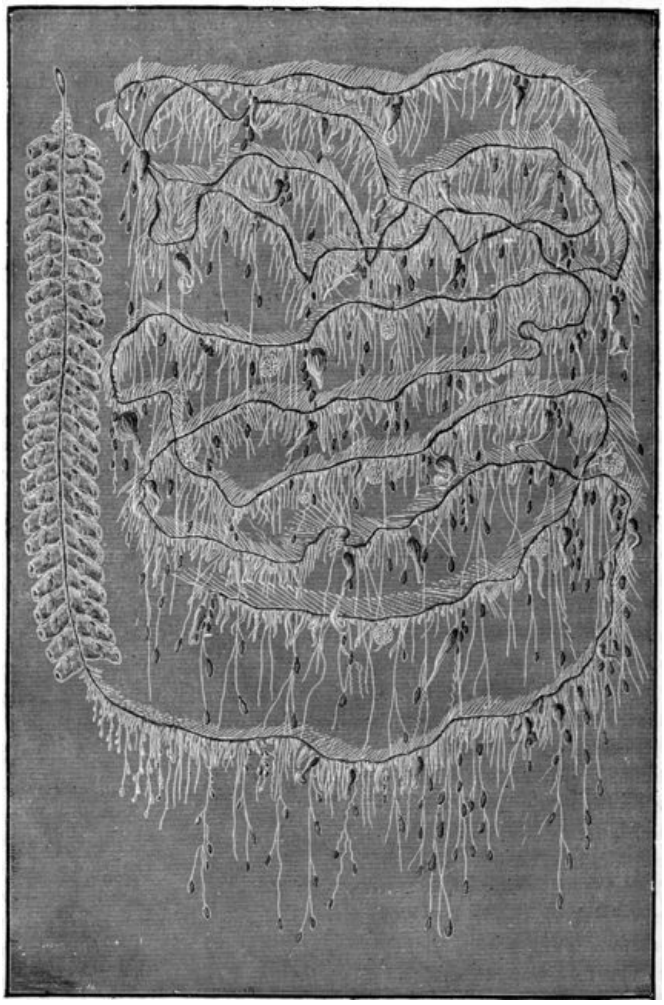
PRAYA DIPHYES.

Nearly all the other Hydrozoa are marine productions, and comprise among them numerous beautiful forms. Take, for example, the polyp known as *Praya diphyes*, a double, bell-shaped body, with a long tail, as it were, of feelers, a floating fishing-line; or, another delicate organisation of the same family, *Galeolaria aurantiaca*, the orange galeolaria. Here are *two* floating bladders with a connecting *chain of polyps*; the floats aiding to support, as it were, a

whole colony! But the large order *Physophoridæ* deserves more than a mere passing notice, on account of the graceful forms of delicate tissue and colour which are included under it.

These inhabitants of the sea are essentially swimmers, having mostly true swimming bladders, more or less numerous and of varied form; they always float on the surface. M. de Quatrefages, the distinguished French naturalist, describing one of these organisms, *Apolemia contorta*, tells the reader "to figure to himself an axis of flexible crystals, sometimes more than a mètre (forty inches) in length, all round which are attached, by means of long peduncles or footstalks equally transparent, some hundreds of bodies, sometimes elongated, sometimes flat, and formed like the bud of a flower. If we add to this garland of pearls of a vivid red colour and infinity of fine filaments, varying in thickness, and giving life and motion to all these parts, we have even now only a very slight and imperfect idea of this marvellous organism."

The *Agalma rubra* is thus described by Vogt, a great authority. "I know," says he, "nothing more graceful than this agalma, as it floats near the surface of the waters, its long, transparent, garland-like lines extended, and their limits distinctly indicated by bundles of a brilliant vermilion red, while the rest of the body is concealed by its very transparency; the entire organism always swims in a slightly oblique position near the surface, but is capable of steering itself in any direction with great rapidity. I have had in my possession some of these garlands more than three feet in length, in which the series of swimming-bladders measured more than four inches, so that in the great vase in which I kept them the column of swimming-bladders touched the bottom, while the aërial vesicle floated on the surface. Immediately after its capture the columns contracted themselves to such a point that they were scarcely perceptible, but when left to repose in a spacious vase, all its shrunken appendages deployed themselves round the vase in the most graceful manner imaginable, the column of swimming-bladders removing, immovable in their vertical position, the float at the surface, while the different appendages soon began to play. The polyps, planted at intervals along the common trunk, of rose-colour, began to agitate
[pg 119] themselves in all directions, taking a thousand odd forms; ... but what most excited my curiosity was the continuous action of the fishing-lines, retiring altogether sometimes with the utmost precipitation. All who have witnessed these living colonies withdraw themselves reluctantly from the strange spectacle, where each polyp seems to play the part of the fisherman who throws his line, furnished with baited hooks, withdrawing it when he feels a nibble, and throwing again when he discovers his disappointment." The agalma is described as well armed; its tendrils have enormous stinging powers.



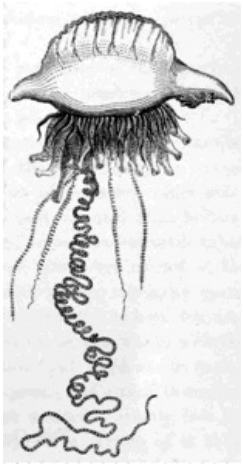
AGALMA RUBRA (THREE-FIFTHS NATURAL SIZE).

One family of the Physophoridæ includes the interesting creature known as the "Portuguese man-

of-war," from a slight resemblance to a small vessel with a sail up; it is also known among sailors as the sea-bladder. The bladder is eleven or twelve inches long, and from one to three broad. Its appearance is glassy and transparent, and of a purply tint. Above the bladder is a crest, limpid and pure as crystal, and veined in purple or violet; it is the crest which the sailors believe fulfils the office of a sail. "This bladder-like form, with its aërial crest, is only a hydrostatic apparatus, whose office is to lighten the animal and modify its specific gravity." From the bottom of the bladder a crowded mass of organs, most of which take the form of very slender, highly contractile, movable threads, depend; they are often several feet, and occasionally several yards, long. Their stinging powers are great; these elegant creatures are terrible antagonists. One French writer says that, "One day, when sailing at sea in a small boat, I perceived one of these little galleys, and was curious to see the form of the animal; but I had scarcely seized it when all its fibres seemed to clasp my hand, covering it as with bird-lime, and scarcely had I felt it in all its freshness (for it is very cold to the touch), when it seemed as if I had plunged my arm up to the shoulder in a cauldron of boiling water. This was accompanied with a pain so strange, that it was only with a violent effort I could restrain myself from crying aloud." Another traveller,[32] while bathing and swimming in the surf of the Antilles, was attacked by one. "I promptly detached it," says he, "but many of its filaments remained glued to my skin, and the pain I immediately experienced was so intense that I nearly fainted." In this case no very serious damage resulted, but during the voyage of the *Princess Louise* round the world a seaman was nearly killed by one. Frédol, the historian of the expedition, says that one of the officers noticed a magnificent Physalia, which was floating near the ship. "A young sailor leaped naked into the sea to seize the animal. Swimming towards it, he seized it; the creature surrounded the person of its assailant with its numerous thread-like filaments, which were nearly a yard in length; the young man, overwhelmed by a feeling of burning pain, cried out for assistance. He had scarcely strength to reach the vessel and get aboard again before the pain and inflammation were so violent that brain fever declared itself, and great fears were entertained for his life." It is a disputed point whether the Physalia is poisonous or not when eaten. It was a commonly-received idea in the Antilles that they are, and that the negroes sometimes made use of them, after being dried and powdered, to poison both men and animals. The fishermen there believe that fish which have eaten parts of the Physalia become unfit for human food. A French physician, M. Ricord-Madiana, settled in Guadaloupe, made many experiments to attempt the settlement of the
[pg 120] question. He found that ants and flies partook of them with impunity; a dog, a puppy, and a fowl, swallowed parts of them nearly with impunity, the first named only seeming to have severely felt the sting in his mouth, but recovering perfectly soon after. The ardent experimentalist next ate, and caused his servant to eat, the chicken which had fed on Physalia, and no inconvenience followed; subsequently he ate twenty-five grains of the dried and powdered animal in a little
[pg 121] bouillon, and he was unharmed. Yet there is some evidence on the other side which would indicate that on occasions, at least, it is poisonous.

The habits of the Physalia are only known in part, though they have been studied by many scientists. Among the many denizens of the ocean, "none," says Gosse,[33] "take a stronger hold on the fancy of the beholder; certainly none is more familiar than the little thing he daily marks floating in the sun-lit waves, as the ship glides swiftly by, which the sailor tells him is the 'Portuguese man-of-war.' Perhaps a dead calm has settled over the sea, and he leans over the bulwarks of the ship, scrutinising this ocean-rover at leisure, as it hastily rises and falls on the long, sluggish heavings of the glassy surface. Then he sees that the comparison of the stranger to a ship is a felicitous one, for at a little distance it might well be mistaken for a child's mimic boat, shining in all the gaudy painting in which it left the toy-shop.

"Not unfrequently one of these tiny vessels comes so close alongside that by means of the ship's bucket, with the assistance of a smart fellow who has jumped into the 'chains' with a boat-hook, it is captured and brought on deck for examination. A dozen voices are, however, lifted, warning you by no means to touch it, for well the experienced sailor knows its terrible powers of defence. It does not now appear so like a ship as when it was at a distance. It is an oblong bladder of tough membrane, varying considerably in shape, for no two agree in this respect; varying also in size, from less than an inch to the size of a man's hat. Once, on a voyage to Mobile, when rounding the Florida reef, I was nearly a whole day passing through a fleet of these little Portuguese men-of-war, which studded the smooth sea as far as the eye could reach, and must have extended for many miles." It is often to be seen on the coasts of Devon and Cornwall, brought thither by the Gulf Stream.



PHYSALIA ANTARCTICA.

The Physalia is the natural enemy of the cuttle-fish and the flying-fish. One an inch in length will numb and kill a fish larger than a herring. “Each tentacle, by a movement as rapid as a flash of light, or sudden as an electric shock, seizes and benumbs them, winding round their bodies as a serpent winds itself round its victim.” Mr. Bennet, who accompanied the expedition under Admiral Fitzroy as naturalist, describes them as seizing their prey by means of the tentacles, which are alternately contracted to half an inch, and then shot out with amazing velocity to several feet, dragging the helpless and entangled prey to the sucker-like mouth and stomach-like cavities among the tentacles. Others have observed bold little fish unharmed among the feelers, a proof that even a Physalia can be good-natured sometimes.

An attendant satellite of the Physalia is the Velella, a smaller animal of the same family, especially abundant in tropical seas, but often seen elsewhere. It also possesses stinging powers.

[pg 122] It is to the moderns we must look for anything like scientific study of these lower forms of Nature. The later poets, too, have caught the spirit of the age, and in some phases their utterances are artistically truer, and therefore truer to nature, than those of the merely *hard* scientists. Crabbe has beautifully described this boon of our age, the study of Nature aided by the light of science. It is nowadays the privilege as well as it is to the profit of any intelligent person —

> “The ocean’s produce to explore.
> As floating by, or rolling on the shore,
> Those living jellies which the flesh inflame,
> Fierce as a nettle, and from that their name:
> Some in huge masses, some that you may bring
> In the small compass of a lady’s ring;
> Figured by hand Divine—there’s not a gem
> Wrought by man’s art to be compared to them;
> Soft, brilliant, tender, through the wave they glow,
> And make the moonbeams brighter where they flow.
> Involved in sea-wrack, here you find a race
> Which science doubting, knows not where to place.
> On shell or stone is dropped the embryo seed,
> And quickly vegetates a vital breed;
> While thus with pleasing wonder you inspect
> Treasures the vulgar in their scorn reject.”

CHAPTER XI.

The Ocean and its Living Wonders (*continued*).

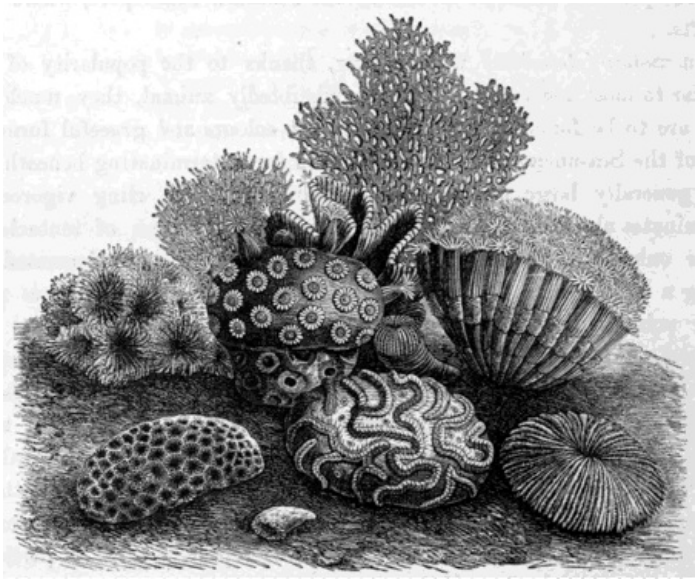
The Madrepores—Brain, Mushroom, and Plantain Coral—The Beautiful Sea-anemones; their Organisation and Habits; their Insatiable Voracity—The Gorgons—Echinodermata—The Star-fish—Sea Urchins—Wonderful Shell and Spines—An Urchin’s Prayer—The Sea Cucumber—The Trepang, or Holothuria—Trepang Fishing—Dumont d’Urville’s Description—The Commerce in this Edible—The Molluscs—The Teredo, or Ship-worm—Their Ravages on the Holland Coast—The Retiring Razor-fish—The Edible Mussel—History of their Cultivation in France—The Bouchots—Occasional Danger of Eating Mussels—The Prince of Bivalves—The Oyster and its Organisation—Difference in Size—American Oysters—High Priced in some Cities—Quantity

Consumed in London—Courteous Exchange—Roman Estimation of them—The “Breedy Creatures” brought from Britain—Vitellius and his Hundred Dozen—A Sell: Poor Tyacke—The First Man who Ate an Oyster—The Fisheries—Destructive Dredging—Lake Fusaro and the Oyster Parks—Scientific Cultivation in France—Success and Profits—The Whitstable and other Beds—System pursued.

Among the interesting and comparatively familiar forms of ocean’s treasures must be counted the Madrepores, often regarded as corals, but quite distinct as a scientific group from the precious coral of commerce. The Madreporidæ are very numerous, and are formed by colonies of polyps. The poet has truly described them:—

“I saw the living pile ascend
The mausoleum of its architects,
Still dying upward as their labour closed:
Slime the material, but the slime was turned
To adamant by their petrific touch.”

[pg 123] The polyps of the madrepores resemble flowers when their upper disc is expanded and their feelers are out in the water. When contracted, they are concealed from sight in the calcareous cells, which have grown with themselves, and form part of the madrepora. These beautiful and curious natural productions assume many distinct forms. Some of them are arborescent, as in *Stylaster flabelliformis*, which puts forth a perfect forest of trunks and branches. Others are star-like in shape; many are more or less cylindrical and oval, as in the well-known “Brain coral” (*Meandrina cerebriformis*). Another genus is entitled *Fungia*, from a supposed resemblance to the mushroom, there being this difference between terrestrial and marine mushrooms—that the former have leaflets below, and the latter have them above. One of the most pleasing forms is found in the Plantain Madrepore, where the polyps are arranged in tufts.



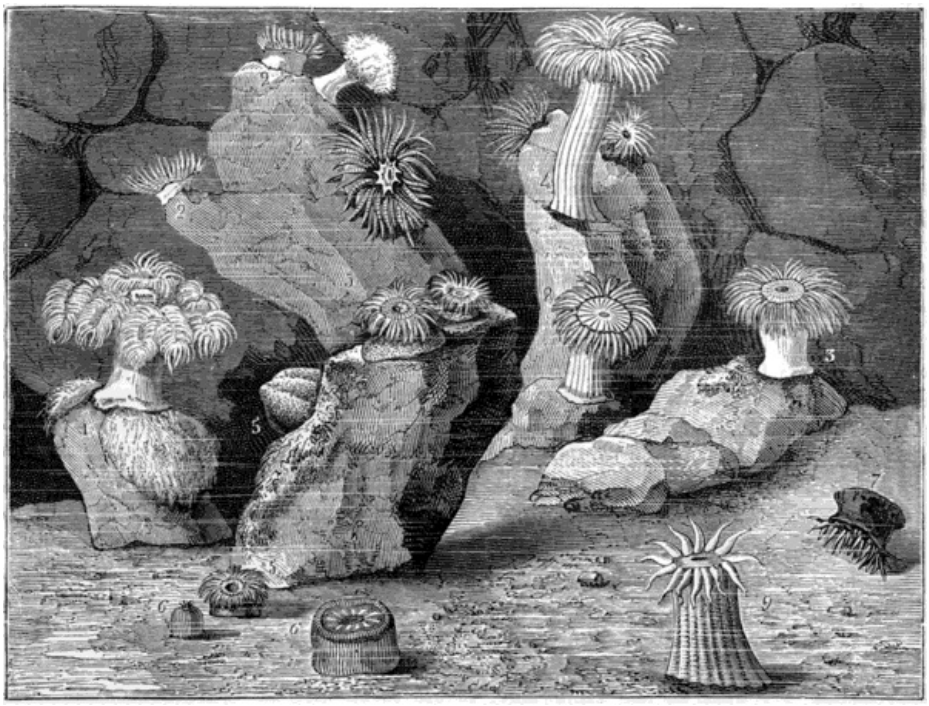
MADREPORES.

The Sea-anemones (*Actinidæ*) will be now, thanks to the popularity of the aquarium, tolerably familiar to most readers. Although undoubtedly animal, they much more resemble flowers. They are to be found of the most brilliant colours and graceful forms.

The body of the Sea-anemone is “cylindrical in form, terminating beneath in a muscular disc, which is generally large and distinct, enabling them to cling vigorously to foreign bodies. It terminates above in an upper disc, bearing many rows of tentacles, which differ from each other only in their size. These tentacles are sometimes decorated with brilliant colours, forming a species of collar, consisting of contractile and sometimes retractile tubes, pierced at their points with an orifice, whence issue jets of water, which are ejected at the will of the animal. Arranged in circles, they are distributed with perfect regularity round a central mouth. These are their arms.” The stomach of the sea-anemone is both the seat of digestion and of reproduction. The young are actually ejected from the mouth with the rejecta of their food. “The daisy-like anemones in the Zoological Gardens of Paris,” Frédol tells us, “frequently throw up young ones, which are dispersed, and attach themselves to various parts of the aquarium, and finally become miniature anemones exactly like the parent. An actinia, which had taken a very copious repast, ejected a portion of it about twenty-four hours later, and in the middle of the ejected food were found thirty-eight young individuals.” According to one author, an accouchement is here a fit of indigestion! Sea-anemones may be mutilated, cut limb from limb, or torn to pieces, and each piece will become a new anemone in the end. “They adhere,” says Dr. Johnson, “to rocks, shells, and other extraneous bodies by means of a glutinous secretion from their enlarged base, but they can leave their hold and remove to another station whensoever it pleases them, either by gliding

along with a slow and almost imperceptible movement (half an inch in five minutes), as is their usual method, or by reversing the body and using the tentacula for the purpose of feet, as Reaumur asserts, and as I have once witnessed; or, lastly, inflating the body with water, so as to render it more buoyant, they detach themselves, and are driven to a distance by the random motion of the waves. They feed on shrimps, small crabs, whelks, and on very many species of shelled mollusca, and probably on all animals brought within their reach whose strength or agility is insufficient to extricate them from the grasp of their numerous tentacula.... The size of the prey is frequently in unseemly disproportion to the preyer, being often equal in bulk to itself. I had once brought me a specimen of *Actinia crassicornis* that might have been originally two
[pg 124] inches in diameter, which had somehow contrived to swallow a valve of *Pecten maximus* of the size of an ordinary saucer. The shell, fixed within the stomach, was so placed as to divide it completely into two halves, so that the body, stretched tensely over, had become thin and flattened like a pancake. All communication between the inferior portion of the stomach and the mouth was, of course, prevented; yet, instead of emaciating and dying of atrophy, the animal had availed itself of what undoubtedly had been a very untoward accident to increase its enjoyment and its chance of double fare. A new mouth, furnished with two rows of numerous tentacula, was opened up on what had been the base, and led to the under stomach; the individual had, indeed, become a sort of Siamese Twin, but with greater intimacy and extent in its unions." The Actinia are at once gluttonous and voracious. They seize even mussels and crabs, and when they want to eject the hardest parts of the latter can turn their stomachs inside out, as one might turn out one's pocket! Their tentacles can act on the offensive; the hand of the man who has touched them becomes inflamed, and small fish are literally killed by contact with them.

In Provence, Italy, and Greece, some varieties are used for food, the Green Actinia being in special repute.



SEA-ANEMONES.
1. *Actinoloba dianthus*. 2. *Cereus gemmaceus*. 3. *Actinia bicolor*. 4. *Sagartia viduata*. 5. *Cereus papillossus*. 6. *Actinia picta*. 7. *Actinia equina*. 8. *Sagartia rosea*. 9. *Sagartia coccinea*.

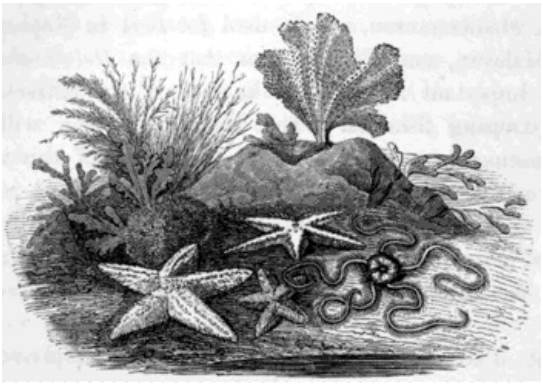
The Gorgons are interesting curiosities of the coral type; some are scarcely the twelfth of an inch in height, while others attain a height of several feet. The beautiful Fan Gorgon, which is often eighteen or more inches high, is so called on account of its form, and there are other very beautiful examples of arborescent gorgons. Their organism is double; the one external, sometimes gelatinous; sometimes, on the contrary, fleshy and cretaceous. It is animated with life.

[pg 125] A vast natural group is that of the *Echinodermata*, which includes five orders, or families, embracing among them the star-fish, the sea-eggs, or sea-urchins, and the sea-cucumbers, or "sea-slugs" (Holothurias), the latter of which are important items in the food of many Asiatics. The generic term Echinodermata signifies an animal bristling with spines, but the group includes many to whom it could not be applied.

The Star-fish (*Asterias*) is met in almost every sea, and in all latitudes, although more richly varied in tropical seas. They vary in colour from a yellowish-grey to orange, red, or violet. The body of the asterias is a most curious organisation, having sometimes as many as 11,000 juxta-imposed pieces, while it possesses spines and tubercles. Observe one stranded on the shore, and it may appear destitute of locomotive powers. But this is not so, for they can slowly creep over small spaces, and even up the vertical sides of rocks. Frédol says:—"If an asterias is turned upon its back, it will at first remain immovable, with its feet shut up. Soon, however, out come the feet

like so many little feelers; it moves them backward and forward, as if feeling for the ground; it soon inclines them towards the bottom of the vase, and fixes them one after the other. When it has a sufficient number attached, the animal turns itself round. It is not impossible, whilst [pg 126] walking on the sea-shore, to have the pleasure of seeing one of these star-fishes walking upon the sand," although they are very commonly left dead there.

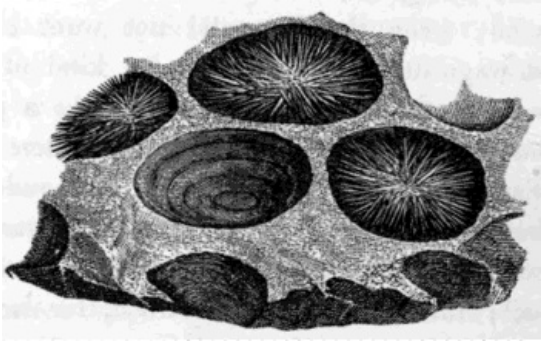
The star-fish's mouth is on its lower side, and almost directly abuts on its stomach. It is a voracious feeder, and will even attack molluscs. Formerly it was believed that the animal would open an oyster with one of its rays, or legs, but this was unlikely, as the oyster might be likely enough to have the best of it in such a case by shutting his shells on the intruder. It is now pretty well understood that it injects an acrid poison into the oyster's shell, which obliges it to open.



STAR-FISH.

The "Urchins" seem to owe their name to Aristotle, and their spiny covering and armature have in all ages attracted the attention of naturalists. Some of them have 3,000 or 4,000 prickles, and their organisation is really wonderful. They are enclosed in a globular hollow box, which grows with their growth. Gosse explains how. The box can never be cast off, and it is obvious that the deposits made from inside would only narrow the space, which really requires to be enlarged. "The growing animal feels its tissues swelling day by day, by the assimilation of food. Its cry is 'Give me space! a larger house, or I die!' How is this problem solved? Ah! there is no difficulty. The inexhaustible wisdom of the Creator has a beautiful contrivance for the emergency. The box is not made in one piece, nor in ten, nor a hundred. Six hundred distinct pieces go to make up the hollow case, all accurately fitted together, so that the perfect symmetry of outline remains unbroken; and yet, thin as their substance is, they retain their relative positions with unchanging exactness, and the slight brittle box retains all requisite strength and firmness, for each of these pieces is enveloped by a layer of living flesh; a vascular tissue passes up between the joints, where one meets another, and spreads itself over the whole exterior surface." Their spines are instruments of defence and of locomotion; each has several muscles to work it.

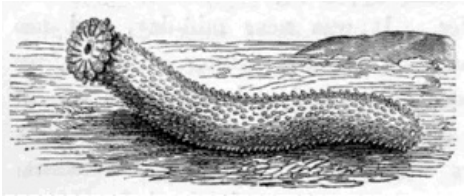
The poet-scientist, Michelet, has beautifully painted the animal's nature, and makes it describe itself as follows. "I am born," says the unobtrusive Echinoderm, "without ambition; I ask for none of the brilliant gifts possessed by those gentlemen the molluscs. I would neither make mother-of-pearl nor pearls; I have no wish for brilliant colours, a luxury which would point me out; still less do I desire the grace of your giddy medusas, the waving charm of whose flaming locks attracts observation and exposes one to shipwreck. Oh, mother! I wish for one thing only, *to be*—to be without these exterior and compromising appendages; to be thickset, strong, and round, for that is the shape in which I should be the least exposed; in short, to be a centralised being. I have very little instinct for travel. To roll sometimes from the surface to the bottom of the sea is enough of travel for me. Glued firmly to my rock, I could there solve the problem, the solution of which your favourite, man, seeks for in vain—that of safety. To strictly exclude enemies and admit all friends, especially water, air, and light, would, I know, cost me some labour and constant effort. Covered with movable spines, enemies will avoid me. Now, bristling like a bear, they call me an urchin."[34]



URCHINS IN A ROCK.

The term “sea-cucumber” accurately describes the shape of the Holothuria, which is in general
[pg 127] terms a worm-like cylinder, varying as much as from an inch or two to thirty, and, in exceptional cases, forty inches in length. The skin of the animal is usually thick and leathery; it is crowned by a mouth with a fringe of tentacula, which expand like a flower when it is unmolested. They particularly avoid the glare of light. One large eatable species is common in the Mediterranean, and is used for food in Naples and elsewhere. But it is in the Indian, Malayan, and Chinese seas that the *Holothuria edulis*, known there as the *trepang*, is an important adjunct to the food of the natives. Thousands of junks are employed in the trepang fisheries. The Malay fisherman will harpoon them with a long bamboo terminating in a sharp hook at a distance of thirty yards. In four or five fathoms of water native divers are employed, who seize them in their hands, and will bring up several at a time. They are then boiled, and flattened with stones; after which process they are spread out on bamboo mats to dry, first in the sun and afterwards by smoking. They are then put in sacks and shipped principally to Chinese ports, where they are considered a luxury.

The great French navigator, Dumont d’Urville, witnessed the processes employed while in Raffles Bay. An hour after the arrival of four prows all the men were at work ashore cooking them in boilers placed over roughly-constructed stone furnaces, after which they were dried on hurdled roofs. Captain d’Urville went on board one of the Malay vessels, where he was received with cordiality by the padrone, or captain. “He,” says that navigator, “showed us over his little ship. The keel appeared to us sufficiently solid; even the lines did not want elegance; but great disorder seemed to reign in the stowage department. From a kind of bridge, formed by hurdles of bamboos and junk, we saw the cabin, which looked like a poultry house: bags of rice, packets and boxes were huddled together. Below was the store of water, of cured trepang, and the sailors’ berths. Each boat was furnished with two rudders, one at each end, which lifted itself when the boat touched the bottom. The craft was furnished with two masts, without shrouds, which could be lowered on to the bridge at will by means of a hinge; they carry the ordinary sail; the anchors are of wood, for iron is rarely used by the Malays; their cables are made of rattan fibre; the crew of each bark consists of about thirty-seven, each shore boat having a crew of six men. At the moment of our visit they were all occupied in fishing operations, some of them being anchored very near to us. Seven or eight of their number, nearly naked, were diving for trepang; the padrone alone was unoccupied. An ardent sun darted its rays upon their heads without appearing to incommode them, an exposure which no European could hold up under. It was near mid-day, and the moment, as our Malay captain assured us, most favourable for the fishing. In fact, we saw that each diver returned to the surface with at least one animal, and sometimes two, in his hands. It appears that the higher the sun is above the horizon, the more easily is the creature distinguished at the bottom. The divers were so rapid in their movements that they scarcely touched the boat, into which they threw the animals before they dived again. When the boat was filled with them, it proceeded to the shore, and its place was supplied by an empty one.” The Holothuria taken there were five to six inches long. D’Urville tasted it when prepared, and says that it resembled lobster. His men, however, took more kindly to it than did he.



SEA-CUCUMBER (*Holothuria tubulosa*).

[pg 128] We must now examine a most important class of pulpy animals, the Mollusca, of which the bivalve molluscs are by far the most important to man. In consequence of their very softness and delicacy, Nature has provided them with a shell coat of calcareous mail.

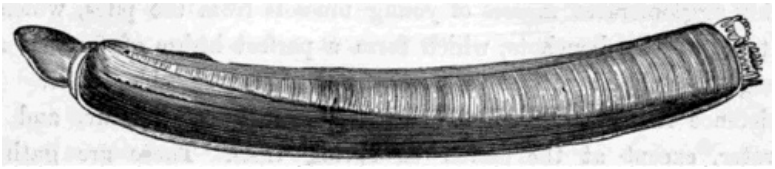
The sub-class *Acephala*, are as their names indicate, *headless* molluscs, and though sometimes *partially* naked, are usually very well protected by shells. When it is known that there are over 4,000 species of bivalve molluscs, the impossibility of describing more than a few typical and prominent examples will be seen.

The genus *Teredo* consists of marine worm-like animals having a special and irresistible inclination for boring wood, whatever its hardness. Ships have been thus silently and secretly undermined, till the planks have been either like sponges or have crumbled into dust under the very feet of their crews. The holes bored by these imperceptible miners riddle the entire interior of a piece of wood, without any external indication of their ravages. Piles and piers have been utterly ruined, and vessels have sometimes gone to the bottom through them. At the beginning of the last century half the coast of Holland was threatened with inundation and practical annihilation because the piles which support its dykes were attacked by the teredo, and hundreds of thousands of pounds damage was done by this wretched worm. It has been now discovered that the worm has a great antipathy to oxide of iron, and wood impregnated with it is secure from its ravages. Other animals of the same group are capable of boring even rock.

Another important bivalve is the well known Solen or “razor-fish,” varieties of which are common all over the globe. “These molluscs,” says Figuier, “live with their shells buried vertically in the

sand, a short distance from the shore; the hole which they have hollowed, and which they never quit, sometimes attains as much as two yards in depth; by means of their foot, which is large, conical, swollen in the middle and pointed at its extremity, they raise themselves with great agility to the entrance of their burrow. They bury themselves rapidly, and disappear on the slightest approach of danger.

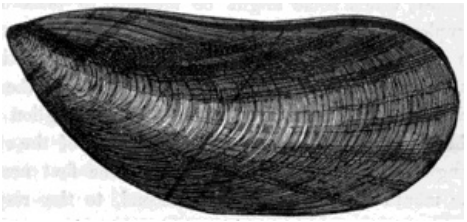
[pg 129] "When the sea retires, the presence of the Solen is indicated by a small orifice in the sand, whence escape at intervals bubbles of air. In order to attract them to the surface, the fishermen throw into the hole a pinch of salt; the sand immediately becomes stirred, and the animal presents itself just above the point of its shell. It must be seized at once, for it disappears again very quickly, and no renewed efforts will bring it to the surface a second time. Its retreat is commonly cut short by a knife being passed below it; for it burrows into the ground with such velocity that it is difficult to capture it with the hand alone. The fish itself is a kind of marine worm."



THE RAZOR FISH (*Solen ensis*).

But of the Acephalous Mollusca none are more important to man than the mussel and oyster, the pearl-bearing varieties of which latter have been already considered. Both are familiar to every reader.

The *Mytilus edulis*, the edible mussel of commerce, the "poor man's oyster," is provided with a byssus, a bundle of hairs or threads, by which it can anchor to the rock. In its natural state it is much less fitted for human food than when cultivated. Their civilisation, as it might be termed, dates back to the year 1236, when the master of a barque, an Irishman named Walton, was wrecked in the bay or creek of Aiguillon, a few miles distant from Rochelle. The exile at first supported himself by hunting sea-fowl in the neighbouring marshes, where he also soon began, being an observant man, to notice certain peculiarities of mussel life.



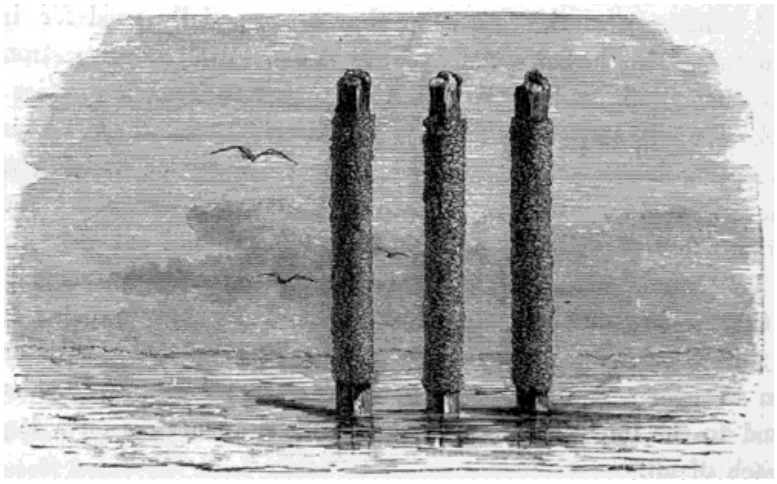
THE MUSSEL (*Mytilus edulis*).

Walton remarked that many of the mussels attached themselves by preference to that part of posts or stones a little *above* the mud of the marshes, and that those so situated soon became plumper and fatter, and more suitable for edible purposes, than those buried *in* the mud. He soon saw the possibilities of a new branch of industry. "The practices he introduced," wrote a distinguished French writer, long ago, "were so happily adapted to the requirements of the new industry, that, after six centuries, they are still the rules by which the rich patrimony he created for a numerous population is governed." He placed long rows of twelve-foot posts, about six feet high out of the watery mud, and a yard apart, each pair of which always formed a letter V; in other words, a number of them radiated from a common centre. The posts were interlaced with a basket-work of branches, so as to form continuous hurdles; these are now termed *bouchots*. He also had isolated posts, and one of his great ideas was, as in oyster culture to-day, to arrest the
[pg 130] spat, which would otherwise have washed away to sea with the tide, and been lost. "At the present time these lines of hurdles form a perfect little forest at Aiguillon; there are about a quarter of a million piles alone. In July the *bouchotiers*, as the men employed in this culture are termed, launch their punts, and proceeding to the marshes, detach with a hook the thickly agglomerated masses of young mussels from the piles, which they gather in baskets and take to the bouchots, which form a perfect hedge of fascines and branches, of different heights. Each stage receives the mollusc suitable to it. In the first stage of its existence the mussel cannot endure exposure to the air, and remains constantly under water, except at the period of spring tides. These are gathered in sacks made of old matting, or suspended in interstices of the basket-work. The mussels are advanced stage after stage until they reach the highest bouchots, which remain out of water at all tides." The whole bay yielded close on half a million pounds sterling some years ago.

"While," says Figuier, "commending the mussel as an important article of food, we must not conceal the fact that it has produced in certain persons very grave effects, showing that for them

its flesh has the effects of poison. The symptoms, commonly observed two or three hours after the repast, are weakness or torpor, constriction of the throat and swelling of the head, accompanied by great thirst, nausea, frequent vomitings, and eruptions of the skin and severe itching.

“The cause of these attacks is not very well ascertained; they have in turn been ascribed to the presence of the coppery pyrites in the neighbourhood of the mussel; to certain small crabs which lodge themselves as parasites in the shell of the mussel; to the spawn of star-fish or medusæ that the mussel may have swallowed. But, probably the true cause of this kind of poisoning is found in the predisposition of individuals. The remedy is very simple; an emetic, accompanied by drinking plentifully of slightly acidulated beverage.” They are eaten very freely in most parts of the seaboard of the United States, and the present writer has eaten them constantly, boiled, stewed with tomatoes, &c., and in soup, without the slightest bad effects.



ISOLATED PILES COVERED WITH THE SPAWN OF MUSSELS.

The bivalve *par excellence* must always be *Ostrea edulis*, the common oyster. This mollusc, which some might be inclined to place low in the scale of nature, has really a complex and delicate organisation. It has a mouth, heart, stomach, liver, and intestines; its blood is colourless, but it has a true circulation; and it breathes under water, as do fishes. “Having no head,” says Figuier, “the oyster can have no brain; the nerves originate near the mouth, where a great ganglion is visible, whence issue a pair of nerves which distribute themselves in the regions of the stomach and liver, terminating in a second ganglion, situated behind the liver. The first nervous branch distributes its sensibility to the mouth and tentacles; the second, to the respiratory branchiæ. With organs of the senses oysters are unprovided. Condemned to a sedentary life, riveted to a rock, where they have been rooted, as it were, in their infancy, they neither see nor hear; touch appears to be their only sense, and that is placed in the labial tentacles of the mouth.” The oyster may carry hundreds of thousands of eggs—some say as many as 2,000,000; it ejects them after a process of incubation. Nothing is more curious than to witness a bank of oysters in the spawning
[pg 131] season, which is usually from the month of June to the end of September.[35] Every adult—for the oyster is sexless—throws forth a living dust, a perfect cloud of embryotic life. The spat is soon scattered far and wide, and unless the young oyster attach itself to some solid body, it falls a victim to other marine animals. Microscopic in size when it leaves the parent, it is at the end of a month about the size of a large pea; in a year it may be an inch and a half in diameter; in three it is getting on to a quite respectable size, and after a short course in the oyster park it is ready for the table.[36]

Oysters are of all sizes, and there are some so large that they require to be carved. In New York, the paradise of oyster-eaters, they range from the size of a half-crown to five or six inches long. The shores of Long Island, a distance round of 115 miles, are one continuous oyster-field, while the one State of Virginia is said to possess nearly 2,000,000 acres of oyster-beds. The Americans are great lovers of the bivalve, which is probably one of the most wholesome forms of *easy* nourishment which can possibly be taken. In a stew with milk, and a little oatmeal, or as soup, they are especially good for invalids, and when one can take nothing else, he can usually relish oysters. And, as all gastronomers know, they rather increase than diminish appetite; hence the modern French practice of taking half a dozen *before* the soup is served. “There is no alimentary substance,” says a French writer, “not even excepting bread, which does not produce indigestion under given circumstances; but oysters never.... We may eat them to-day, to-morrow, eat them always and in profusion, without fear of indigestion.” The few who cannot eat them, and there *are* such, are really to be commiserated. How highly they are esteemed in some countries is shown by the fact that some years ago they cost in St. Petersburg a paper rouble, or about a shilling *each*; in Stockholm, fivepence each. In England only two or three years ago they had risen to nearly four-fifths of the latter price; but now, thanks to the extensive cultivation, and to the importation of excellent American oysters on a large scale, they are within the reach of all.

Of the quantity of oysters consumed in London alone who can give even an approximate guess?

Fancy, if you can, also, that curiously courteous exchange which goes on every Christmas between our oyster-eating country cousins and our turkey and goose loving Londoners. The turkey, the brace of pheasants or hares, has arrived. “Such a present,” says the author of “The Oyster,” “is promptly repaid by a fine cod packed in ice, and two barrels of oysters. How sweet are these when eaten at a country home, and opened by yourselves, the barrel being paraded on the table with its head knocked out, and with the whitest of napkins round it. * * * How sweet it is, too, to open some of the dear natives for your pretty cousin, and to see her open her sweet little mouth about as wide as Lesbia’s sparrow did for his lump of—not sugar, it was not then invented—but lump of honey! How sweet it is, after the young lady has swallowed her half-dozen,
[pg 132] to help yourself! The oyster never tastes sweeter than when thus operated on by yourself, so that you do not ‘job’ the knife into your hand!”

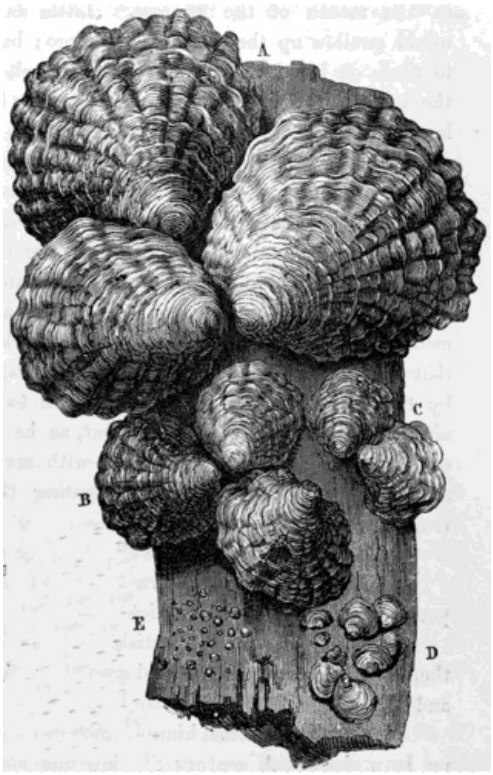
The Greeks have not said much in praise of oysters, but then they regarded Britain much as we now do Greenland. The Romans, however, highly appreciated them. Horace, Martial, and Juvenal, Cicero, Seneca, and Pliny, have all enlarged upon the various qualities of the oyster; and it was to Sergius Orata that we owe the introduction of oyster-beds, for he it was that invented the layers or stews for oysters at Baia. “That was in the days when luxury was rampant, and when men of great wealth, like Licinius Crassus, the leviathan slave-merchant, rose to the highest honours; for this dealer in human flesh in the boasted land of liberty served the office of consul along with Pompey the Great, and on one occasion required no less than 10,000 tables to accommodate all his guests. How many barrels of oysters were eaten at that celebrated dinner, the ‘Ephemerides’—as Plutarch calls *The Times* and *Morning Post* of that day—have omitted to state; but as oysters then took the place that turtle soup now does at our great City feeds, imagination may busy itself as it likes with the calculation. All we know is, that oysters then fetched very long prices at Rome, as the author of the ‘Tabella Ciberia’ has not failed to tell us; and then, as now, the high price of any luxury of the table was sure to make a liberal supply of it necessary when a man like Crassus entertained half the city as his guests, to rivet his popularity.

“But the Romans had a weakness for the ‘breedy creatures’ as our dear old friend Christopher North calls them in his inimitable ‘Noctes.’ In the time of Nero, some sixty years later, the consumption of oysters in the ‘Imperial City’ was nearly as great as it now is in the ‘World’s Metropolis;’ and there is a statement, which I remember to have read somewhere, that during the reign of Domitian, the last of the twelve Cæsars, a greater number of millions of bushels were annually consumed at Rome than I should care to swear to. These oysters, however, were but Mediterranean produce—the small fry of Circe, and the smaller Lucrinians; and this
[pg 133] unreasonable demand upon them quite exhausted the beds in that great fly-catcher’s reign; and it was not till under the wise administration of Agricola in Britain, when the Romans got their far-famed Rutupians from the shores of Kent, from Richborough, and the Reculvers—the *Rutupi Portus* of the ‘Itinerary’ of which the latter, the Regulbium, near Whitstable, in the mouth of the Thames, was the northern boundary–that Juvenal praised them as he does; and he was right; for in the whole world there are no oysters like them; and of all the ‘breedy creatures’ that glide, or have ever glided, down the throats of the human race, our ‘natives’ are probably the most delectable.” The Roman emperors later on never failed to have British oysters at their banquets.

Vitellius ate oysters four times daily, and at each meal is said to have got through 1,200 of his own natives! Seneca, who praised the charms of poverty, ate several hundred a week. Horace is enthusiastic about them; he notes the people who first provided him with them, and the name of the gourmet who at the first *bite*[37] was able to tell whence the particular breed came.

> “When I but see the oyster’s shell,
> I look and recognise the river, marsh, or mud
> Where it was raised.”

The shell is often an indication of the particular locality whence it is brought, and no doubt the modern oyster dealer, if not the ordinary eater, can always tell rightly. For although London swears by her Milton and Colchester “natives,” Edinburgh has her Pandores and Aberdours, and Dublin her Carlingfords and “Powldoodies of Burran.”



OYSTERS (*Ostrea edulis*).
A, Oysters of twelve to fifteen months; B, five or six months; C, three or four months; D, one to two months; and E, twenty days after birth.

“There is one little spot,” says the author of the entertaining but veracious little work quoted before, “on the shores of Cornwall which I cannot pass over, because from it came one of the colonies on the banks of the Thames from which the Whitstable boats still draw their annual supply. Into Mount’s Bay, the Helford River, upon which stands the little town of Helstone,
[pg 134] empties itself, opposite Mount St. Michael’s, into the sea, and in the estuary of that little river, a person of the name of Tyacke, within the memory of the ‘oldest inhabitant,’ rented certain oyster-beds, famous among Cornish gourmets for a breed of oysters, which, it is said, the Phœnicians, ‘a long time ago,’ had discovered to be infinitely preferable to the watery things they got at home. These Helford oysters are regularly brought to London.... Determined to make his venture, Tyacke loaded a fishing-smack with the best produce of his beds, and coasted along the southern shores, till passing round the Isle of Thanet he found himself in the mouth of the Thames. Little did the elated oyster-dredger think that mouth would swallow up the whole of his cargo; but so it came to pass. It had long been evident to those on board that oysters which travel, no less than men, must have rations allowed on the voyage, if they are to do credit to the land of their birth. Now the voyage had been long and tedious, and the oysters had not been fed; so Tyacke got into his boat, and obtained an interview with the owner of the spot when he reached the shore. He asked permission to lay down his oysters, and feed them. This was granted, and after a few days the spores of *ulva latissima* and *enteromorpha*, and of the host of delicate fibrous plants which there abound, and all of which are the oyster’s delight, made the whole green and fat, and in the finest condition for re-shipment. Four days, it is said, will suffice to make a lean oyster, on such a diet, both green and plump; and Tyacke, joyful at the improvement which he daily witnessed, let his stock feed on for a week. It was towards evening that he bethought himself, as the tide was out, that if he meant to reach Billingsgate by the next morning it would be wise to re-ship his oysters before turning in for the night. The boat was lowered; but, as he attempted to land, he was warned off by the owner of the soil, who stood there with several fierce-looking fellows, armed with cutlasses and fowling-pieces, evidently anticipating the Cornishman’s intention, and determined to frustrate it at all hazards.

“ ‘What do you want here?’ he asked of Tyacke.

“ ‘The oysters I put down to feed,’ was the reply; ‘they were placed there by your permission, and now I am anxious to re-ship them, to be in time for to-morrow’s market.’

“ ‘True,’ replied the Kentishman, ‘I gave you leave to lay down the oysters and feed them, but not a word was said about re-shipping them. Where they are, there they stay; and if you persist in trespassing, I shall know what to do.’

“Poor Tyacke found himself much in the predicament of many a flat who has been picked up by a sharp. A century ago law was not justice, nor justice law. Perhaps it may not be so even now, and the story of the lawyer who ate the oyster in dispute, and gave each of the disputants a shell, may hold as good in our day as it did in that when the author of the ‘Beggars’ Opera’ put it into verse.”

It is said that the oyster, a delicate, refined animal, is particularly fond of music. One of the oyster's historians says that an old ballad is still sung by many a hardy seaman as he trolls his dredging nets:—

"The herring loves the merry moonlight,
The mackerel loves the wind,
But the oyster loves the dredger's song,
For he comes of a gentle kind."

Shakspere, it may be remembered, alludes to "an oyster crossed in love."

[pg 135] Raised out of his native waters, the oyster makes the voyage to the first station in his destined travels in company with his kind, and if it occupies a long time, is attentively supplied with refreshing sea-water. If taken proper care of, he arrives at the wharf as lively as when first taken from his native element. Witness the excellent American "Blue Points," now commonly sold in England. Arrived in port, the oyster too often, however, first becomes sensible of the miseries of slavery, for here he is shovelled into carts and barrows, and tumbled into sacks, and he may consider himself greatly fortunate if he gets a drink of salted, not sea, water.

An old adage tells us that "He was a bold man who first ate an oyster." Mr. Bertram tells us how the discovery was made. "Once upon a time a man of melancholy mood was walking by the shores of a picturesque estuary, and listening to the murmur of the 'sad sea waves'—or, as Mr. Disraeli would say, of 'the melancholy main'—when he espied a very old and ugly oyster-shell, all coated over with parasites and weeds. Its appearance was so unprepossessing that he kicked it aside with his foot; whereupon the mollusc, astonished at receiving such rude treatment on its own domain, gaped wide with indignation, preparatory to closing its bivalve still more closely. Seeing the beautiful cream-coloured layers that shone within the shelly covering, and fancying that the interior of the shell was probably curious or beautiful, he lifted up the aged 'native' for further examination, inserting his finger and thumb within the valves. The irate mollusc, thinking, no doubt, that this was intended as a further insult, snapped its nacreous portcullis close down upon his finger, causing him considerable pain. After relieving his wounded digit, our inquisitive gentleman very naturally put it in his mouth. 'Delightful!' he exclaimed, opening wide his eyes; 'what is this?' and again he sucked his finger. Then flashed upon him the great truth that he had discovered a new pleasure—had, in fact, opened up to his fellows a source of immeasurable delight. He proceeded at once to realise the thought. With a stone he opened the oyster's threshold, and warily ventured on a piece of the mollusc itself. 'Delicious!' he exclaimed; and there and then, with no other condiment than its own juice, without the usual accompaniment, as we now take it, of 'foaming brown stout' or 'pale Chablis' to wash it down—and, sooth to say, it requires neither—did that solitary, nameless man indulge in the first oyster-banquet!"[38]

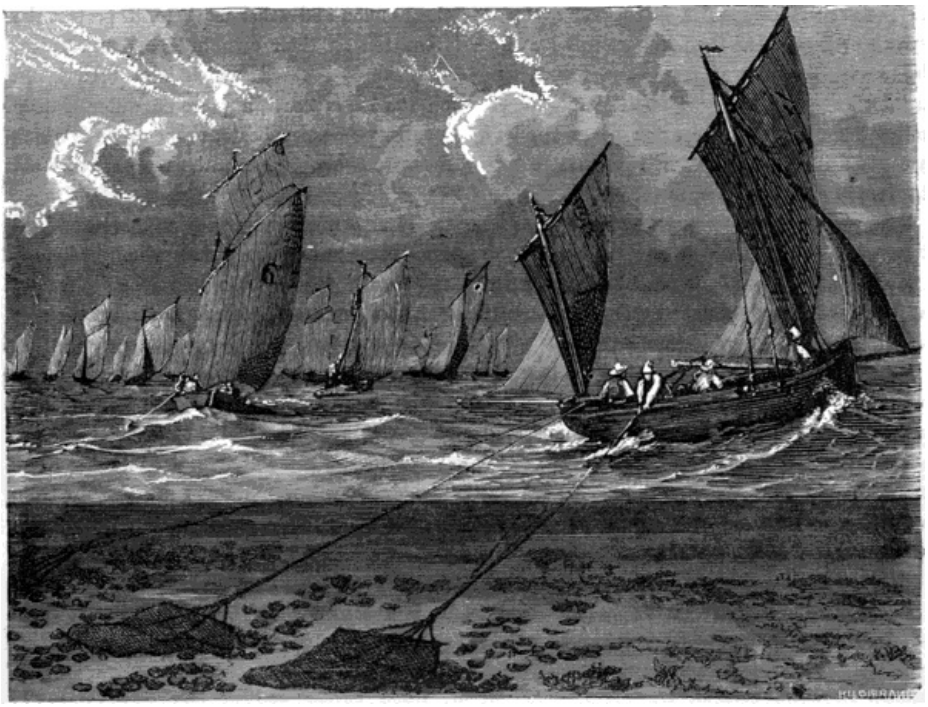
The authorities all agree, as above, that however good some cooked oysters may be, if you would have them in their most delicious condition, you must take them *au naturel*. In Wilson's "Noctes Ambrosianæ" we find the following:—"I never, at any time o' the year, had recourse to the cruet till after the lang hunder; and in September, after four months' fast frae the creturs, I can easily devour them by theirsels, just in their ain liccor, ontill anither fifty; and then, to be sure, just when I am beginning to be a wee stawed, I apply first the pepper to a squad; and then, after a score or twa in that way, some dizzen and a half wi' vinegar, and finish off, like you, wi' a wheen to the mustard, till the brodd is naething but shells.... There's really no end in nature to the eatin' of eisters."

[pg 136] Oyster-fishing is pursued in many different ways in different countries. Round Minorca, divers descend, hammer in hand, and bring up as many as they can carry. On the English and French coasts a most destructive process is employed; a dredge-net, heavily weighted with an iron frame, is thrown overboard; it tears off a number of the precious bivalves from the bottom, and leaves a larger number buried in the mud. "In France," says Figuier, "oyster-dredging is conducted by fleets of thirty or forty boats, each carrying four or five men. At a fixed hour, and under the surveillance of a coastguard in a pinnace bearing the national flag, the flotilla commences the fishing. In the estuary of the Thames the practice is much the same, although no official surveillance is observed. Each bark is provided with four or five dredges, each resembling in shape a common clasp purse. These dredges are formed of network, with a strong iron frame, the iron frame serving the double purpose of acting as a scraper and keeping the mouth open, while giving a proper pressure as it travels over the oyster-beds.... The tension of the rope is the signal for hauling in, and very heterogeneous are the contents of the dredge—seaweeds, star-fishes, lobsters, crabs, actinia, and stones. In this manner the common oyster-beds on both sides of the Channel were ploughed up by the oyster-dredger pretty much as the ploughman on shore turns up a field." The consequence was that the fields became nearly exhausted. This led to the scientific cultivation now in vogue, which has proved most thoroughly successful in a commercial point of view.

In Italy, the Neapolitan Lake Fusaro—the Acheron of so many of the classical poets—is a great oyster-park, dating from the days of the Romans. It is a salt, marshy pond, shaded by magnificent trees; its greatest depth is nowhere more than six feet; its bottom is black, the mud being of volcanic origin. The general idea involved in the oyster cultivation there is the protection of the embryo oyster. The fishermen of Lake Fusaro warehouse, as it were, in protected spots, the oysters ready to discharge the spawn or spat. Upon the bottom of the lake, and all around it, there are round pyramidal heaps of stones and artificial rockeries, surrounded by piles. Other

piles have lines suspended from one to the other, each cord bearing a faggot or faggots of young branches and twigs. In the spawning season the young fry, issuing from the parents on the stones or rocks, are arrested by these means. They have, as it were, a resting-place provided for them on the piles and faggots.

The system pursued in France is that introduced by M. Coste, and founded on his study of the Fusaro park. In 1858 he reported to the Emperor that of twenty-three oyster-beds which had once existed at Rochelle, Marennes, Rochefort, the Isles of Ré and Oleron, only five were left, and that at other places formerly famed for oysters a similar mournful statement must be made. “The impulse given by this report has been productive of the most satisfactory results in France. All along the coast the maritime populations are now actively engaged in oyster culture. Oyster-parks, in imitation of those at Fusaro, have sprung up. In his appeal to the Emperor, M. Coste suggested that the State, through the Administration of Marine, and by means of the vessels at its command, should take steps for sowing the whole French coast in such a manner as to re-establish the oyster-banks now in ruins, extend those which were prosperous, and create others anew wherever the nature of the bottom would permit. The first serious attempt to carry out the views of the distinguished Academician were made in the Bay of St. Brieuc. In the month of April in the same year in which his report was received operations commenced by planting 3,000,000
[pg 137] mother-oysters which had been dredged in the common ground; brood from the oyster-grounds at Cancale and Tréquiers being distributed in ten longitudinal lines on tiles, fragments of pottery, and valves of shells. At the end of eight months the progress of the beds was tested, and the dredge in a few minutes brought up 2,000 oysters fit for the table, while two fascines, drawn up at random, contained nearly 20,000, from one to two inches in diameter.” The publicity given to these facts excited great and practical interest, and in a short time the culture assumed gigantic proportions. The Bay of Arcachon was transformed into a vast field of production, no less than 1,200 capitalists, mostly very small ones, associated with an equal number of fishermen, having up to 1870 planted no less than 988 acres of oysters. In this way the State organised two model farms for experimental purposes, at the trifling original cost of £114; it was estimated to be worth £8,000 in 1870, and had 5,000,000 oysters, large and small. 1,200 parks were then in active operations on the Isle of Ré, and 2,000 more in course of construction.

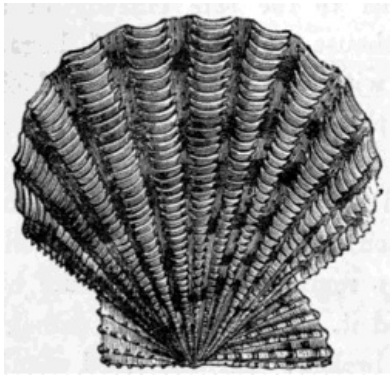


DREDGING FOR OYSTERS.

In our own country the Whitstable Company has been most successful. “The layings at Whitstable,” Mr. Bertram tells us, “occupy about a mile and a half square, and the oyster-beds
[pg 138] have been so prosperous as to have obtained the name of the ‘happy fishing grounds.’ Whitstable lies in a sandy bay formed by a small branch of the Medway, which separates the Isle of Sheppey from the mainland. Throughout this bay, from the town of Whitstable at its eastern extremity to the old town of Faversham, which lies several miles inland, the whole of the estuary is occupied by oyster-farms, on which the maritime population, to the extent of 3,000 people and upwards, is occupied, the sum paid for labour by the various companies being set down at £160,000 per annum, besides the employment given at Whitstable in building and repairing boats, dredges, and other requisites for the oyster-fishing. The business of the various companies is to feed oysters for the London and other markets, to protect the spawn or flotsam, as the dredgers call it, which is emitted on their own beds, and to furnish, by purchase or otherwise, the new brood necessary to supply the beds which have been taken up for consumption.” The little Bay of Pont, on the Essex coast, a piece of water sixteen miles long by three wide, now gives employment to 150 or more boats, the crews of which are exclusively employed in obtaining brood oysters from

eighteen months to two years old to supply the oyster farmers.

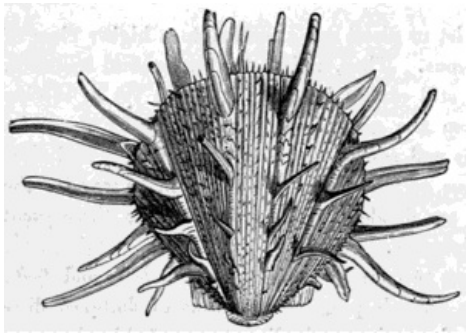
The Thames, or “native” system, is as follows:—Every year there is a regular examination of the beds, which are so carefully dredged that almost every individual oyster is examined. The younger ones are placed where they can thrive best, the same being true of all grades. Dead and sickly oysters are removed, and star-fish and all kinds of enemies killed.



THE SCALLOP (*Pecten*).

The Scallop (*Pecten*) is not a true oyster, though it may be cooked and treated like one, with satisfactory results. Its name is derived from the channeled edges and surfaces peculiar to it, which somewhat resemble the arrangements of the teeth of a comb. Centuries ago they were known as Pilgrims’ Shells; for in the middle ages the pilgrims were wont to ornament their habits or hats with these bivalves, of which there are not far from a couple of hundred known species. They are much more lively animals than the oyster, being able to shift about from place to place with some degree of agility; this they do by forcibly ejecting water between their shells, moving on by a kind of recoil. Another curious bivalve mollusc is the *Spondylus*, a genus found mostly in the warmer seas, some of the species of which are highly prized by conchologists. Their strong, brilliantly-coloured shells bristle with spines and feet. One of the most remarkable species is that known to naturalists as *Spondylus regius*, at all times scarce, and at one time extremely rare. In connection with the last-named mollusc, a story is told by M. Chenu, regarding an enthusiastic collector. “M. R——,” says Chenu, “was Professor of Botany to the Faculty of Paris, and was, as sometimes happens, more learned than rich; he wished, on the invitation of a stranger, to purchase one of these shells at a very high price, which might be from 3,000 to 6,000 francs (approximately £120 to £240); the bargain was made, and the price agreed upon; it was only necessary to pay. The money in the Professor’s hands made only a part of the sum the merchant was to receive for his shell, and he would not part with it without payment. M. R——, now consulting his desire to possess the shell more than his weak resources, made up secretly a parcel of his scanty plate, and went out to sell it. Without consulting his wife, he replaced his silver plate by articles of tin, and ran to the merchant to secure his coveted Spondylus, which he believed to be *S. regius*.

[pg 139]



SPONDYLUS.

“The hour of dinner arrived, and we may imagine the astonishment of Madame R——, who could not comprehend the strange metamorphosis of her plate. She delivered herself of a thousand painful conjectures on the subject. M. R——, on his part, returned home happy with his shell, which he had committed to the safe custody of a box placed in his coat pocket. But as he approached the house he paused, and began for the first time to think of the reception he might meet with. The reproaches which awaited him, however, were compensated when he thought of the treasure he carried home. Finally, he reached home, and Madame R——’s wrath was worthy of the occasion; the poor man was overwhelmed with the grief he had caused his wife; his courage altogether forsook him. He forgot his shell, and in his trepidation, seated himself on a chair without the necessary adjustment of his garment. He was only reminded of his treasure by hearing the crushing sound of the breaking box which contained it. Fortunately the damage done was not very great—two spines only of the shell were broken; but the good man’s grief made so

great an impression on Madame R——, that she no longer thought of her own loss, but directed all her efforts to console the simple-minded philosopher."

It may be added that these curious bivalve molluscs are very commonly associated with branches of coral, to which they adhere firmly.

CHAPTER XII.

The Ocean and its Living Wonders (*continued*).

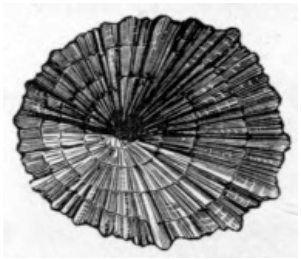
The Univalves—A Higher Scale of Animal—The Gasteropoda—Limpets—Used for Basins in the Straits of Magellan—Spiral and Turret Shells—The Cowries—The Mitre Shells—The Purpuras—Tyrian Purple—The Whelk—The Marine Trumpet—The Winged-feet Molluscs—The Cephalopodous Molluscs—The Nautilus—Relic of a Noble Family—The Pearly Nautilus and its Uses—The Cuttle-fish—Michelet's Comments—Hugo's Actual Experiences—Gilliatt and his Combat—A Grand Description—The Devil-Fish—The Cuttle-Fish of Science—A Brute with Three Hearts—Actual Examples contrasted with the Kraken—A Monster nearly Captured—Indian Ink and Sepia—The Argonauta—The Paper Nautilus.

And now, the bivalves having had their turn, let us direct our attention to a higher class of animals, to which nature has been more generous. They, unlike the first-named molluscs, have heads. "This head," says Figuier, "is still carried humbly; it is not yet *os sublime dedit*; it is drawn along an inch or so from the ground, and in no respect resembles the proud and magnificent organ which crowns and adorns the body of the greater and more powerfully organised animals." The Acephalous, or "headless," must now make way for the Cephalous, or headed mollusca. These again are divided by the scientists into three great classes, the *Gasteropoda*, *Pteropoda*, and *Cephalopoda*.

The title of the *Gasteropoda* is derived from two Greek words signifying *belly* and *foot*; the *raison d'être* of that title being that these animals progress by means of flattened discs placed under their bellies. The snail, slug, and cowrie, are leading types of this class.

In the *Pteropoda* (from Greek words signifying *wing* and *foot*) locomotion is effected by membranous fins or wings.

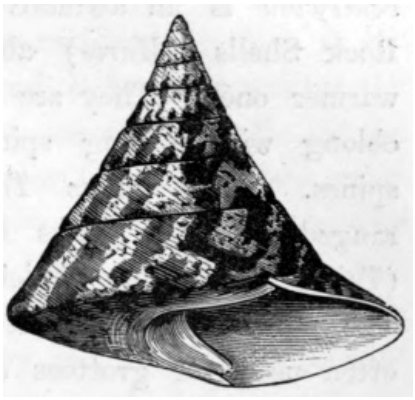
[pg 140] Lastly, the *Cephalopoda* are so called because they have prominently, as a class, heads and feet, locomotion being effected by a set of tentacles (arms or legs, as you will). The cuttle-fish and devil-fish (or octopus) are types of this important series of animals.



THE LIMPET (*Patella*).

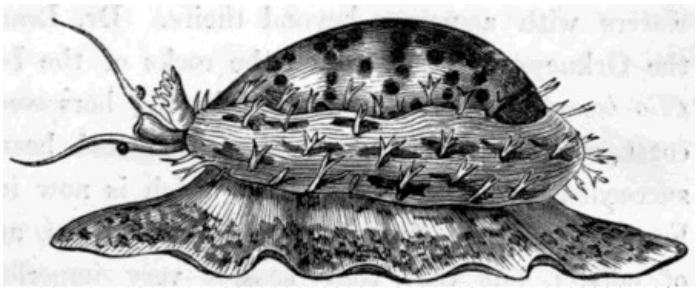
The vastness of the subject precludes the possibility of details, and for evident reasons a few of those inhabiting the sea itself can only be considered here. Among the "Gasteropods," as they are familiarly termed, the limpets constitute a numerous family. The scientific name *Patella* (a deep dish or knee-cap) was given to them by Linnæus, the form of their shells fully warranting the title. Some of them are oval, others circular; but all terminate in an elliptic cone. Otherwise they are varied enough, some being smooth, but others having ridges or scales on the outer surface, the edges being often dentated. Their colours are very varied. The head of the animal itself has two horns and two eyes; its foot is a thick fleshy disc, and when it means to hold on to a rock we all know how difficult it is to dislodge it, for the said foot becomes a kind of sucker. Some of those from the coast of Africa and the Antilles, &c., have elegant forms, as witness *Patella umbella*, *P. granatina*, *P. longicosta*, and others. Although often eaten, they are very tough and indigestible. In Southern seas they attain to a great size; for example, in the Straits of Magellan the natives use for culinary purposes species as large as a slop-basin.

TURBO.



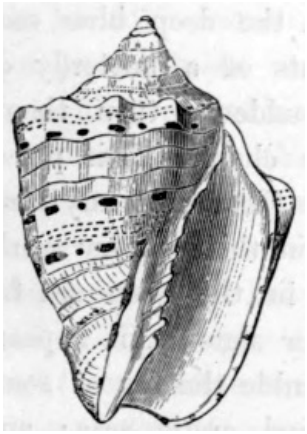
TROCHUS.

Well-known shells are also those of many species of *Trochus*; the spiral shell has literally a *spiral animal* inside it. So also some of the fifty species of *Turbo*, which are often marbled in beautiful colours outwardly and superbly nacred within. So again the winding pyramidal shells of the *Turritella*, many of which are found in every sea. And once more, what mantelpiece of old was not adorned with a pair or more of cowrie shells (*Cypræ*), natives of every sea! They range from the little whitish money cowrie, actually used in place of coin in parts of Africa to-day, to handsome shells of large size. The animal which inhabits this shell is elongated, and has a head with a pair of long tentacles, each having a very large eye. The foot, as one example specially will show (*Cypræ tigris*) is an oval sucker, capable of great tenacity.

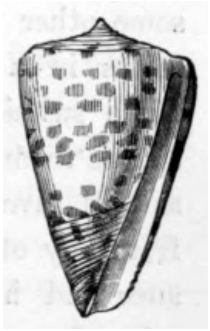


THE COWRIE (*Cypræa tigris*).

In every conchologist's collection will be found some of the mitre shells, so called from their resemblance to a bishop's mitre, and principally obtained from Indian and Australian seas. So, again, the *Voluta*, with their oval and graceful forms. The animal inhabiting the latter has a very large head, provided with two tentacles and a mouth furnished with hooked teeth. The foot is
[pg 141] very large and projects from the whole mouth of the shell, which is often ornamented with gay colours and varied marks and flutings. So also the *Conus* genus, the title of which sufficiently indicates its general form, and some of the shells of which command high prices. These generally tropical shells are more uniform in shape than many just mentioned, but they are most beautifully varied in colour and minor details. The "residents" have large heads with *snouts*, while their mouths are furnished with horny teeth. Every good collection, too, is sure to contain examples of the genus *Cassis*, principally from the Indian Ocean.



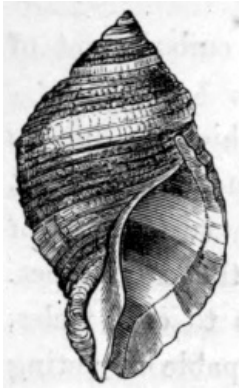
VOLUTA.



CONUS.

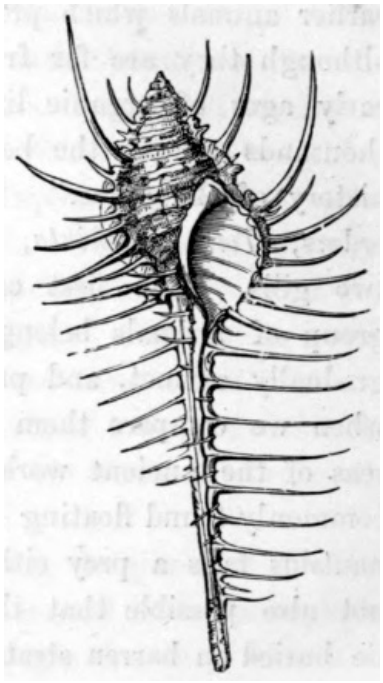
Among the one-shell molluscs the Purpuras bear an honoured name; for did they not furnish the Greeks and Romans with the brilliant purple colouring matter which was reserved for the mantles of princes and patricians! The genus *Purpura* is characterised as possessing an oval shell, thick pointed. The animal itself has a large head, furnished with two swollen conical tentacles close together, and bearing an eye towards the middle of their external side. By means of a large foot they creep about in pursuit of bivalves. The larger and more important kinds come from the warmer seas, especially those surrounding the West Indies and Australia.

The purple mentioned in the Scriptures in connection with fine linen was that of the Phœnicians, and came from Tyre. Sir William Wilde discovered not far from the ruins of that city several circular excavations in a rocky cliff, and in these he found a great number of crushed and broken shells of Purpura. He believed that they had been bruised in great masses by the Tyrian workmen for the manufacture of the dye. Shells of the same species (*Murex trunculus*) are commonly found on the same coast at the present day. Aristotle says that the Tyrian dye was taken from two molluscs inhabiting the Phœnician coasts and seas. According to the great Greek philosopher, one of these had a very large shell, consisting of seven turns of the spire, studded with spines, and terminating in a strong beak; the other had a much smaller shell. It is thought that the latter is to be found in the *Purpura lapillus*, which abounds in the English Channel. Reaumur and Duhamel both obtained a purple colour from it, which they applied as a dye, and found permanent. The real secret of the production of the Tyrian purple remains undiscovered to-day.



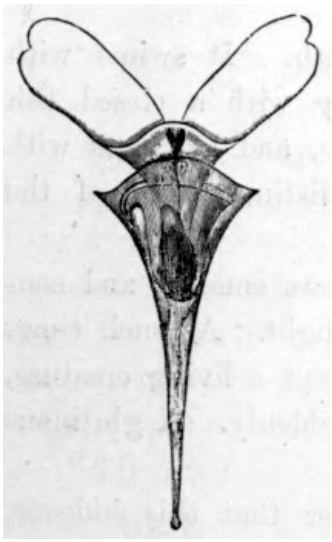
PURPURA LAPILLUS.

[pg 142] The genus *Buccinum* resembles that of the *Purpura* in many respects. The common whelk belongs to the series. Thus one of the humblest of our shell-fish is allied to the animal from which a nearly priceless dye was once obtained.



MUREX.

HARPA.

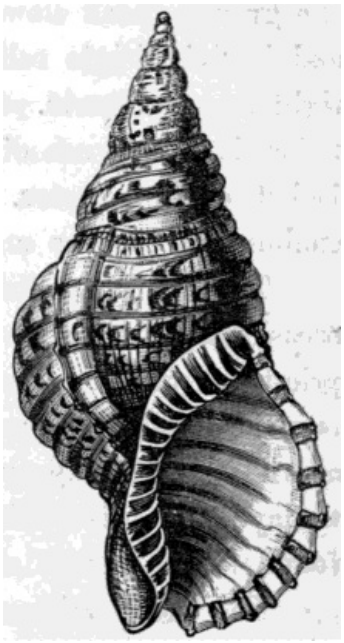


CLEODORA.

The genus *Harpa* includes some beautifully marked and coloured shells, of which *H. ventricosa* is an attractive example. These are chiefly found in the Indian Ocean. The Rock Shells (*Murex*) abound in every sea, but are finer and more branching in the warmer ones. They are remarkable for bright colours and fantastic forms. The shell is oblong with a long spire attached, its surface often covered with rows of branching spines. The genus *Triton*, of which about one hundred

species are known, is ranged with the genus *Murex*, on account of points of similarity. The Marine Trumpet (*Triton variegatum*) which sometimes attains a length of sixteen inches, is a fine example. The genus *Strombus* includes among its species the great roughly ornamental shells, often used for grottoes or rockeries. Some of the streets of Vera Cruz are said to be paved with them. Oddest and most remarkable of all the marine shells to be found in the naturalist's collection are those of the genus *Pteroceras*. They are of fresh and brilliantly shaded colours.

STROMBUS.



TRITON.

And now to the *Pteropoda*, practically "winged feet" molluscs, the position of which in scientific nomenclature many think unsatisfactory. This is, however, of little consequence to the general reader. These curious little molluscs can pass through the deep blue seas they usually inhabit rapidly, reminding us strongly of the movements of a butterfly or some other winged insect. They can "ascend to the surface very suddenly, turn themselves in a determinate space, or rather swim without appearing to change their place, while sustaining themselves at the same height." "If," continues Figuier, "anything alarms them, they fold up their flappers and descend to such a depth in their watery world as will give them the security they seek. Thus they pass their lives in the open sea far from any other shelter except that yielded by the gulf weed and other algæ. In appearance and habits these small and sometimes microscopic creatures resemble the fry of some other forms of mollusca. They literally swarm both in tropical and arctic seas; and are sometimes so numerous as to colour the ocean for leagues. They are the principal food of whales and sea-birds in high latitudes, rarely approaching the coast. Only one or two species have been accidentally taken on our shores, and those evidently driven thither by currents into which they have been entangled, or by tempests which have stirred the waters with a power beyond theirs. Dr. Leach states that in 1811, during a tour to the Orkneys, he observed on the rocks of the Isle of Staffa several mutilated specimens of *Clio borealis*. Some days after, having borrowed a large shrimp net, and rowing along the coast of Mull, when the sea, which had been extremely stormy, had become calm, he succeeded in catching one alive, which is now in the British Museum." Professor Huxley has told us that they have auditory organs, are sensible of light and heat, and

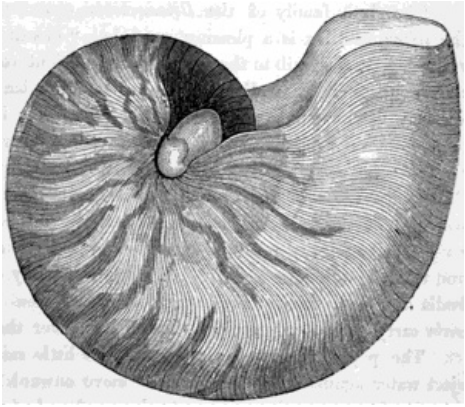
probably of odours, but that they possess very imperfect eyes and tentacles. They have respiratory organs, hearts and livers, and are undeniably social and gregarious, swarming together in great numbers.

We now approach the highest class of the mollusca—on paper, only, be it observed, for in actual life most of them are either nearly unapproachable, or, at all events, are most undesirable acquaintances.

[pg 143] "The cephalopodous molluscs," says Figuier, a writer who in descriptive powers is an artistic scientist and a scientific artist, "are indeed highly organised for molluscs, for they possess in a high degree the sense of sight, hearing, and touch. They appear with the earlier animals which present themselves on the earth, and they are numerous even now, although they are far from playing the important part that was assigned to them in the early ages of organic life upon our planet. The Ammonites and Belemnites existed by thousands among the beings which peopled the seas during the secondary epoch in the history of the globe." The Cephalopods were divided by Professor Owen into two great orders, *Tetrabranchiata*, or animals having four gills, and the *Dibranchiata*, having two gills. The first order has at this epoch but one genus, that of *Nautilus*. This group of animals belongs emphatically to the earlier ages of our globe, "is becoming gradually extinct, and presents in our days only some species very rare and few, especially when we compare them with the prodigious numbers of these beings which animated the seas of the ancient world." It is a fact that the empty shells of the nautilus are more commonly found floating on the ocean than those which are inhabited. No doubt the living nautilus falls a prey either to larger marine animals, or, likely enough, to sea-fowl. Is it not also possible that the lone animal, knowing the fate of its ancestors, and how they lie buried in barren strata, overwhelmed with melancholy apprehensions of his own future, jumps overboard and drowns himself? This suggestion is *not* to be found among the recognised authorities.

On the sea this scion of a decayed family is a graceful object, and in fine weather projects his head and tentacles, and takes a general inspection of the ocean. On land, however, he does not shine to so much advantage, for there he has to drag himself over the ground, head down and body and shell up. The shell has a regularly convoluted form, and is divided into cells; doubtless this it was that gave the idea to the inventor of water-tight compartments. Through these passes a tube for respiration. In the outermost partition is the owner of the ship, covered by its mantle as a captain would be with pea-jacket or sou'-wester. The animal possesses numerous tentacles, and has two great eyes, enabling it to keep a good "look-out."

The Pearly Nautilus, common in the Indian seas, is sometimes used for food. Its shell occasionally attains to a height of eight inches, and is said to be even now used by Hindoo priests as the conch with which they summon their followers to prayers. A very fine nacre is yielded, which is used in ornamental work. The Orientals make drinking-cups of it, and adorn it with engraved devices. Many a retired old sea-captain has such about his house to-day; and before the world became so familiar with Asiatic productions they were often found in the houses of the wealthy.



THE COMMON NAUTILUS (*Nautilus pompilius*.)

The order *Dibranchiata* contains six families, mostly of formidable and repulsive nature. They include cuttle-fish, squids, and argonauts, and these must mainly occupy our attention. What wonderful things have not been written about them! The French have found in them a fertile theme.

"It is now," says Michelet, "however, necessary to describe a much graver world—a world of rapine and of murder. From the very beginning, from the first appearance of life, violent death
[pg 144] appeared; sudden refinement, useful but cruel purification of all which has languished, or which may linger or languish, of the slow and feeble creation whose fecundity had encumbered the globe.

"In the more ancient formations of the Old World we find two murderers—a nipper and a sucker. The first is revealed to us by the imprint of the trilobite, an order now lost, the most destructive of extinct beings. The second subsists in one gigantic fragment, a beak nearly two feet in length,

which was that of a great sucker, or cuttle-fish (*sepia*). If we may judge from such a beak, this monster—if the other parts of the body were in proportion—must have been enormous; its ventose invincible arms, of perhaps twenty or thirty feet, like those of some monstrous spider. In making war on the molluscs he remains mollusc also; that is to say, always an embryo. He presents the strange—almost ridiculous, if it were not also terrible—appearance of an embryo going to war; of a fœtus furious and cruel, soft and transparent, but tenacious, breathing with a murderous breath—for it is not for food alone that it makes war: it has the wish to destroy. Satiated, and even bursting, it still destroys. Without defensive armour, under its threatening murmurs there is no peace; its safety is to attack. It regards all creatures as a possible enemy. It throws about its long arms, or rather thongs, armed with suckers, at random."

Victor Hugo's description of the monster, the devil-fish (or octopus), with whom poor Gilliatt has that terrible encounter, will not fade from the mind of any one who has once read it. The poet-novelist tells us that he founded his narration on facts that came under his own notice. "Near Breck-Hou, in Sark," says he, "they show a cave where a devil-fish, a few years since, seized and drowned a lobster-fisher.... He who writes these lines has seen with his own eyes, at Sark, in the cavern called the Boutiques, a *pieuvre* (cuttle-fish) swimming, and pursuing a bather. When captured and killed, this specimen was found to be four English feet broad, and one could count its four hundred suckers. The monster thrust them out convulsively, in the agony of death."

Hugo's wonderful description of the monster, though often technically wrong, principally from exaggeration, must have some place here. He grasps the facts of nature with the appreciation of the artist rather than of the scientist.

"It is difficult," writes he, "for those who have not seen it to believe in the existence of the devil-
[pg 145] fish. Compared to this creature the ancient hydras are insignificant. At times we are tempted to imagine that the vague forms which float in our dreams may encounter in the realm of the Possible attractive forces, having power to fix their lineaments, and shape living beings out of these creatures of our slumbers....

"If terror were the object of its creation, nothing could be more perfect than the devil-fish.

"The whale has enormous bulk, the devil-fish is comparatively small; the tararaca makes a hissing noise, the devil-fish is mute; the rhinoceros has a horn, the devil-fish has none; the scorpion has a dart, the devil-fish has no dart; the shark has sharp fins, the devil-fish has no fins; the vespertilio-bat has wings with claws, the devil-fish has no wings; the porcupine has his spines, the devil-fish has no spines; the sword-fish has his sword, the devil-fish has no sword; the torpedo has its electric spark, the devil-fish has none; the toad has its poison, the devil-fish has none; the viper has its venom, the devil-fish has no venom; the lion has its talons, the devil-fish has no talons; the griffon has its beak, the devil-fish has no beak; the crocodile has its jaws, the devil-fish has no teeth.

"The devil-fish has no muscular organisation, no menacing cry, no breastplate, no horn, no dart, no claw, no tail with which to hold or bruise, no cutting fins, or wings with nails, no prickles, no sword, no electric discharge, no poison, no talons, no beak, no teeth. Yet he is, of all creatures, the most formidably armed. What, then, is the devil-fish? It is the sea-vampire.

"The swimmer who, attracted by the beauty of the spot, ventures among breakers in the open sea, where the still waters hide the splendours of the deep, or in the hollows of unfrequented rocks, in unknown caverns abounding in sea-plants, testacea and crustacea, under the deep portals of the ocean, runs the risk of meeting it. If that fate should be yours, be not curious, but fly. The intruder enters there dazzled, but quits the spot in terror.

"This frightful apparition, which is always possible among the rocks in the open sea, is a greyish form which undulates in the water. It is the thickness of a man's arm, and its length nearly five feet. Its outline is ragged. Its form resembles an umbrella closed, and without handle. This irregular mass advances slowly towards you. Suddenly it opens, and eight radii issue abruptly from around a face with two eyes. These radii are alive; their undulation is like lambent flames; they resemble, when opened, the spokes of a wheel of four or five feet in diameter. A terrible expansion! It springs upon its prey.

"The devil-fish harpoons its victim.

[pg 146] "It winds around the sufferer, covering and entangling him in its long folds. Underneath it is yellow; above, a dull, earthy hue; nothing could render that inexplicable shade dust-coloured. Its form is spider-like, but its tints are like those of the chameleon. When irritated it becomes violet. Its most horrible characteristic is its softness. Its folds entangle; its contact paralyses.

"It has an aspect like gangrened or scabrous fish. It is a monstrous embodiment of disease.

"It adheres closely to its prey, and cannot be torn away—a fact which is due to its power of exhausting air. The eight antennæ, large at their roots, diminish gradually, and end in needle-like points. Underneath each of these feelers range two rows of pustules, decreasing in size, the largest ones near the head, the smaller at the extremities. Each row contains twenty-five of these. There are, therefore, fifty pustules to each feeler, and the creature possesses in the whole four hundred. These pustules are capable of acting like cupping glasses. They are cartilaginous

substances, cylindrical, horny, and livid. Upon the large species they diminish gradually from the diameter of a five-franc piece to the size of a split pea. These small tubes can be thrust out and withdrawn by the animal at will. They are capable of piercing to a depth of more than one inch.

"This sucking apparatus has all the regularity and delicacy of a key-board. It stands forth at one moment and disappears the next. The most perfect sensitiveness cannot equal the contractibility of these suckers—always proportioned to the internal movement of the animal and its exterior circumstances. The monster is endowed with the qualities of the sensitive plant.

"This animal is the same as those which mariners call poulps, which science designates *Cephalopoda*, and which ancient legends call krakens. It is the English sailors who call them 'devil-fish,' and sometimes bloodsuckers. In the Channel Islands they are called *pieuvres*.

"They are rare at Guernsey, very small at Jersey; but near the island of Sark are numerous and very large....

"When swimming the devil-fish rests, so to speak, in its sheath. It swims with all its parts drawn close. It may be likened to a sleeve sewn up with a closed fish within. The protuberance which is the head pushes the water aside, and advances with a vague undulatory movement. Its two eyes, though large, are indistinct, being of the colour of the water.

"When in ambush, or seeking its prey, it retires into itself, grows smaller, and condenses itself. It is then scarcely distinguishable in the submarine twilight. At such times it looks like a mere ripple in the water. It resembles anything except a living creature. The devil-fish is crafty. When its victim is unsuspicious, it opens suddenly. A glutinous mass, endowed with a malignant will, what can be more horrible?

"It is in the most beautiful azure depths of the limpid water that this hideous, voracious polyp delights. It always conceals itself—a fact which increases its terrible associations. When they are seen, it is almost invariably after they have been captured. At night, however, and particularly in the hot season, the devil-fish becomes phosphorescent.

[pg 147] "The devil-fish not only swims, it walks. It is partly fish, partly reptile. It crawls upon the bed of the sea. At these times it makes use of its eight feelers, and creeps along in the fashion of a species of swift-moving caterpillar.

"It has no blood, no bones, no flesh. It is soft and flabby: a skin with nothing inside. Its eight tentacles may be turned inside out, like the fingers of a glove. It has a single orifice in the centre of its radii, which appears at first to be neither the vent nor the mouth. It is, in fact, both one and the other. The orifice performs a double function. The entire creature is cold.

"The jelly-fish of the Mediterranean is repulsive. Contact with that animated gelatinous substance which envelops the bather, in which the hands sink, and the nails scratch ineffectively, which can be torn without killing it, and which can be plucked off without entirely removing it—that fluid and yet tenacious creature which slips through the fingers, is disgusting; but no horror can equal the sudden apparition of the devil-fish, that Medusa with its eight serpents."

Let us examine the creatures scientifically.

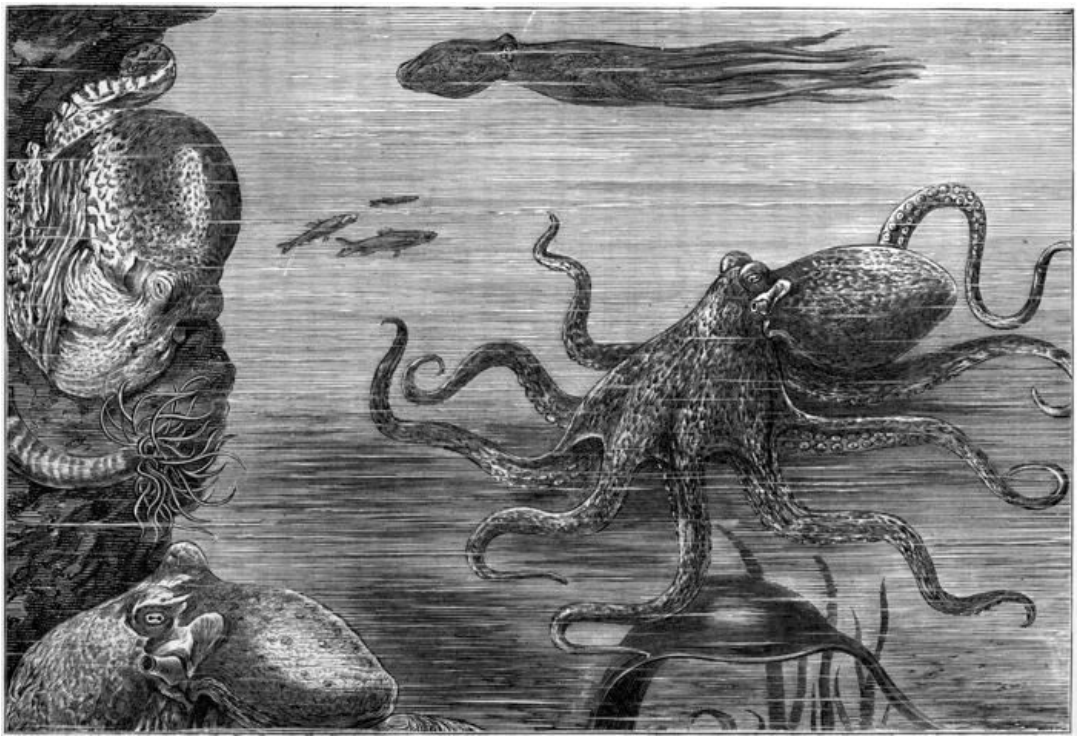
The bodies of these formidable animals are soft and fleshy, while the head protrudes; it is gifted with the usual organs of sense, the eyes being particularly prominent. "Not to oppress the reader with anatomical details," says Figuier, "we shall just remark that the gaze of the cuttle-fish is decided and threatening. Its projecting eyes and golden-coloured iris are said to have something fascinating in them." The mouth is armed with a pair of horny mandibles or beaks, not unlike those of a parrot, and is surrounded by a number of fleshy tentacles, provided, in most species, with numerous suckers, and even claws. The arms or tentacles serve for all purposes—locomotion, swimming, offence, and defence. The suckers occupy all the *internal* surface of the eight tentacular arms, and *each* arm carries about 240 of them. "The cuttle-fish," says the writer last quoted, "would be at no loss to reply to the question of the Don Diego of Corneille—

" 'Rodrique, as-tu du cœur?'

for they have three hearts." After that it need not be stated that they possess respiratory organs and a blood circulation. Man and woman can blush and change colour; *so can the cuttle-fish*; but it turns darker instead of paler, and its emotion has another effect—numerous little warts suddenly appear on its surface.

In spite of the exaggerations of some writers, the size of many of these animals is very large, as has been attested by trustworthy authorities. Mr. Beale,[39] engaged in searching for shells on the rocks of Bonin Island, was seized by one which measured across its expanded arms four feet, the body not being larger than a clenched hand. He describes its cold, slimy grasp as sickening. His tormentor was killed by a cut from a large knife, but its arms had to be released bit by bit. In the museum of Montpellier there is one six feet long. Péron, a French naturalist, saw in the Australian seas one eight feet long. The travellers Quoy and Gaimard picked up in the Atlantic Ocean the skeleton of an enormous mollusc, which, according to their calculations, must have
[pg 149] weighed 200 lbs. In the College of Surgeons a beak or mandible of a cuttle-fish is preserved, which is larger than a human hand. In 1853 a gigantic specimen was stranded on the coast of

Jutland, which furnished many barrow-loads of flesh and other organic matter.



THE OCTOPUS (*Octopus vulgaris*.)

Who has not heard of the kraken, the terror of the northern seas? Naturalists and others long ago gave credence to the assertions of certain Scandinavian writers who believed themselves in the existence of a great sea-monster capable of arresting and annihilating vessels. This kraken was made to embrace a three-masted vessel in its arms. “If,” says laughing De Montfort, “my kraken takes with them, I shall make it extend its arms to both shores of the Straits of Gibraltar.” A Bishop of Bergen assured the world that a whole regiment could easily manœuvre on the back of the kraken. All this, however, probably arose from the observation of some extraordinarily large specimen. An apparently well-authenticated fact is the following, vouched for by a French naval officer, and the then French Consul at the Canaries.

The steam corvette *Alecton* fell in, between Teneriffe and Madeira, with a sea-monster of the cuttle kind, said to be fifty feet long, without counting its eight arms; it had two fleshy fins; they estimated its weight at close on two tons. The commander allowed shots to be fired at it, one of which evidently hit the animal in a vital part, for the waves were stained with blood. A strong musky odour was noticed. This is characteristic of many of the cephalopods.

“The musket shots not having produced the desired results, harpoons were employed, but they took no hold on the soft, impalpable flesh of the marine monster. When it escaped from the harpoon, it dived under the ship, and came up again at the other side. They succeeded at last in getting the harpoon to bite, and in passing a bowline hitch round the posterior part of the animal. But when they attempted to hoist it out of the water the rope penetrated deeply into the flesh, and separated it into two parts, the head with the arms and tentacles dropping into the sea and making off, while the fins and posterior parts were brought on board: they weighed about forty pounds.” The crew wished to pursue it in a boat, but the commander refused, fearing that they might be capsized. “It is probable,” says M. Moquin-Tandon,[40] “that this colossal mollusc was sick, or exhausted by a recent struggle with some other monster of the deep.”

[pg 150] Most of the cephalopods secrete a blackish fluid, which they can eject in moments of danger, and thus cloud themselves in obscurity. This fluid was known to the Romans, who made ink from it. It is the leading ingredient in Indian ink and sepia to-day. A story is told of an English officer abroad who went out just before dinner-time for a walk on the beach, where he came across a cuttle-fish sheltering under a hollow rock. For a time each watched the other in mute astonishment, but the cuttle-fish had the best of it in the end. The aroused animal suddenly ejected a fountain of its black fluid over the officer’s trousers, which was the more annoying inasmuch as they were of white duck!

The bone of the cuttle, powdered, has long been used, in combination with chalk, &c., as a dentifrice, so that the “monstrum horrendum” of Virgil is of some use in the world.

The sixth family of the *Dibranchiata* contains only one genus, *Argonauta*, of which the paper nautilus is a pleasing example. “Floating gracefully on the surface of the sea, trimming its tiny sail to the breeze, just sufficient to ruffle the surface of the waves, behold the exquisite living shallop! The elegant little bark which thus plays with the current is no work of human hands, but a child of nature: it is the argonaut, whose tribes, decked in a thousand brilliant shades of colour,

are wanderers of the night in innumerable swarms on the ocean's surface!" The Greek and Roman poets saw in it an elegant model of the ship which the skill and audacity of the man constructed who first braved the fury of the waves. To meet it was considered a happy omen. "O fish justly dear to navigators!" sang Oppian; "thy presence announces winds soft and friendly: thou bringest the calm, and thou art the sign of it!" Aristotle and Pliny both gave careful descriptions of it. In India the shell fetches a great price, and women consider it a fine ornament. Dancing-girls carry them, and gracefully wave them over their heads.

The paper nautilus has more than its little sail to assist its progression; it is able to eject water against the waves, and so move onward. They are timid and cautious creatures, live in families, and are almost always found far out at sea: they never approach the shore.

CHAPTER XIII.

The Ocean and its Living Wonders (*continued*).

The Crustaceans, a Crusty Set—Young Crabs and their Peculiarities—Shells and no Shells—Powers of Renewal—The Biter Bit—Cocoa-nut eating Crabs—Do Crabs like Boiling?—The Land Crab and his Migrations—Nigger Excitement—The King Crab—The Hut Crab—A True Yarn—The Hermit or Soldier Crab—Pugnaciousness—Crab War and Human War—Prolific Crustaceans—Raising Lobster-pots—Technical Differences—How do Lobsters shed their Shells?—Fishermen's Ideas—Habits of the Lobster—Its Fecundity—The Supply for Billingsgate—The Season-"Lobster Frolics"in British North America—Eel-grass—Cray-fish, Prawns, and Shrimps.

In the Crustacea we find the lowest form of articulate animals. They possess feet, breathe through gills, and derive their name from their hard crusty covering, which is mainly carbonate of lime with colouring matter. They have nearly all of them claws, which most of them know well
[pg 151] how to employ offensively. "They have been compared," says Figuier, "to the heavily-armed knights of the middle ages—at once audacious and cruel; barbed in steel from head to foot, with visor and corselet, arm-pieces and thigh-pieces—scarcely anything, in fact, is wanting to complete the resemblance." They possess the power of throwing off their calcareous covering, when they become, for the nonce, as vulnerable as they had been before formidable.[41]

"Among all the curious and quaint forms of animal life to be found in the sea," says Lord, "few for grotesque oddity can equal the baby crabs, or *Zoëa*, as they are sometimes called. These interesting infants are not the least like their papa or mamma, and no respectable or fully-matured male or female *crab* would ever own them as his or her offspring. An elfish little creature is the juvenile crab, with a head scarcely deserving the name, and a pair of goggle bull's-eyes as of two policemen's lanterns rolled into one, a tail vastly too long for him, and an anti-garotte spear, quite as long as his absurd little body, attached to the spot where his coat-collar should be.... Master Crab's internal economy is just as curious as his external skeleton. One pair of jaws one would be disposed to think sufficient for any living creature of reasonable requirements, but he possesses eight, and instead of exposing his teeth to the examination of the critical in matters of dentition, he carries them safely stowed away in the interior of his stomach, where they would be excessively hard to get at in cases of crustacean toothache. With such appliances as these the food cannot well be otherwise than perfectly masticated. A crab's liver is an odd organ to contemplate, and constitutes a considerable portion of the soft interior of the shell-like box in which the heart and other viscera are lodged. That well-known delicacy known as the 'cream' or 'fat' of the crab is liver, and nothing else. The lungs, or gills, are formed by those fringe-like appendages popularly known as the 'dead men's fingers.' The shell-shifting process before referred to is common to all crustaceans; and our friend the crab, when he feels his corselet getting rather tight for him, manages by some extraordinary process not only to extricate himself from it, together with his shell-gauntlets, and the powerful nippers with which he is provided, but performs other feats, compared with which those of the Davenport Brothers sink into utter insignificance."

Nearly all the crustaceans are hardy and destructive, and fight not merely their enemies, but among each other. It matters little to them whether they lose a claw or a tail, for after a few weeks of repose those members grow again. Tandon records the fact that lobsters "which in an unfortunate encounter lost a limb, sick and debilitated, reappear at the end of a few months with a perfect limb, vigorous, and ready for service." On the Spanish coast a certain crab is caught for its claw alone, which is considered excellent eating; this is pulled off, and the mutilated animal thrown back into the sea, likely enough to be retaken, and the same process repeated at some future time. Crustaceans are nearly all carnivorous, and are by no means particular what they eat. Some of them, however, show considerable appreciation for the oyster. Sometimes they eat each other. Mr. Rymer Jones tells a story of one which attacked and commenced to eat one
[pg 152] slightly smaller than himself, and was then himself attacked and eaten by a companion, realising

the old adage concerning fleas—

> “And these have smaller still to bite ‘em,
> And so proceed, *ad infinitum*.”

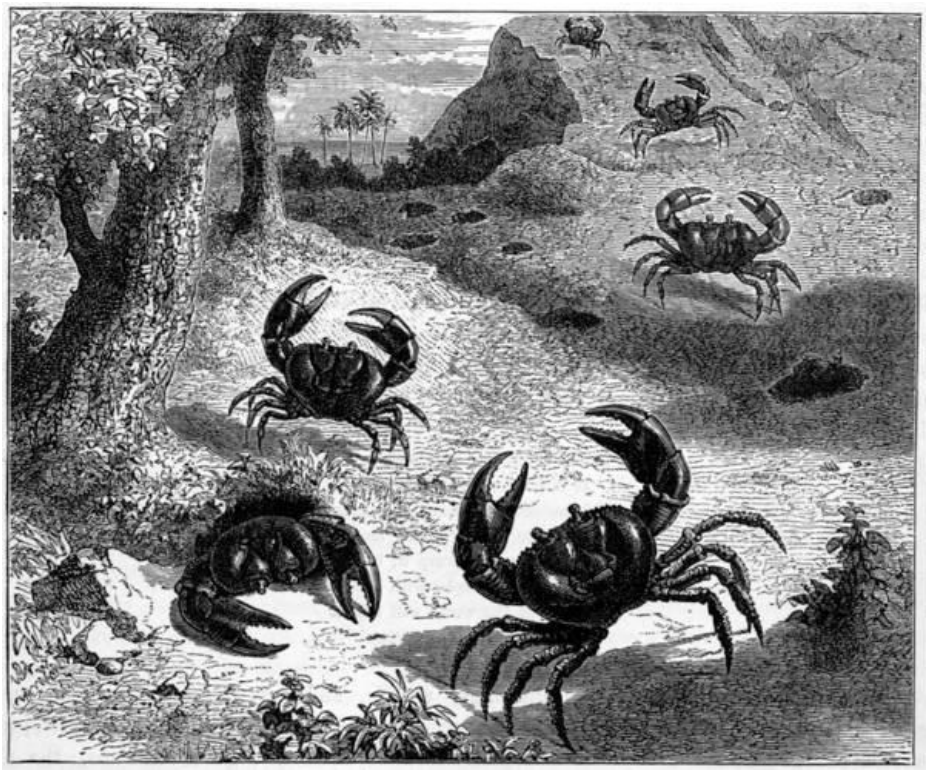
Some crustaceans, however, adopt a vegetable diet. The Robber Crab of the Polynesian Islands can not merely open a cocoa-nut, but also enjoy its contents. The crab begins by tearing off the fibre at the extremity where the fruit is, always choosing the right hand. When this is removed, it strikes it with its great claws until an opening is made; it then inserts its slender claws, and by wriggling and turning itself about removes the contents of the nut.

CRABS (*Cancer pagurus*).

The proper mode of boiling crabs has long been a subject on which doctors have disagreed. Who, then, shall decide? That there is cruelty associated with the taking away of life it would be hard to deny, but the correctness of choice between gradual stewing in slowly-heated water and being plunged at once into the seething, bubbling cauldron requires “the revelations of a boiled crab” to clear up; and until a crustacean production under that or a like title appears, we shall continue to plunge our armour-clad victims in water at 212 degrees of Fahrenheit’s thermometer, and leave the question as to the propriety of our so doing to those who are disposed to grapple with the subject for its own sake.

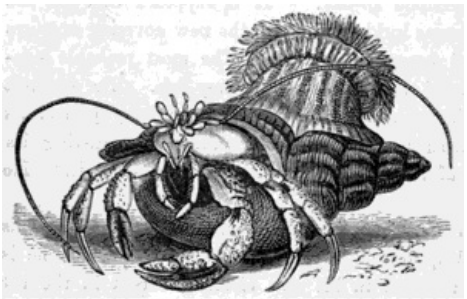
The West India Islands possess in the Land Crab (*Gecarcinus ruricola*) a kind of crustacean highlander, who retreats into the uplands at certain times in the year. “As the spawning season approaches a mighty gathering of the clans takes place, and whole legions, unwarned by fiery cross or blazing beacon, hasten forth to join the living tide flowing onward towards the sea. Through the tangled jungle, down the rock-strewed ravine, over fallen tree-trunks, and among the dense undergrowth of the forest, in ceaseless, creeping, crawling, scuttling thousands, still they come onward, and ever onward, as the bright stars shine out to light them on their way. Banks, hedges, walls, and even houses, are passed straight over in this crustacean steeplechase, no flags being needed to keep the mail-clad competitors to the true course. Instinct the guide, and the blue sea for a goal, nothing stops the race.

“Cuffee and his companions, who have been gossiping and story-telling beneath their cocoa-leaf roofs until half asleep, appear to become most violent and incurable lunatics, on suddenly becoming aware of the nocturnal exodus. They leap high in the air, shout, scream, and dance like fiends, whilst the most ready-witted of the crew dash off to ‘de massa’ with the startling news. ‘Hi, golly, sa! de crab! de crab! He come for sure, this time, sure ’nuff. Plenty catch um bime by;’ and Cuffee keeps his word to the letter, and captures the pilgrims by the basketful, in spite of their claws. And black-faced, woolly-headed Aunt Lilly, the cook, shows her teeth, like ivory dominoes in an ebony box, as visions of white-snow-like rice, cocoa-nut milk, capsicum-pods, and stewpans, pass in pleasing and appetising review before her; and ‘massa’ himself takes an extra pull at the cold-sangaree jug, sleeps pleasantly, and dreams of the crab-feast on the morrow.”



THE WEST INDIAN LAND CRAB (*Gecarcinus ruricola*).

The King Crab of the eastern seas grows sometimes to an enormous size, while the lance-shaped spear with which he is furnished is used by the Malays as a warlike instrument. Then, for a
[pg 153] contrast, there's the little nut-crab, with his queer little legs tucked up under his body, which rambling jack-tars sometimes gather for their friends at home, under the idea that their shells, when cut and polished, will make handsome brooches and shirt-pins. Major Lord tells a good story of a dry old salt of a quartermaster, on the Indian station, who "chanced one day, when on shore for a cruise, to become possessed of a goodly number of these lucky stones, as he called them, and by way of securing his treasures, placed them in an old silk handkerchief, and stowed them away, with a few dollars and sundry cakes of cavendish, in the corner of his chest. It so happened that some piratical shipmate, not proof against the allurements of honeydew and silver, but totally indifferent to natural history, seized his opportunity and spirited off the tobacco and money, but left the lucky-stones behind. The next day, when our old friend came for his accustomed supply of the weed, he, to his horror, astonishment, and indignation, found the supposed pebbles in active motion, performing foot-races over his best jacket, the handkerchief spread open, and, alas! empty. 'Well!' exclaimed he; 'blow me if this aint too much of the monkey! Why, look ye here, messmates! These here blessed stones have come to life, every man Jack of 'em. They've chawed up all my bacca, and spent every mag of my money! and now I'll
[pg 154] heave the beggars to Davy Jones's locker. Overboard is where I means to pitch 'em.' And so he did, no doubt to the intense gratification of the falsely-accused crabs."



THE HERMIT CRAB (*Pagurus Bernhardus*).

The Hermit, or Soldier, Crab, with the exception of a kind of cuirass, or head-piece, has a soft, yielding skin. Knowing his own weakness, he invariably entrenches himself in some safe place, not unfrequently emptying the shell of some other marine animal. When he outgrows his borrowed habitation he looks out for some larger dwelling. He is a very timid creature, and retires at the least alarm. On the other hand, among his kind he is strong, voracious, and cruel. Two hermit crabs cannot meet without a fight brewing, but it rarely comes off. "Each extends his long pincers, and seems to try to touch the other, much as a spider does, when it seeks to seize a fly on its most vulnerable side; but each finding the other armed in proof and perfectly protected, though eager to fight, usually adopts the better part of valour, and prudently withdraws. They often have true passages of arms, nevertheless, in which claws are spread out and displayed in

the most threatening manner, the two adversaries tumbling head over heels, and rolling one upon the other, but they get more frightened than hurt." Mr. Gosse, however, describes a struggle which had a tragic end. A hermit met a brother hermit pleasantly lodged in a shell much more spacious than his own. He seized it by the head with his powerful claws, tore it from its asylum with the speed of lightning, and took its place not less promptly, leaving the dispossessed unfortunate struggling on the sand in convulsions of agony. "Our battles," says Bonnet, "have rarely such important objects in view; *they* fight each other for a house." A young poet of to-day[42] sings of *our* wars—

"Tell me, tell me, is this glory?
Is it honour, is it fame?
Has mankind, through ages hoary,
Given to war its fitting name?
Twist it, turn it, warp it, bind it,
Greet its triumphs with acclaim,
Yet at last the world will find it
Only murder, all the same!"

Both crabs and lobsters are amazingly prolific, and lay an enormous number of eggs: it is computed that each female produces from 12,000 to 20,000 in a season; and yet these shell-fish are always dear in London! In France, Figuier tells us, the size of the marketable lobster is regulated by law, and fixed at a minimum of eight inches in length: all under that length are contraband. The London market is supplied from every part of our coasts, and very largely from Norway. At Kamble, near Southampton, one owner has storing-ponds, or tanks, for 50,000 at a time; and he has his own smacks constantly running to the coasts of France, Scotland, and Ireland.

The Lobster (*Homarus vulgaris*) is found in great abundance all round our coasts. Who that has frequented our seaside watering-places has not either gone out to assist in hauling up the lobster-pots, or, at all events, seen the fishermen returning with their spoils? And what *can* be finer than a lobster boiled, say not more than half an hour after his capture from the briny? He
[pg 155] tastes very unlike the poor creature which has been conveyed by boat or train to London, and knocked about in barrows, carts, markets, and shops, until he wishes they would boil him, and have done with it at once. Lobster-pots are, practically, wicker-basket traps. The hole at the bottom allows free ingress, but makes it difficult for the victim to get out. They are baited with garbage, and the position of each on the rocks or sand below is marked by a buoy. Each fisherman has his own private mark on them; and woe to the lobster-thief, as to the crab-thief! Sometimes nets are used for catching lobsters.

Mr. Pennant says that large lobsters are in their best season from the middle of October to the beginning of May. The smaller ones are good all the summer. If they are four-and-a-half inches long from the top of the head to the end of the back shell they are called "sizable" lobsters; if under four inches, "half-size," and two are reckoned as one of size. Under four inches, they are called "pawks."

There is little doubt that up to a certain age lobsters shed their shells annually, but the mode of performance is not quite understood to-day. "It is supposed that the old shell is cast, and that the animal retires to some lurking-place till the new covering acquires consistence to contend with his armour-clad congeners.... The most probable conjecture is that the shell sloughs off piecemeal, as it does in the cray-fish. The greatest mystery of all, perhaps, is the process by which the lobster withdraws the fleshy part of its claws from their calcareous covering. Fishermen say the lobster pines before casting its shell, and thus gets thin, so as to permit of its withdrawing its members from it." He sheds tears first, and shell second.

The common English lobster, as seen in the fishmonger's shop, is very unlike his relatives beneath the waves. "The curled-up form," says Major Lord, "in which he is seen when so exposed is not that usually assumed in his own element, except in the act of exerting its immense powers of retrograde motion. These are so great that one sudden downward sweep of its curiously-constructed oar-like tail is sufficient to send it like an arrow, three or four and twenty feet, with the most extraordinary precision, thereby enabling our friend to retreat with the greatest rapidity into nooks, corners, and crevices among the rocks, where pursuit would be hopeless. His eyes being arranged on foot-stalks, or stems, are free from the inconvenient trammels of sockets, and possess a radius of vision commanding both front and rear, and from their compound form (being made up of a number of square lenses) are extremely penetrating and powerful. The slightest shadow passing over the pool in which the lobster may chance to be crawling or swimming will frequently cause one of these backward shoots to be made, and the lobster vanishes into some cleft or cavity with a rapidity of motion which no harlequin could ever, in his wildest dreams, hope to achieve. Down among the deep channels, between the crags at the sea's bottom, alarms, except from the sea-robbers themselves, are not to be dreaded. Here the lobsters are at home, and in such spots the wicker trap, or the trunk net, may be laid down for them: nets of this kind are in general use. They are made by fastening a number of stout wooden hoops to longitudinal bars, and covering them with network. Their internal construction is much like that of the crab-pot, only there are two entrances instead of one, and twine is used instead of willows or twigs to prevent the prisoners from escaping. Heavy stones are attached to them as sinkers. Fish offal is used as bait, and corks at the end of lines serve to point out their position and haul them up by.

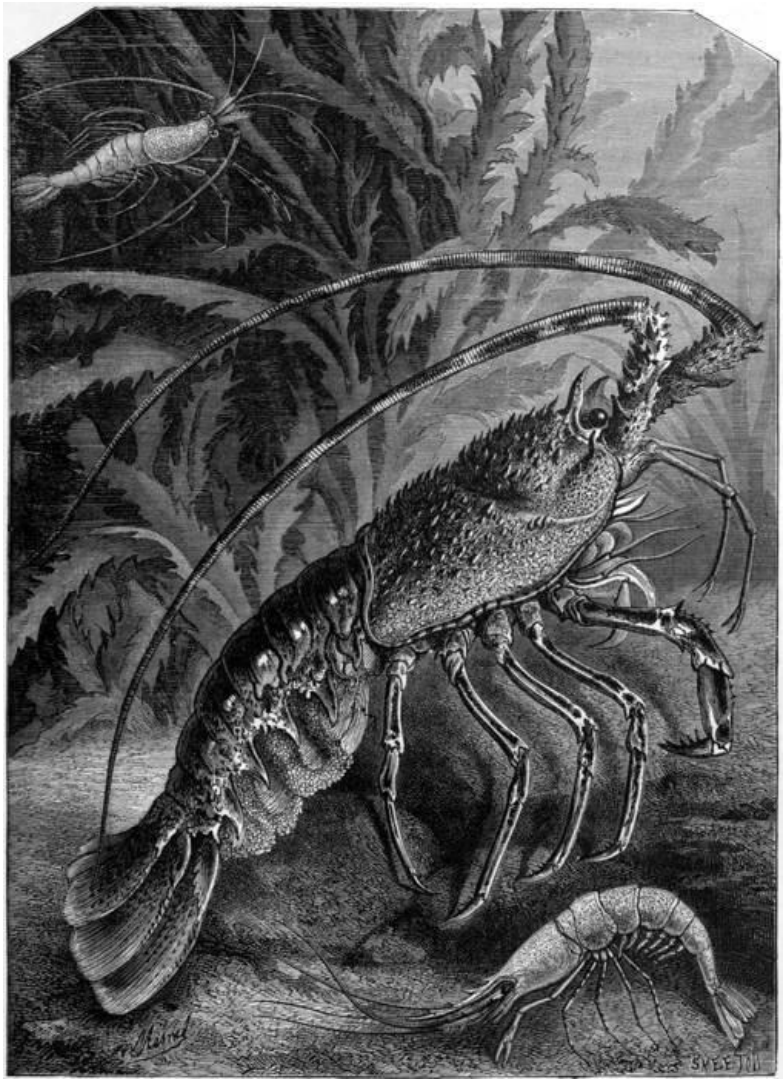
[pg 156] Lobsters are prolific creatures, and it is well that they are so, considering the enormous quantities consumed every day in England alone.

“It has been computed that each fully-matured female will produce from 18,000 to 20,000 eggs, and there is little doubt but that with proper management and the expenditure of a very small capital artificial fecundation of the ova might be most successfully and profitably conducted in this country. Much attention has of late been paid to this subject in France, and many most interesting experiments in connection with it have been tried. The number of lobsters brought every season to Billingsgate Market will serve to give some idea of the importance of lobster fishing, and the sums of money which must change hands in connection with it. Calculations show that from the coasts of England, Ireland, Scotland, and the Channel Islands 150,000 lobsters per season reach Billingsgate, exclusive of the supply of Norway lobsters, which are even more abundantly supplied, over 600,000 per season being imported. It not unfrequently happens that one day’s supply for that great emporium of sea dainties reaches as high as 25,000, and here at early morning, long before mighty London is fairly up for the day, a scene of bustle and activity may be witnessed which well repays the early riser. Steam in clouds floats above the vast loads of newly-boiled crustaceans and molluscs; and carts of every size and pattern block the way.”

The regular lobster season lasts from the month of March to August. About the middle or latter end of the last-mentioned month the shifting of shells takes place, and the fish is unfit for human food; but, like the silkworms after a change of skin, they commence feeding in the most voracious manner directly the new garment is durable enough to admit of their taking their walks abroad, and their temporary seclusion and compulsory abstinence are amply made up by a course of heavy feeding. The lost plumpness and condition soon return. Unlike some crustaceans who are coldly indifferent to the welfare of their offspring, the mamma lobster keeps her little brood about her until the youthful lobsterkins are big enough to start in life for themselves.

The coasts of British North America, as well as many portions of the seaboard of the United States, abound in mail-clad inhabitants of many kinds. In some localities great amusement is at times afforded by their capture—a sort of picnic, or lobster frolic, being organised. A boat, with plenty of eatables and drinkables, and a capacious pot, are provided, and long poles with their ends split prepared. On the boat being propelled slowly through the shallow water, a sharp look-out is kept on the regions below, and on the lobster being discovered, the split end of the pole is lowered quietly, and with the greatest caution, until just over the unsuspecting victim’s back, when by a sudden downward thrust the forceps-like instrument securely nips him, and he is brought to the surface in spite of his claws and the pinches he inflicts on the tough, unyielding wood. Some overhanging rock or pleasant nook on the shore is usually selected as a place in which to dine and cook the proceeds of the lobster hunt.

[pg 157]



LOBSTER (*Homarus vulgaris*) AND PRAWNS (*Palæmon serratus*).

[pg 158] The bays, shallows, and mouths of rivers on the coast of Prince Edward's Island abound in a species of seaweed known amongst the inhabitants as "eel-grass," on which vast numbers of lobsters feed as in a rich sea-garden. To these favoured hunting grounds the lobster-catchers betake themselves, and by wading little more than half-leg deep gather as many as they require. A bushel basket has been filled in this way in less than an hour.

Like the branching growths of submarine life which form the connecting link between the vegetable and animal kingdoms, we find crustaceans dwelling, so to speak, on the border-lands of other races, and linking the shrimp, crab, and lobster families together; partaking of the nature of each, but being identical with neither; such are the so-called *Squat Lobsters*, or *Galathea*. Their singular alertness renders capture somewhat difficult. Like the lobster, they possess extraordinary powers of vision and retrograde movement. The horns are extremely long, and so sensitive that the slightest touch seems to reveal at once the nature of an approaching object, and enables the alarmed squat to seek a safe sanctuary between the rock clefts, from which it is by no means easy to withdraw him.

The *spined lobster*, *crawfish*, *cray*, or *crowder*, will, from its thorn-coated shell, long horns, powerful nippers, and generally formidable appearance, be familiar to most of our readers. Like most other crustaceans, the cray delights in a home among rugged sunken rocks, and is taken in the traps laid for ordinary lobsters and crabs. Their flesh, being of harder texture and sweeter flavour, is objected to by professed lobster-eaters; still, a well-conditioned spined lobster is by no means to be despised. Some portions of the Pacific Ocean, and the warm seas of the East, contain them in vast numbers. Many spots on the coast of South America, and the bays and inlets of the island of Juan Fernandez, literally swarm with them. Some idea may be formed of the abundance of animated creatures of this and other kinds to be taken in these seas by the following account of the fishing to be obtained in them, given by the Hon. F. Walpole:—"The fishing afforded the best return for labour, and a boat might be filled in four hours with hook and line only. Fish swarmed of every size and colour, and seemingly of every variety of appetite, for they took any bait. The bottom was literally lined with crawfish of a large size; some must have weighed five pounds at least. There needed no hook—a piece of anything let down on a string to the bottom was enough; they saw it, grasped it, and kept their hold till you had seized them by their long feelers and borne them into the boat, where they crawled about and extended their feelers as if in search of more bait.... We had crawfish for breakfast, crawfish for dinner, crawfish for supper, and crawfish for any incidental meal we could cram in between." The coral reefs fringing the

island of Mauritius afford shelter to numbers of the family of crawfish, which in both size and splendour of colouring far excel those taken in our seas.

The prawn and shrimp are included in the same order as the lobster and the crab, and species of these crustaceans are found in all seas. They are the scavengers of the ocean, and pick and devour any dead matter in the sea; hence they are particularly valuable in the aquarium. The art of shrimping will no doubt be familiar to all our readers, from visits made to our south-coast watering-places. In tropical climates the prawn attains the size of a small lobster—up to nine or ten inches in length, three being considered sufficient for a meal. Prawns are sold in Dublin six and seven inches in length, and are considered splendid feeding.

[pg 159]

CHAPTER XIV.

Ocean Life.—The Harvest of the Sea.

Fishes and their Swimming Apparatus—The Bladder—Scientific Classification—Cartilaginous Fish—The Torpedo—A Living Galvanic Battery—The Shark—His Love for Man in a Gastronomic Sense—Stories of their Prowess—Catching a Shark—Their Interference with Whaling—The Tiger-Shark—African Worship of the Monster—The Dog-fish—The Sturgeon—Enormous Fecundity—Caviare—The Bony Fishes—The Flying Fish: its Feats; its Enemies—Youth of a Salmon—The Parr, the Smolt, and the Grilse—Flourishes in the Sea—The Ponds at Stormontfield—The Salmon's Enemies—The Ettrick Shepherd—Canned Salmon, and where it comes from—The Fish a Drug in N. W. America—Canoes impeded by them—The Fisheries of the Columbia River—The Fishing Season—Modes of Catching Salmon—The Factories and Processes employed.

And now we proceed to still higher organisations. The fish must have their turn in a work treating of their natural home, the ocean.[43] Fishes, intended always to live in water, have wonderful organs to aid them in swimming. "The anterior limbs," says Figuier, "which correspond with the arms in man and the wings in birds, are attached to each side of the trunk, immediately behind the head, and form the pectoral fins. The posterior limbs occupy the lower surface of the body, and form the ventral fins. The latter, which are always over the ventral line, may be placed before, beneath, or, as is most usual, behind the former. Fishes possess, besides these two pair of fins, odd fins. The fins which are found on the back or dorsum are called the back or dorsal fins, those at the end of the tail are the caudal fins; finally, there is frequently another attached to the lower extremity of the body, which is called the anal fin. These fins are always nearly of the same structure, consisting generally of a fold of the skin, supported by slender, flexible, cartilaginous, or osseous rays, connected by a thin membrane." The muscles which move these fins are powerful. Further, nearly all species of fish possess a swimming bladder, over which the animal has control, and can thereby increase or diminish the specific gravity of its body. Immediately behind the head are the gill openings; respiration is effected by water, in its natural state always charged with air, being taken in at the mouth, which passes over the gills, and is afterwards ejected. The eyes in fish are usually very large.

The scientific classification of fishes usually adopted is that of Muller. He divided them into five groups, the *Leptocardia*, *Cyclostomata*, *Selachia*, *Ganoidea*, and *Teleostea*. The first of these is represented by a single genus, *Amphioxus*, a little slender gelatinous fish, rarely over two inches in length, and commonly found on all sandy coasts. The second order is characterised as serpentine, void of fins, and with a mouth formed for suction. The lamprey is a familiar example.

The third order, *Selachia*, includes a number of cartilaginous fish, varying much in form; the rays, dog-fish, skate, torpedo, shark, and saw-fish belong to this important division. The torpedo has the power of giving a strong electrical shock. Redi, an Italian naturalist of the seventeenth century, first studied them carefully. He caught and landed an electric ray, and pressing it with his hand, experienced a tingling sensation, which extended to his arms and shoulders, and was followed by a disagreeable trembling. This electric power dies with the animal. Dr. Walsh made
[pg 160] some interesting experiments with them. He placed a living torpedo on a clean wet towel, and connected brass wires with it. Round the torpedo were eight persons, standing on isolating substances. One end of the wire was placed in a basin full of water. The first person had a finger of one hand in this basin, and a finger of the other in a second basin, also full of water. The second person had a finger in the last-named basin, and a finger of the other hand in a third basin, and so on round the circle of eight persons. The end of the second wire was plunged into the last basin of the series, thus establishing a complete electric circuit. At the moment when the experimenter touched the torpedo a tolerably strong shock was felt by all participating. When the torpedo was placed on an isolated supporter, it showed its energy by communicating to several persons forty or fifty shocks in the short space of a minute and a half.

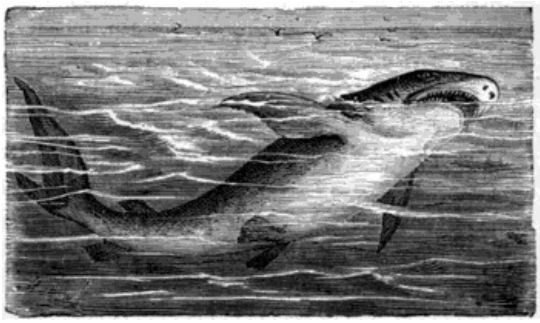
The family *Carcharidæ* includes the true sharks, some species of which attain to a length of

twenty, or even thirty, feet. They are the terror of all other fish and molluscs. “But the prey which has the greatest charm for him is man; the shark loves him dearly, but it is with the affection of the gourmand. If we may believe some travellers, when several varieties of human food comes in its way, the shark prefers the European to the Asiatic, and both to the negro.” He has been known to jump clean aboard a fisherman’s boat, and even to snap up a sailor from the shrouds. Commerson relates the following:—The corpse of a negro had been suspended from a yard-arm *twenty feet* above the level of the sea. A shark was seen making every effort to reach the body, which eventually he did, and tore it limb from limb in presence of the horror-stricken crew. The mouth of the shark is placed in the lower part of the head, and the animal has to turn itself in the water before he can seize an object above him. On the African coast the negroes take advantage of this fact; they swim towards him, and seize the moment when he turns to rip up his belly with a large strong knife. The adult shark has six rows of murderous-looking teeth, forming a perfect arsenal of deadly weapons.

Captain Basil Hall describes the mode by which sharks are sometimes captured. “The sharp-curved dorsal fin of a huge shark was seen rising about six inches above the water, and cutting the glazed surface of the sea by as fine a line as if a sickle had been drawn along it. ‘Messenger, run to the cook for a piece of pork,’ cried the captain, taking the command with as much glee as if an enemy’s cruiser had been in sight. ‘Where’s your hook, quartermaster?’ ‘Here, sir, here,’ cried the fellow, feeling the point, and declaring it was as sharp as any lady’s needle, and in the next instant piercing with it a huge junk of pork weighing four or five pounds. The hook, which is as large as one’s little finger, has a curvature about as large as a man’s hand when half closed, and is six or eight inches in length, while a formidable line, furnished with three or four feet of chain attached to the end of the mizen topsail halyard, is now cast into the ship’s wake.

“Sometimes the very instant the bait is cast over the stern the shark flies at it with such eagerness that he actually springs partially out of the water. This, however, is rare. On these occasions he gorges the bait, the hook, and a foot or two of the chain, without any mastication, and darts off with the treacherous prize with such prodigious velocity that it makes the rope crack again as soon as the coil is drawn out. Much dexterity is required in the hand which holds
[pg 161] the line at this moment. A bungler is apt to be too precipitate, and jerk away the hook before it has got far enough into the shark’s stomach. The secret of the sport is to let the monster gulp down the whole bait, and then to give the line a violent pull, by which the barbed point buries itself in the coat of the stomach. When the hook is first fixed it spins out like the log-line of a ship going twelve knots.

“The suddenness of the jerk with which the shark is brought up often turns him quite over. No sailor, however, thinks of hauling one on board merely by the rope fastened to the hook. To prevent the line breaking, the hook snapping, or the jaw being torn away, a running bowline is adopted. This noose is slipped down the rope and passed over the monster’s head, and is made to join at the point of junction of the tail with the body; and now the first part of the fun is held to be completed. The vanquished enemy is easily drawn up over the taffrail, and flung on deck, to the delight of the crew.” Even then he is sometimes a very formidable enemy. The flesh of the shark, though sometimes eaten, is coarse and leathery.



THE COMMON SHARK (*Carcharias vulgaris*).

On several of the smaller islands of the Spanish Main whaling stations are established. After the huge fish have been captured, they are towed by the boats to one of these stations, and the blubber is stripped off and carried on shore to the boiling-house in large white blocks, where a simple apparatus is set up for “trying-out” the oil. It sometimes happens that immediately after the whale has been killed the sharks surround it in such numbers, and devour the blubber with such rapacity, that if the distance be great and the currents adverse, the greater part has been eaten off before the whale can be towed ashore; and the labour of the fishermen is thus thrown away.

The tiger-shark is a more formidable monster than others of its tribe, because of its power of seizing its prey without turning on its back or side. It is enabled to do this from the great size of its mouth, and from its position, which is near the end of the snout, instead of underneath, as in other varieties of the shark.

“As soon as the carcase of the whale has been stripped of its blubber, it is towed out at high

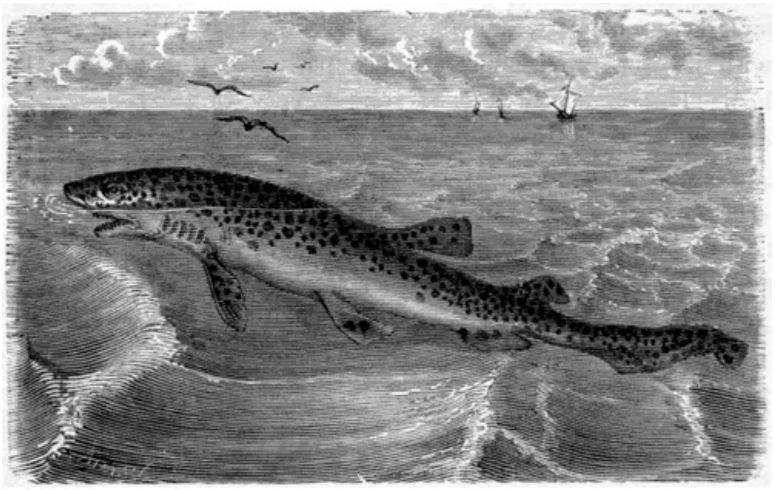
water to a sufficient distance from the station to ensure of its being carried away by the falling tide. This is necessary, for the stench from so large a mass of putrefying flesh, exposed as it has been to the intense action of a tropical sun for three or four days, is more than unpleasant.

“Now is the opportunity for the shark-hunters. They take possession of the remains, tow them to some convenient nook of the Bocas, as the channels between the islands are called, and there anchor them. All is now prepared, and nothing remains but eagerly and silently to watch for the assembly of the ravenous brutes to their midnight orgies.”

[pg 162] The liver of the shark yields a most valuable oil, largely used in the colony as a substitute for cod-liver oil. The liver of a shark fifteen feet long will yield from twelve to sixteen gallons of oil.

The canoes used for shark-hunting are some twenty feet in length. In the bow a deep groove is cut, to guide the rope after the fish has been struck. A coil of fifteen fathoms of rope, carefully arranged under the thwarts, is secured at one end to a piece of strong chain, at the other end of which is a harpoon. A lance is kept on board to assist in giving the *coup de grâce* to the shark when he has exhausted himself sufficiently.

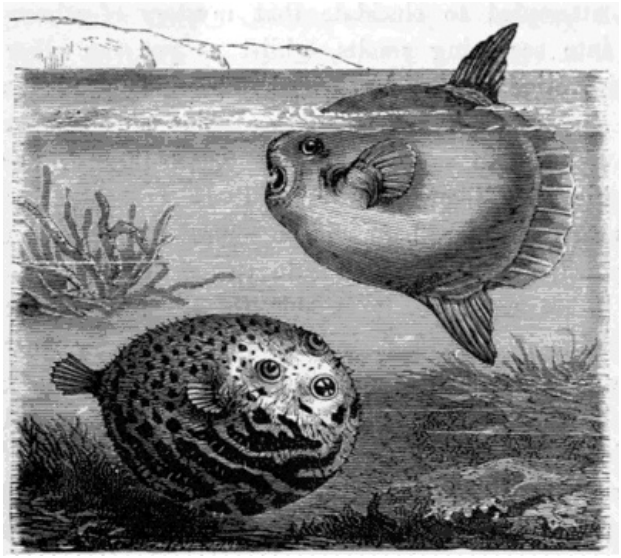
The inhabitants of many parts of the African coasts worship the shark, and consider its stomach the road to heaven. Three or four times a year they row out and offer the shark poultry and goats to satisfy his appetite. This is not all; a child is once a year sacrificed to the monster, which has been specially fattened for this occasion from its birth to the age of ten. On the *fête* day, the unfortunate little victim is bound to a post on a sandy point at low water; as the tide rises the sharks arrive. The child may shriek, and the mother may weep, but it is of no avail; even its own parent thinks that the horrible sacrifice will ensure her child’s entry into heaven.



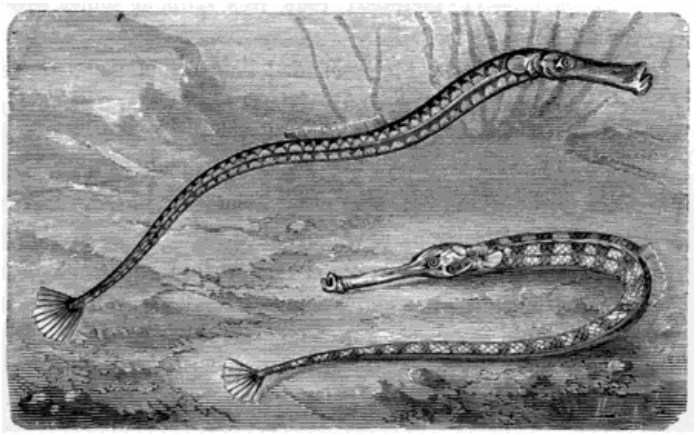
THE DOG-FISH (*Acanthias vulgaris*).

The dog-fish—from which we derive the skin known as *shagreen*, used for spectacle and other cases—the furious and voracious hammerhead, and the saw-fish, belong to the same great order. The last named will attack any inhabitant of the deep whatever, and even dares to measure his strength with the whale. Its length is from twelve to fifteen feet, while its weapon of defence is sometimes as much as two yards in length. Occasionally it dashes itself against the side of a ship with such fury as to leave its sword broken in the timber.

Of the fourth great order, *Ganoidea*, the sturgeon is the most prominent example. It is essentially a sea-fish, although ascending rivers at stated periods, as does the salmon. It is particularly noticeable for the number of bony plates or scales on its back and belly. In the sea the sturgeon feeds on herrings, mackerel, and other fish; in the rivers on salmon. It is caught in traps, or in nets. The prepared roe, cleaned, washed in vinegar, and partially dried, is the caviare of the Russians. The eggs of a female sturgeon will weigh over one-third of its entire body, and as they sometimes reach a weight of nearly 3,000 pounds, the preparation of caviare becomes an important and profitable industry.

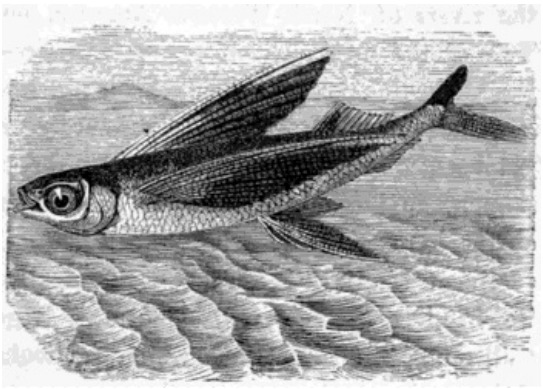


THE GLOBE-FISH (*Tetrodon*) AND SUN-FISH (*Orthagoriscus mola*).



THE PIPE FISH (*Syngnathus acus*).

The fifth order, *Teleostea*, or bony fishes, constitutes a lengthy series. Among it must be placed the globular and phosphorescent sun-fish, the spiny globe-fish, the bony trunk-fish, and the cuirassed pipe-fish, the sea-horse, which has a head not unlike a horse, and floats vertically, the flying-fish, the eels, herrings, salmon, carp, cod, flat-fish, mullets, tunnies, and others too numerous to mention. It is for man’s purposes the most important of all the orders.



THE FLYING-FISH (*Exocœtus exiliens.*)

The flying-fish have been incidentally mentioned before in this work. Captain Basil Hall observed a flight of 200 yards; they have come on board a vessel fourteen or fifteen feet, and into the chains of a line-of-battle ship twenty feet above the water. They are considerably harassed by the attacks of other fish, and when they take to the air often fall victims to gulls and other sea-birds. Sharks and dolphins are their particular enemies. Their glittering, silvery brilliancy is most beautiful in the brightness of tropical seas.

[pg 163] Among the most important bony fishes must certainly be first placed the salmon, which includes three well-known species, *Salmo salar* (the salmon itself), *S. fario* (the salmon trout), and *S. trutta* (the trout). The early life of the salmon is interesting. The infant fry is primarily, of course,

very helpless, and during the first two or three weeks of its existence carries about with it, as a provision for food, a portion of the yolk of the egg from which it was hatched. This generally lasts it from twenty to forty days. It is two years before the youngster ventures out to sea. In the first stage the young salmon is called a *parr*; during the second it is a *smolt*, *i.e.*, a parr plus a covering of silvery scales. The smolt, which in the course of its two or more years' stay in the river has only attained a growth of six or eight inches, returns from the sea in a couple of months weighing three or four pounds, and after six months ten or twelve pounds. It is now a *grilse*.

Dr. Bertram says of the salmon's growth:—

"The sea-feeding must be favourable, and the condition of the fish well suited to the salt-water to ensure such rapid growth—a rapidity which every visit of the fish to the ocean serves but to confirm. Various fish, whilst in the grilse state, have been marked to prove this; and at every migration they returned to their breeding-stream with added weight and improved health. What the salmon feeds upon whilst in the salt-water is not well known, as the digestion of the fish is so rapid as to prevent the discovery of food in their stomachs when they are captured and opened. Guesses have been made, and it is likely that these approximate to the truth; but the old story of the rapid voyage of the salmon to the North Pole and back again turns out, like the theory upon which was built up the herring migration romance, to be a mere myth.

"None of our naturalists have yet attempted to elucidate that mystery of salmon life which converts one-half of the fish into sea-going smolts, whilst as yet the other moiety remain as parr. It has been investigated so far at the breeding-ponds at Stormontfield, but without resolving the question. There is another point of doubt as to salmon life which I shall also have a word to say about—namely, whether or not that fish makes two visits annually to the sea; likewise, whether it be probable that a smolt remains in the salt water for nearly a year before it becomes a grilse. A salmon only stays, as it is popularly supposed, a very short time in the salt water; and as it is one of the quickest-swimming fishes we have, it is able to reach a distant river in a very short space of time, therefore it is most desirable we should know what it does with itself when it is not migrating from one water to the other; because, according to the opinion of some naturalists, it would speedily become so deteriorated in the river as to be unequal to the slightest exertion....

"At every stage of its career the salmon is surrounded by enemies. At the very moment of spawning, the female is watched by a horde of devourers, who instinctively flock to the breeding-grounds in order to feast on the ova. The hungry pike, the lethargic perch, the greedy trout, the very salmon itself, are lying in wait, all agape for the palatable roe, and greedily swallowing whatever quantity the current carries down. Then the waterfowl eagerly pounces on the precious deposit the moment it has been forsaken by the fish; and if it escape being gobbled up by such
[pg 164] cormorants, the spawn may be washed away by a flood, or the position of the bed may be altered, and the ova be destroyed, perhaps for want of water. As an instance of the loss incidental to salmon-spawning in the natural way, I may just mention that a whiting of about three-quarters of a pound weight has been taken in the Tay with three hundred impregnated salmon ova in its stomach! If this fish had been allowed to dine and breakfast at this rate during the whole of the spawning season it would have been difficult to estimate the loss our fisheries would have sustained by his voracity. No sooner do the eggs ripen, and the young fish come to life, than they are exposed, in their defenceless state, to be preyed upon by all the enemies already enumerated; while, as parr, they have been taken out of our streams in such quantities as to be available for the purpose of pig-feeding and manure! Some economists estimate that only one egg out of every thousand becomes a full-sized salmon. Mr. Thomas Tod Stoddart calculated that 150,000,000 of salmon ova are annually deposited in the river Tay; of which only 50,000,000, or one-third, come to life and attain the parr stage; that 20,000,000 of these parr become in time smolts, and that their number is ultimately diminished to 100,000; of which 70,000 are caught, the other 30,000 being left for breeding purposes. Sir Humphry Davy calculated that if a salmon produced 17,000 roe, only 800 of these would arrive at maturity. It is well, therefore, that the female fish yields 1,000 eggs for each pound of her weight; for a lesser degree of fecundity, keeping in view the enormous waste of life indicated by these figures, would long since—especially taking into account the destructive modes of fishing that used a few years ago to be in use—have resulted in the extinction of this valuable fish.

[pg 165] "The first person who 'took a thought about the matter'—*i.e.*, as to whether the parr was or was not the young of the salmon—and arrived at a solid conclusion, was James Hogg, the Ettrick Shepherd, who, in his usual impulsive way, proceeded to verify his opinions. He had, while herding sheep, many opportunities of watching the fishing streams, and, like most of his class, he wielded his fishing-rod with considerable skill. While angling in the tributaries of some of the Border salmon-streams, he had often caught the parr as it was changing into the smolt, and had, after close observation, come to the conclusion that the little parr was none other than the infant salmon. Mr. Hogg did not keep his discovery a secret, and the more his facts were controverted by the naturalists of the day the louder became his proclamations. He had suspected all his life that parr were salmon in their first stage. He would catch a parr with a few straggling scales upon it; he would look at this fish, and think it queer; instantly he would catch another, a little better covered with silver scales, but all loose, and not adhering to the body. Again, he would catch a smolt, manifestly a smolt, all covered with the white silver scales, yet still rather loose upon the skin, which would come off in his hand. Removing these scales, he found the parr with the blue finger-marks below them, and that the fish were young salmon then became as manifest to the shepherd as that a lamb, if suffered to live, would become a sheep. Wondering at this, he

marked a great number of the lesser fish, and offered rewards (characteristically enough, of whisky) to the peasantry to bring him such as had evidently undergone the change predicted by him. When this conclusion was settled in his mind, the Shepherd at once proclaimed his new-gained knowledge. 'What will the fishermen of Scotland think' said he, 'when I assure them, on the faith of long experience and observation, and on the word of one who can have no interest in instilling an untruth into their minds, that every insignificant parr with which the cockney fisher fills his basket is a salmon lost!' These crude attempts of the impulsive Shepherd of Ettrick—and he was hotly opposed by the late Mr. Buist, of Stormontfield—were not without their fruits; indeed, they were so successful as quite to convince him that parr were young salmon in their first stage."

[pg 166] The following amusing dialogue on the habits of the salmon once took place between the Ettrick Shepherd and a friend:—

"*Shepherd*:—'I maintain that ilka saumon comes aye back again frae the sea till spawn in its ain water.'

"*Friend*:—'Toots, toots, Jamie! hoo can it manage till do that? Hoo, in the name o' wonder, can a fish, travelling up a turbid water frae the sea, know when it reaches the entrance to its birthplace, or that it has arrived at the tributary that was its cradle?'

"*Shepherd*:—'Man, the great wonder to me is no hoo the fish get back, but hoo they find their way till the sea first ava, seein' that they've never been there afore!' "

The canned salmon, now generally popular in England, and which, though some few years ago an expensive luxury, is now within the reach of all, comes principally from the Columbia River, Oregon, and other parts of the North Pacific coasts. In North-Western America the fish is a perfect drug in the market. In a city like San Francisco it sells for eight cents (4d.) per pound. Higher up the coast a large fish is obtained for a quarter to half a dollar. Further north a piece of tobacco or a few needles will purchase a twenty or thirty pound salmon. They are so abundant that the writer has seen them on the beaches of streams and creeks falling into Frazer River, British Columbia, by the score, bleeding, gasping, and dying, having literally crowded each other out of the water. "Schools" of them are often so densely packed together, that they impede the progress of canoes and boats.

The salmon fisheries of the Columbia, Oregon, itself one of the grandest rivers in the world, give employment to 4,000 men during the season, and nearly all the canned salmon consumed in Europe comes from it.[44] There are dozens of rivers on the north-west coast equally available, and the business even now is in its infancy; while salted, pickled, or smoked salmon, hardly ever reaches England from there at all. As will appear, there are splendid opportunities on that coast for hundreds of new-comers, it may almost be said with or without capital. It is needless to state that the former is always to be preferred. Where isn't it?

Some ten or a dozen varieties of salmon and salmon-trout, Mr. Murphy tells us, enter the rivers of North-Western America, but only one is selected for commercial purposes. Two of the most delicate-eating varieties—the silvery-white and spring salmons—are never packed in tins, because their schools are less abundant and the fish themselves smaller. The hook-nosed and dog salmons are rarely eaten, except by Indians; while the man has not yet been discovered who would tackle the hump-back. The blue-back, or weak-toothed salmon, an inferior fish also, is only exported to the Sandwich Islands, where the natives are said to really prefer its lean and fibrous flesh to the more delicately-flavoured and succulent kinds. The salmon principally caught is distinguished by the Indians as the "Tyhee," or chief; it is abundant, large, and most excellent eating; it possesses those "all-round" qualifications which particularly fit it for commerce and cooking. It is the *Salmo quinnat* of the naturalists.

[pg 167] The fishery season on the Columbia lasts from the beginning of April to the end of July, and the fisheries extend along the river for a hundred miles or more. Some of the curing establishments employ their own men to tend the nets, while others purchase from fishermen, the price for fish weighing from fifteen to forty pounds ranging from 25 cents to 50 cents (approximately one to two shillings). These prices would seem ridiculously low were it not for the abundance of the fish and the ease with which they are taken. A party of four men may secure from 300 to 2,000 salmon in twenty-four hours! Take the lowest estimate—300 at 25 cents. This gives 75 dollars (or £15) to divide among the four fishermen. But this would be a very poor catch. A thousand fish are no uncommon haul. This at the lowest price paid would give 250 dollars (£50) to be divided. Of course there is the wear and tear of boat and fishing gear to be considered.

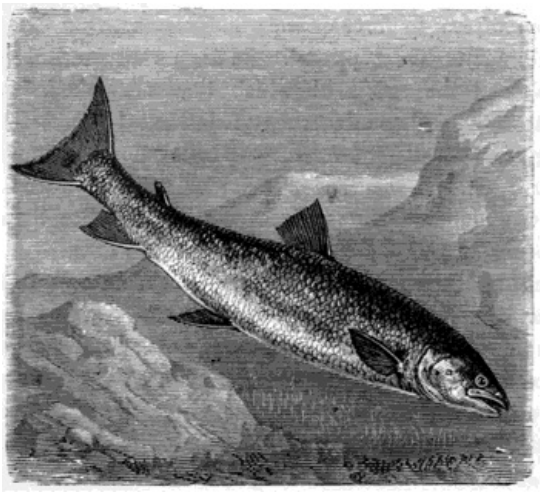
Large quantities of the fish are caught in weirs. The Indians, also, knowing that the salmon avoids currents if possible, build out into the river from the shore, for ten or a dozen feet, walls of stone a few inches in height. The salmon crowd into the quieter water caused thereby, and are easily captured in nets or by spearing. They are so numerous in places that the Indian can often flap them out of the water, by a sudden dexterous jerk of his paddle, to his squaw on the beach, who then immediately knocks them on the head and guts them.

At the curing houses, mostly owned by Americans, the labour is chiefly performed by Chinamen under the superintendence of white men. "John" quickly and cleverly guts the fish and cuts off its head; then cuts it into chunks, which are boiled, first in salt and afterwards in fresh water. Next

the tins are filled, and soldered down, all but one little hole in their tops. The tins are then immersed in boiling water, and when every particle of air is excluded, a few drops of solder effectually seal them up till wanted for the table. The process is in effect the same employed in the preservation of meats and fruits in tins.

Many British and Irish waterfalls are celebrated for their salmon leaps. In Inverness-shire at Kilmorack, at Ballyshannon in Donegal, and Leixlip near Dublin, in Pembrokeshire and elsewhere, the leaps are noted, and at many of them there are osier baskets placed below to catch the fish when they fail and fall. Sportsmen have even shot them, on the wing as it were, in their leap. At the Falls of Kilmorack "Lord Lovat conceived the idea of placing a furnace and frying-pan on a point of rock overhanging the river. After their unsuccessful effort some of the unfortunate salmon would fall accidentally into the frying-pan. The noble lord could thus boast that the resources of his country were so abundant, that on placing a furnace and frying-pan on the banks of its rivers, the salmon would leap into it of their own accord, without troubling the sportsman to catch them. It is more probable, however, that Lord Lovat knew that the way to enjoy salmon in perfection is to cook it when fresh from the water, and before the richer parts of the fish have ceased to curd."

In our own land, the Tweed, Tay, Spey, and Severn, are all noted rivers for salmon; the Tay fish sometimes weigh sixty pounds. It is a curious fact that the full-grown salmon never feeds in the rivers. "Juvenile experience on the part of the fish, recurring as a phantasm, causes them to snap at a shining artificial minnow or a gaudy fly, but they never rise out of the water; the bait must
[pg 168] dip to them, and when hooked they shake the intruder as a terrier does a rat." Their superabundant store of fat enables them to live on themselves, as it were, as do the Asiatic and African doomba sheep when avalanches and heavy snow-falls stop their supplies of herbage.[45] They become much thinner during their stay in fresh water; their colour becomes duller, and their flavour much depreciated. Izaak Walton's statement that "the further they get from the sea they be both fatter and better" is utterly erroneous, for they fatten only in the sea. In March, 1845, the Duke of Athole took a ten-pound salmon in the Tay after it had spawned, and attached a medal to it and then let it go to sea. The same individual, with its decoration, was fished up five weeks and a few days afterwards, when it had been to the refreshing salt water. It had more than doubled its weight, for it weighed twenty-one pounds.



THE SALMON (*Salmo salar*).

CHAPTER XV.

Ocean Life.—The Harvest of the Sea (*concluded*).

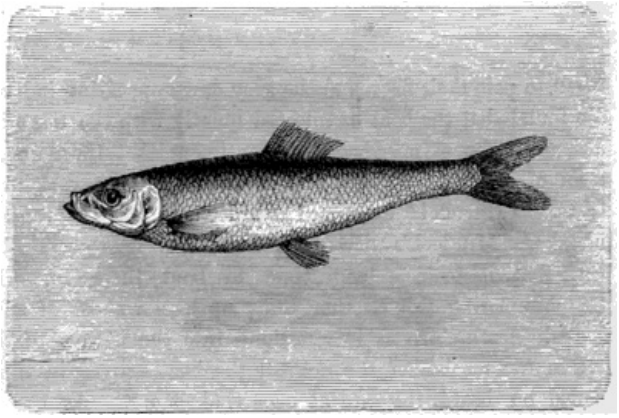
The *Clupedæ*—The Herring—Its Cabalistic Marks—A Warning to Royalty—The "Great Fishery"—Modes of Fishing—A Night with the Wick Fishermen—Suicidal Fish—The Value of Deep-sea Fisheries—Report of the Commissioners—Fecundity of the Herring—No fear of Fish Famine—The Shad—The Sprat—The Cornish Pilchard Fisheries—The "Huer"—Raising the "Tuck"—A Grand Harvest—Gigantic Holibut—Newfoundland Cod Fisheries—Brutalities of Tunny Fishing—The Mackerel—Its Courage, and Love of Man—Garum Sauce—The formidable Sword-fish—Fishing by Torchlight—Sword through a Ship's side—General Remarks on Fish—Fish Life—Conversation—Musical Fish—Pleasures and Excitements—Do Fish sleep?

A great and important group of the bony fish is comprised under the family name *Clupedæ*. It

includes such useful fish as the herring, pilchard, shad, and anchovy. The family is as interesting to the merchant as to the gastronomist.

The herring hardly needs description here, but it may just be remarked, *en passant*, that its back, indigo-coloured after death, is greenish during life. The curious markings often found on the herring have been considered by ignorant fishermen to signify mysterious words of cabalistic import. On one November day, near three hundred years ago, two herrings were caught on the
[pg 169] coast of Norway, which bore marks resembling Gothic printed characters. “They were presented to the then King of Norway, Frederick II., who was so frightened by the characters he saw on the backs of the innocent fish that he turned ghastly pale, for he thought that they announced his approaching death and that of his queen.” A council of *savants* was convened, and the learned ones solemnly reported that the words implied, “Very soon you will cease to fish herrings, as well as other people.” Some more politic scientists gave another explanation, but it was useless, for the king died next year, and his late subjects became firmly convinced that the two herrings had been celestial messengers charged to announce that monarch’s sudden end.

The herring abounds in the entire Northern Ocean from the coasts of France and England to Greenland and Lapland. They are very gregarious, and travel in immense shoals, their appearance in any specified locality being uncertain and always sudden. On the coast of Norway the electric telegraph is used to announce to the fishing towns the approach of the shoals, which can always be perceived at a distance by the wave they raise. In the fiords of Norway the herring fisheries are the principal means of existence for the seaboard population. So in 1857 the paternal Norwegian Government laid a submarine cable round the coast 100 miles in length, with stations ashore at intervals conveniently placed for the purpose of notifying the fishermen. In Holland the industries of catching and curing the fish are highly profitable; the fishery is in consequence known as “the great,” while whaling is known as the “small fishery.” To a simple Dutch fisherman, George Benkel, who died in 1397, Holland owes the introduction of the art of preserving and curing the herring. Two hundred years after his death, the Emperor Charles V. solemnly ate a herring on his tomb, as homage to the memory of the creator of a great national industry.



THE HERRING (*Clupea harengus*).

In our country there is also an important trade in the fish. Yarmouth sends out 400 vessels of from forty to sixty tons, the larger carrying a crew of twelve. In 1857 three fishing boats of this seaport brought home 3,762,000 fish. In Scotland the one town of Wick had a few years ago 920 boats employed in the fisheries.

The Dutch use lines 500 feet in length, with fifty or more nets to each. The upper part of these nets is buoyed with empty barrels or cork, while they are kept down by lead or stone weights; they can be lowered by lengthening the cord to which the buoys are attached. The meshes of the nets are so arranged that if the herring is too small to be caught in the first meshes, he passes through and gets caught in the succeeding one. Dr. Bertram went out in a Wick boat to the
[pg 170] fishing grounds. He says:—“At last, after a lengthened cruise, our commander, who had been silent for half an hour, jumped up and called to action. ‘Up men, and at them!’ was the order of the night. The preparations for shooting the nets at once began by lowering sail. Surrounding us on all sides was to be seen a moving world of boats; many with sails down, their nets floating in the water, and their crews at rest. Others were still flitting uneasily about, their skippers, like our own, anxious to shoot in the right place. By-and-by we were ready; the ‘dog,’ a large inflated bladder to mark the far end of the train, is heaved overboard, and the nets, breadth after breadth, follow as fast as the men can pay them out, till the immense train is all in the water, forming a perforated wall a mile long and many feet in depth, the ‘dog’ and the marking bladder, floating and dipping in long zig-zag lines, reminding one of the imaginary coils of the great sea-serpent. After three hours of quietude beneath a beautiful sky, the stars—

> “The eternal orbs that beautify the night”—

began to pale their fires, and the grey dawn appearing indicated that it was time to take stock. We found that the boat had floated quietly with the tide till we were a long distance from the

harbour. The skipper had a presentiment that there were fish in his net, and the bobbing down of a few of the bladders made it almost a certainty; and he resolved to examine the drifts. ‘Hurrah!’ exclaimed Murdoch of Skye; ‘there’s a lot of fish, skipper, and no mistake.’ Murdoch’s news was true; our nets were silvery with herrings—so laden, in fact, that it took a long time to haul them in. It was a beautiful sight to see the shimmering fish as they came up like a sheet of silver from the water, each uttering a weak death-chirp as it was flung into the bottom of the boat. Formerly the fish were left in the meshes of the net till the boat arrived in the harbour; but now, as the net is hauled on board, they are at once shaken out. As our silvery treasure showers into the boat, we roughly guess our capture at fifty cranes—a capital night’s work.” Wick boats are not, however, always so fortunate. The herring fleet has been overtaken more than once by fearful storms, when valuable lives, boats, and nets, have been sacrificed.

Early in December, 1879, an apparent epidemic of suicide attacked the herrings and sprats in Deal Roads, and they rushed ashore in such myriads at Walmer that the fishermen got tired of carting them off, and they were left on the beach for all who cared to help themselves. Nature seems now and then to put bounds to over-population, but if this be the case, no herring famines need be feared, for economical Nature would never have played into the hands of the fishermen who are always at war with her. Such wholesale suicides occur among other forms of animal life. In Africa regiments of ants have been seen deliberately marching into streams, where they were immediately devoured by fish. Rats have migrated in myriads, stopping nowhere, neither day nor night, and have been preyed upon by both large birds and beasts of prey. In the Seychelles some years ago several hundred turtles conspired to die together on the island in front of the harbour, and carried out their decision. Were they the victims of hydrophobia, delirium tremens, or some other disease? Even the gay and sprightly butterfly has been known to migrate in immense clouds from the land straight out to sea, without the remotest chance of ever reaching another shore. What could be the reason for such a suicidal act?

[pg 171] It would be difficult to over-estimate the value of deep sea fisheries; in which, according to trustworthy statistics, England and Wales alone employ nearly 15,000 boats, with nearly double that number of “hands,” added to whom are over 14,000 others to whom they give occasional employment on the coasts. The report of Commissioners Frank Buckland and Spencer Walpole, who were instructed to investigate the modes of fishing in the two countries named, and how far they were conducted on proper principles, has therefore both importance and interest. It was feared that in certain directions deep-sea fishing, which undeniably leads to the capture of myriads of young and useless fish, might have the same effect as wasteful fishing and dredging did in the case of the salmon and oyster.

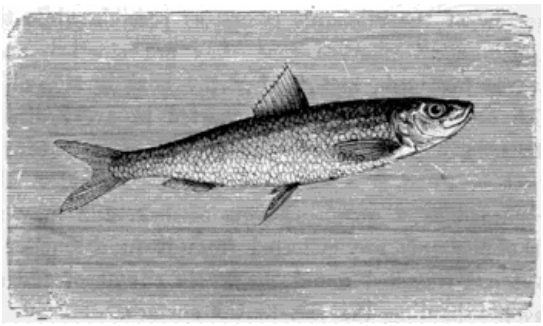
The Commissioners assure us that there is neither ground for alarm nor for legislative interference. The beneficent sea is practically inexhaustible. “Bearing in mind,” wrote a commentator on the Report, “how much has been said regarding the wilful destruction of spawn, it is startling to hear that nobody ‘has ever seen the eggs of soles, turbot, plaice, and other like fish after their extrusion from the parent,’ while, with respect to the finny tribe in general, the Commissioners add: ‘So far as we know, there is, with one exception—herring spawn—no clearly-established instance of the spawn of any edible fish being raised in a trawl net or taken in any other net.’ With these words one bugbear of the sea disappears. Nature, whatever may be her shortcomings elsewhere, knows how to take care of herself here. She carries on her life-giving processes beyond our reach, and is veiled in a mystery which even the keen observation of the present time cannot penetrate, for the Commissioners remind us that, generally speaking, ‘little is known either of the seasons in which sea fish spawn or of the places in which the spawn is cast; still less of the time which the spawn, after it is cast, takes to vivify.’ But if the spawn evades the power of man, the young fish are not so fortunate. It is unquestionable that an immense waste of fry of all kinds goes on round our coasts. The trawler, the shrimper, the seine net, and the fixed engine, combine against these little creatures, tons upon tons of which are annually destroyed. At first sight it would seem that a grave matter here presents itself. The Commissioners, however, proceed so to reason away its importance that in the end it assumes very small dimensions indeed. Starting from the indisputable fact that all animals have ‘a tendency to increase at a greater rate than their means of subsistence,’ Messrs. Buckland and Walpole go on to show that this especially applies to sea fish; and they take as an example the fecund herring. Assuming that the British waters contain sixty thousand millions of female herrings, each of which deposits twenty thousand eggs, it follows that the total number of eggs which, but for natural and artificial checks, would come to maturity is twelve hundred millions of millions—an expression which is easy to put on paper, but which the mind can no more comprehend than it can grasp the idea of eternity. Enough that these countless hordes, if compressed by five hundreds into foot cubes, would build a wall round the earth two hundred feet broad and one hundred high. The inference from such astounding figures is that man’s destructiveness can do little. He takes one herring for every half-million of eggs, while the original stock would be kept up were only one egg to mature out of ten thousand. All fish, it is true, are not as prolific as the herring, but the argument applies to each kind in its degree, and
[pg 172] may be summed up generally by the statement that the proportion of spawn and fry which must perish is so great as to reduce the operations of man to limits barely appreciable. On the important related question whether the supply of fish is decreasing, the Commissioners entertain no doubt whatever. They say, ‘so far from the stock of fish decreasing, we believe that the supply of fish, taken on the whole, is at least as great as it has ever been; there are some reasons for even thinking that it is actually increasing.’ On the other hand, they refer to a general impression that the take of flat-fish, such as soles and plaice, is becoming less; the local explanation

referring almost universally to the destruction of fry. Yet while the Commissioners do not, except in the case of soles, contest the alleged decrease, they refuse to recognise the assigned cause, nor, generally speaking, do they see any reason for legislative action of a restrictive nature." The prospects of our ocean fishing, both as an industry and as a food supply, are, therefore, encouraging. The harvest of the sea is constant, and though there must be local fluctuations, the return for the labour of those "who reap where they have not sowed" is sure.

HERRING FISHING.

[pg 173] Of the shad, though not as commonly known as the herring, there are twenty known species. In the season this fish regularly approaches the mouths of great rivers for the purpose of spawning. It is found in the spring in the Rhine, Seine, Garonne, Volga, Elbe, and in many of our own rivers. In some Irish rivers the masses of shad taken have been so great that hardly any amount of exertion has been sufficient to land the net. It sometimes attains a very considerable size, weighing from four to six pounds. The shad taken at sea is considered coarser eating than that caught in rivers.

The sprat has been by some taken for the young of the herring, and the controversy on the subject has at times waxed warm. Some anatomists declare that their peculiarities show no difference but size. It has a serrated belly, which Bertram looks upon as the tuck in the child's frock, a provision for growth. "The slaughter of sprats," says he, "is as decided a case of killing the goose with the golden eggs as the grilse slaughter carried on in our salmon rivers." But Figuier reminds that writer that the young herrings are caught without the serrated belly, and that the curer's purchase is regulated by the sprat's rough, and the herring's smooth, belly. Sprats are often so abundant as to be unsaleable, and are then actually used for manure.



THE PILCHARD (*Clupea pilchardus*).

The pilchard visits our coasts at all times, the leading fisheries being in Cornwall. Wilkie Collins has given us a lively and interesting picture of the "look-out" for their approach and capture.[46] He says: "A stranger in Cornwall, taking his first walk along the cliffs in August, could not advance far without witnessing what would strike him as a very singular and even alarming phenomenon.

He would see a man standing on the extreme edge of a precipice just over the sea, gesticulating in a very remarkable manner, with a bush in his hand, waving it to the right and to the left, brandishing it over his head, sweeping it past his feet; in short, acting the part of a maniac of the most dangerous description. It would add considerably to the stranger's surprise if he were told that the insane individual before him was paid for flourishing the bush at the rate of a guinea a week.[47] And if he advanced a little, so as to obtain a nearer view of the madman, and observed a well-manned boat below turning carefully to the right and left as the bush turned, his mystification would probably be complete, and his ideas as to the sanity of the inhabitants would be expressed with grievous doubt.

"But a few words of explanation would make him alter his opinion. He would learn that the man was an important agent in the pilchard fishery of Cornwall, that he had just discovered a shoal swimming towards the land, and that the men in the boats were guided by his gesticulations
[pg 174] alone in their arrangements for securing the fish on which so many depend for a livelihood." These watchers are known locally as "huers." They can easily detect the approach of the shoals, as they darken the water, producing the effect of a cloud. As they approach the fish may themselves be seen leaping and playing on the surface by hundreds; sometimes they are so abundant that the fish behind force those in front ashore, and they are taken by hand or in baskets.

The boats, each of about fifteen tons burden, carry a large, long seine net, kept up by corks and down by lead. The grand object in the fishery, guided by the "huer" on the cliffs ashore, is to drive the shoals into shallow waters and bays.

"The grand object is now to enclose the entire shoal. The leads sink one side of the net perpendicularly to the bottom, the corks buoy the other to the surface of the water. When it has been taken all round the shoal, the two extremities are made fast, and the fish are imprisoned within an oblong barrier of netting. The art is now to let as few of the pilchards escape as possible while the process is being completed. Whenever the 'huer' observes that they are startled, and separating at any particular point, he waves his bush, and thither the boat is steered, and there the net is shot at once; the fish are thus headed and thwarted in every direction with extraordinary address and skill. This labour completed, the silence of intense expectation that has hitherto prevailed is broken, there is a shout of joy on all sides—the shoal is secured." The seine is now regarded as a great reservoir of fish, and may remain in the water for a week or more. The pilchards are collected from it in a smaller net known as the "tuck." When this net has travelled round the whole circuit of the seine, everything is prepared for the great event—hauling the fish to the surface.

"Now all is excitement on sea and shore; every little boat in the place puts off crammed with idle spectators; boys shout, dogs bark, and the shrill voices of the former are joined by the deep voices of the 'seiners.' There they stand, six or eight stalwart, sunburnt fellows, ranged in a row in the seine-boat, hauling with all their might at the 'tuck'-net, and roaring out the nautical 'Yo, heave ho!' in chorus. Higher and higher rises the net; louder and louder shout the boys and the idlers; the 'huer,' so calm and collected hitherto, loses his self-possession, and waves his cap triumphantly. 'Hooray! hooray! Yoy—hoy, hoy! Pull away, boys! Up she comes! Here they are!' The water boils and eddies; the 'tuck'-net rises to the surface; one teeming, convulsed mass of shining, glancing, silvery scales, one compact mass of thousands of fish, each one of which is madly striving to escape, appears in an instant. Boats as large as barges now pull up in hot haste all round the nets, baskets are produced by dozens, the fish are dipped up in them, and shot out, like coals out of a sack, into the boats. Presently the men are ankle-deep in pilchards; they jump upon the benches, and work on till the boats can hold no more. They are almost gunwale under before they leave for the shore." At the little fishing cove of Trereen, Mr. Wilkie Collins tells us, 600 hogsheads, each of 2,400 fish and upwards, were taken in little more than a week.

The sardine also comes under the *Clupedæ* family. It derives its commercial name from Sardinia, but is found all over the Mediterranean, the coast of Brittany, &c. On the latter coast the fish are caught in floating nets, and arranged in osier baskets, layer after layer, each boat returning to port when it has secured 25,000.

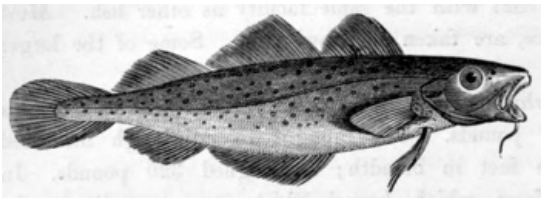
[pg 175] Space will not permit of more than a passing notice to the flat-fish, or *Pleuronectidæ*. These fish swim by means of a caudal fin, and they can ascend or descend in the water readily, but they cannot turn to right or left with the same facility as other fish. Most flat-fish, soles, turbot, flounders, and plaice, are taken by trawl nets. Some of the larger are speared.

The holibut (or halibut) is a fish which attains a great size, sometimes as much as seven feet in length, and weighing 300 pounds. One brought to Edinburgh measured seven-and-a-half feet in length by three feet in breadth; it weighed 320 pounds. In Norway and Greenland a long cord, from which branch thirty or so smaller cords, each furnished with a barbed hook, is employed for their capture. The main cord is attached to floating planks, which indicate the place where it is let down.

The *Gadidæ* family includes some most important fish, commercially considered, such as the whiting, haddock, and cod, the general form and peculiarities of which are familiar to all.

The cod fish is a most voracious feeder, and is provided with a vast stomach; it eats molluscs, crabs, and small fish, and has been known even to swallow pieces of wood. It is essentially a sea

fish, and is never seen in rivers. From the days of John Cabot, the English, French, Dutch, and Americans have prosecuted the great fisheries on the banks of Newfoundland; 2,000 English vessels, manned by 32,000 seamen, are employed in the pursuit. The modern cod-smack is clipper-built, has large tank wells for carrying the fish alive, and costs about £1,500. The fish is taken in nets, or by line. Bertram tells us that each man has a line of fifty fathoms in length, and attached to this are a hundred hooks, baited with mussels, pieces of herring, or whiting. "On arriving at the fishing ground, the fishermen heave overboard a cork buoy, with a flagstaff about six feet in height attached to it. The buoy is kept stationary by a line, called the 'pow end,' reaching to the bottom of the water, where it is held by a stone or grapnel fastened to the lower end. To the 'pow end' is also fastened the fishing-line, which is then paid out as fast as the boat sails, which may be from four to five knots an hour. Should the wind be unfavourable for the direction in which the crew wish to set the line, they use the oars. When the line, or 'taes,' is all out, the end is dropped, and the boat returns to the buoy. The 'pow' line is hauled up with the anchor and fishing-line attached to it. The fishermen then haul in the line, with the fish attached to it. Eight hundred fish might be, and often have been, taken by eight men in a few hours by this operation; but many fishermen say now that they consider themselves fortunate when they get a fish on every fifth hook on an eight-lined 'taes' line." On our own coasts the cod is principally taken by deep-sea lines, with many shorter lines depending from them armed with large hooks. One man has in ten hours taken 400, and eight men have taken eighty score in one day off the Doggerbank. The Norfolk and Lincoln coasts afford a large supply; the fish taken is stowed in well-boats, and brought to Gravesend, whence they are transhipped into market boats and sent to Billingsgate. The store-boats with their wells, through which the water circulates, cannot come higher, as the fresh water of the Thames, and possibly some of that which is *not* too fresh, would kill the fish.



THE COD (*Morrhua vulgaris*).

[pg 176] The haddock is also taken with lines. In the village of Findhorn, Morayshire, large numbers of fine haddocks are dried and smoked with the fumes of hard wood and sawdust. Hence the term, "Finnan haddies," which, when obtained, are the finest for gastronomic purposes, being of superior flavour.

The mackerel (*Scomber scombrus*) is a most valuable fish for man. The tunny, bonita, and mackerel have yielded immense supplies of excellent food, the first-named being esteemed in parts of France far above any other fish. It is called the salmon of Provence. They attain a far larger growth than the mackerel, specimens having been found of seven, eight, and even nine feet in length, and weighing up to 400 pounds. They are specially abundant in the Mediterranean, where they are usually caught in nets. In Provence they are driven, much as are the pilchards in Cornwall, into an enclosed space called the *madrague*, where at last the fish finds itself ensnared in shallow water. Then "the carnage commences. The unhappy creatures," says Figuier, "are struck with long poles, boat-hooks, and other weapons. The tunny-fishing presents a very sad spectacle at this its last stage; fine large fish perish under the blows of a multitude of fishermen, who pursue their bloody task with most dramatic effect. The sight of the poor creatures, some of them wounded and half dead, trying in vain to struggle with their ferocious assailants, is very painful to see. The sea red with blood, long preserves traces of this frightful slaughter."

The bonita is principally a tropical fish, not unlike the mackerel, but more than double its size. It is the great enemy of the flying-fish, and possesses electrical or stinging powers, for any one attempting to hold the living fish is violently shaken as in palsy, and one's very tongue is tied, and unable to make more than a spasmodic sputter.

THE MACKEREL (*Scomber scombrus*).

The mackerel is common to all European seas. It is the *macquereau* of the French, the *macarello* of the modern Romans, the *makril* of the Swedes, the *bretal* of some parts of Brittany, the *scombro* of the Venetians, the *lacesto* of the Neapolitans, and the *cavallo* of the Spaniards. It is one of the most universally-esteemed fish.

The mackerel is very voracious, and has courage enough to attack fish much larger than itself. It will even attack man, and is said to love him, gastronomically speaking. A Norwegian bishop who lived in the sixteenth century records the case of a sailor attacked by a shoal of mackerel, while he was bathing. His companions came to the rescue; but though they succeeded in driving off the fish, their assistance came too late; he died a few hours afterwards.

[pg 177] This fish is generally taken by drift-nets, usually 20 feet deep, and 120 long, well buoyed with cork, but without weights to sink them. The meshes are made of fine tarred twine. They are in

their best condition in June and July. The ancients used to make a sauce piquant from their fat, which was called *garum*, and sold for the equivalent of sixteen shillings the pint. It was acrid and nauseous, but had the property of stimulating jaded appetites. Seneca charged it with destroying the coats of the stomach, and injuring the health of the high livers of his day. A traveller of the sixteenth century, Pierre Belon, found it highly esteemed in Constantinople.

FISHING FOR TUNNY OFF THE COAST OF PROVENCE.

The formidable sword-fish is also tolerable eating, especially when young, and there are fisheries for its capture in the Mediterranean. The fishermen of Messina and Reggio fish by night, using large boats carrying torches, and a mast, at the top of which one of their number is stationed to announce the approach of their prey, which is harpooned by a man standing in the bows. This fish attains a length of five or six feet, its sword forming three-tenths of its length. It is one of the whale's natural enemies, and it objects even to ships passing through its element. There are numerous cases cited of ship's bottoms having been pierced by it. In 1725, some carpenters
[pg 178] having occasion to examine a ship just returned from the tropics, found the sword of one of these animals buried in its lower timbers. They averred that to drive a pointed iron bolt of the same size to the same depth would require eight or nine blows with a thirty-pound hammer. It was further evident from the position of the weapon that the fish had followed the ship while under full sail; it had penetrated the metal sheathing and three-and-a-half inches of the timber.

FISHING FOR SWORD-FISH.

And now, before leaving the minor and intermediate types of ocean life for the monsters of the deep, a few general observations may be permitted. Pliny described 94 species of fish; Linnæus described 478; the scientists of to-day know upwards of 13,000, one-tenth of which are fresh-water fish. The reader will then understand why only a few of the more important, useful, or curious have been described in these pages.

A hard man of science once described fish-life as “silent, monotonous, and joyless.” Modern science has disproved each and all of these statements. As regards the first, there are species actually known which “indulge in jews’-harps, trumpets, and drums.... Musical fish are a fact of positive knowledge, for not only can they be heard in shoals thrumming their jews’-harps in unison, but other kinds have been taken in the very act of trumpeting and drumming.” Bertram, as we have seen, speaks of the “death-chirp” of the captured herring. The application of the telephone has proved that a fish, placed alone in some water, actually talked to itself! Mr. S. E. Peal, in a letter to a scientific journal, tells us of a large fish, *Barbes macrocephalus*, which converses with a peculiar “cluck,” or persuasive sound, which may be heard as far as forty feet from the water. He also mentions a bivalve of Eastern Assam which actually “sings loudly in concert.”

How fish-life could be called monotonous and joyless will puzzle any one who has watched them in a large aquarium, where their every movement tells of pleasure, or at least excitement. Imagine, then, their life in the ocean itself. All around them is life—life in constant activity. The ancients said, and Pliny assented to the dictum, that in the water might be found anything or everything that was found out of it, and as much more besides. Then there is the excitement of the chase, in which they may be either the pursued or the pursuers. “Not only,” said a writer in a leading daily journal, “can they indulge themselves in running away from sharks, as we should do from tigers if they swarmed in the streets, in contemplating the while the elephant of the seas sauntering along through his domain, or finding diversion and instruction in the winged process of the flying-fish or the tree-climbing of perch, the buffooneries of sun-fish and pipe-fish, the cunning artifices of the ‘angler-fish,’ the electric propensities of some, the luminosity of others, the venomous nature of these or the grotesque appearance of those—not only is all the variety of experience to be found on the earth to be found also in the water, but even in a wider range and a greater diversity. The sea floor is strewn with marvels, and the rocks are instinct with wonders.” Fish-life is, then, full of excitement and interest.

An accomplished ichthyologist, Mr. F. Francis, has stirred up the vexed question, “Do fish sleep?” Only a very few fish, the dog-fish being one of the few exceptions, can close their eyes at all. Still, on the other hand, some human beings, and notably infants, can sleep with one or both eyes open, while the hare is credited with being able to take his nap in the latter condition. Fish would seem to require sleep from their constant activity; but in actual fact, no scientific watcher has yet caught one asleep.

[pg 179]

CHAPTER XVI.

Monsters of the Deep.[48]

Mark Twain on Whales—A New Version of an Old Story—Whale as Food—Whaling in 1670—The Great Mammal’s Enemy, the “Killer”—The Animal’s Home—The So-called Fisheries—The Sperm Whale—Spermaceti—The Chase—The Capture—A Mythical Monster—The Great Sea-Serpent—Yarns from Norway—An Archdeacon’s Testimony—Stories from America—From Greenland—Mahone Bay—A Tropical Sea-Serpent—What is the Animal?—Seen on a Voyage to India—Off the Coast of Africa—Other Accounts—Professor Owen on the Subject—Other Theories.

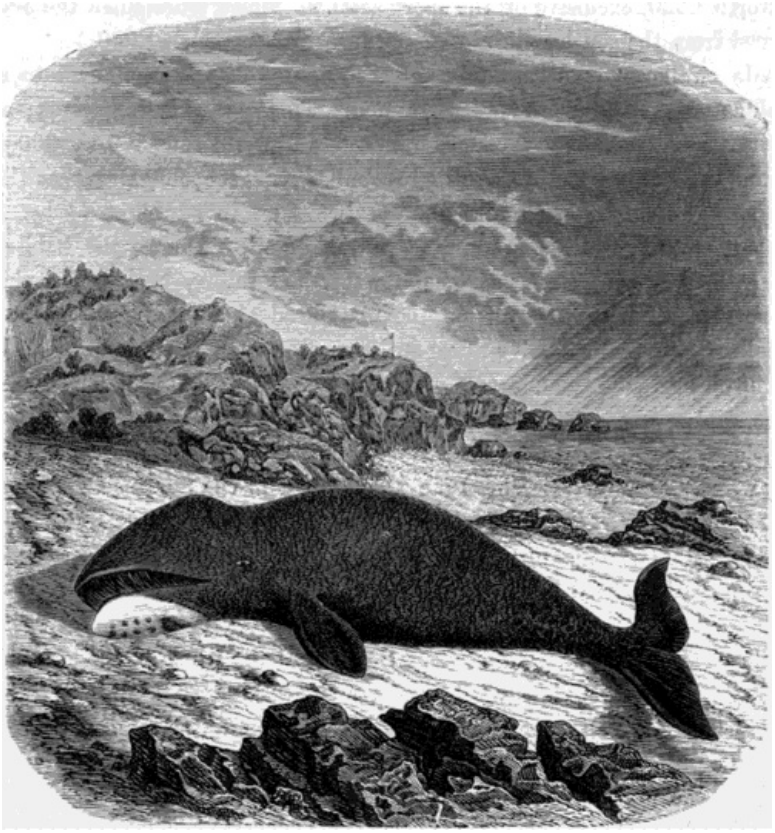
Some years ago, when an invalid wrote to Mark Twain seeking advice as to the value of fish as “brain food,” the answer of that humourist was plain indeed:—“Fish-food is good: abounds in phosphorus and nutrition. In your case I must recommend a small whale!” Unfortunately, Mark Twain fell into a very common error. The whale is *not* a fish; it is a mammal: it suckles its young. The writer has eaten whale—that is, a little bit of one. Whale brain, enclosed in batter, and treated as a fritter, is not to be despised.

The British whaler of about 1670 is quaintly described by Frederic Martin, who visited Spitzbergen and Greenland that year. He says:—“Whoever of the ships’ crews sees a dead whale cries out, ‘Fish mine!’ and therefore the merchants must pay him a ducat for his care and vigilance. Many of them climb often into the mast in hopes to have a ducat, but in vain. When the dead whale is thus fastened to the ship, two sloops hold on the other side of the fish, or whale, and in each of them doth stand a man or boy that has a long hook in his hands, wherewith he doth hold the boat to the ship, and the harpooner stands before in the sloop or upon the whale, with a leathern suit on, and sometimes they have boots on. Underneath the hook are some sharp nails fixed, that they may be able to stand firm. These two men that cut the fat off have their peculiar wages for it, viz., about four or five rix dollars. First they cut a large piece from behind the head, by the eyes, which they call the *kenter-piece*, that is as much as to say, the *winding-piece*; for as they cut all the other fat all in rows from the whale towards the end, so they cut this great *kenter-piece* larger and wider than all the rest. This piece, when it is cut round about from the whale, reaches from the water to the cradle (that is, the round circle that goes round about

the middle of the mast, and is made in the shape of a basket), whence you may guess of the bigness of a whale. A strong and thick rope is fixed to this kenter-piece, and the other end is fixed to underneath the cradle, whereby the whale is as it were borne up out of the water, that they may come at it, and by reason of the great weight of the whale the ship leans towards that side. One may judge how tough the fat is, for in this piece a hole is made, through which the rope is fastened, yet not deep into the fat, wherewith they turn the fish at pleasure. Then they cut another piece down hard by this, which is also hauled up into the ship, where it is cut into pieces a foot square. The knives used are, with their hafts, about the length of a man," and so on.

Mr. Brierly tells us that the most important natural enemy of the whale on the coast of Australia
[pg 180] is the "killer," a kind of large porpoise, with a blunt head and large teeth. These "killers" often attack the whale, and worry it like a pack of dogs, and sometimes kill it. The whalemen regard these creatures as important allies, for when they see from the look-out that a whale has been "hove-to" by them they are pretty sure of capturing it. The killers show no fear of the boats, but will attack the whale at the same time; and if a boat is stove in, which often happens, they will not hurt the men when in the water. The Australian natives about Twofold Bay say the killers are the spirits of their own people, and when they see them will pretend to point out particular individuals they have known. Some are very large, exceeding twenty-five feet; they blow from the head, in the same manner as the whale.

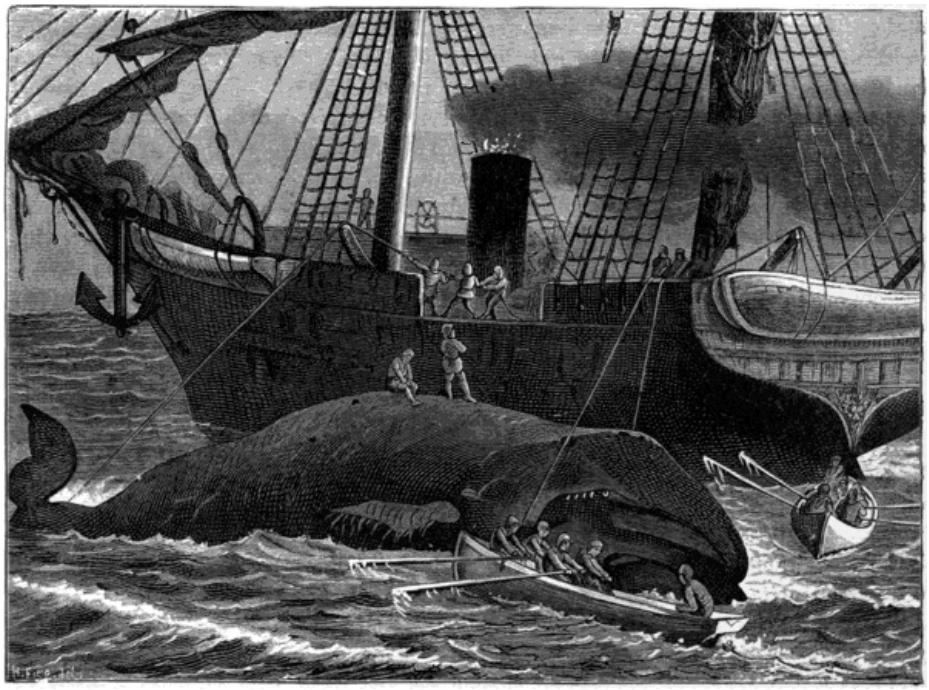
The homes of whales are hardly known. Where the northern whale breeds has long been a puzzling question among whalemen. It is a cold-water animal. Maury asks:—"Is the nursery for the great whale in the Polar Sea, which has been so set about and hemmed in with a ledge of ice that man may not trespass there? This providential economy still further prompts the question, Whence comes all the food for the young whales there? Do the teeming whalers of the Gulf Stream convey it there also, in channels so far in the depths of the sea that no enemy may waylay and spoil it in the long journey? It may generally be believed that the northern whale, which is now confined to the Polar Sea, descended annually into the temperate region of the Atlantic, as far as the Bay of Biscay, and that it was only the persecution of the whale-fishers which compelled it to seek its frozen retreat. This opinion is now shown to be erroneous, and to have rested only on the confounding of two distinct species of whale. Like other whales, the northern is migratory, and changes its quarters according to the seasons; and the systematic registers of the Danish colonists of Greenland show that often the same individual appears at the same epoch in the same fiord. The females of the southern whale visit the coasts of the Cape in June to bring forth their young, and return to the high seas in August or September. It was supposed that the migration of the northern whale was for a similar purpose. This, however, is not now considered to be the case. Its movements are attributed to climatal changes alone, and especially to the transport of ice into Baffin's Bay. It lives entirely in the midst of glaciers, and therefore is found in the south during winter and in the north during summer. The whale-fishery has diminished its numbers, but not altered its mode of life. It is stated now that the whale believed to have visited the North Atlantic Ocean is a totally different species, a much more violent and dangerous animal than the northern whale, also smaller, and less rich in oil. The fishery for the latter ceased towards the end of the last century, but it is thought to be not wholly extinct. On September 17th, 1854, a whale, with its little one, appeared before St. Sebastian, in the Bay of Biscay; the mother
[pg 181] escaped, but the young one was taken, and from a drawing of a skeleton of the latter MM. Eschricht and Rheinhardt, of Copenhagen, are convinced that it belonged to a species distinct from the Greenland whale; so that the name of 'Mysticete' has been applied to various whales."



THE NORTHERN WHALE (*Balina mysticetus*).

The sperm whale, says Maury, is a warm water animal; the *right* whale delights in cold water. The log-books of the American whalers show that the torrid zone is to the right whale as a sea of fire, through which it cannot pass; and that the right whale of the northern hemisphere and that of the southern are two different animals; and that the sperm whale has never been known to double the Cape of Good Hope—he doubles Cape Horn.

Mr. Beale has done more to elucidate the habits and form of this whale than any other writer. Its great peculiarity of form is the head, presenting a very thick, blunt extremity, about a third of the whole length of the animal. The head, viewed in front, has a broad, flattened surface, rounded and contracted above, considerably expanded on the sides, and gradually contracted below,
[pg 182] resembling in some degree the cut-water of a ship. On the right side of the nose is a cavity for secreting and containing an oily fluid, which after death concretes into the substance called spermaceti, of which in a large whale there is not unfrequently a ton. The mouth extends nearly the whole length of the head, and the throat is capacious enough to give passage to the body of a man, presenting a strong contrast to the contracted gullet of the Greenland whale. Immediately beneath the black skin of the sperm whale is the blubber, or fat, termed “the blanket,” of a light yellowish colour, producing when melted the sperm oil. A specimen taken in 1829 near Whitstable measured sixty-two feet in length. The oil was worth £320, exclusive of the spermaceti.[49] Many years since the *Samuel Enderby*, whaler, returned from the south with a cargo of sperm oil worth £40,000.



CUTTING UP THE WHALE.

This whale swallows quantities of small fishes, and has been known to eject from its stomach a fish as large as a moderate-sized salmon. This species is gregarious; and the herds, called “schools,” are females and young males. Mr. Beale saw 500 or 600 in one school. With each female school are one to three large “bulls,” or “schoolmasters,” as they are termed by the whalers. The full-grown males almost always go in search of food. A large whale will yield eighty, and sometimes one hundred, barrels of oil. Among the habits of the whale are “breaching,” or leaping clear out of the water and falling back on its side, so that the breach may be seen on a clear day from the mast-head at six miles’ distance; in “going ahead” the whale attains ten or twelve miles an hour, which Mr. Beale believes to be its greatest velocity; “lob-tailing” is lashing the water with its tail. The dangers and hairbreadth escapes in the capture are very numerous.

In 1839 there were discovered among rubbish in a tower of Durham Castle the bones of a sperm whale, which, from a letter of June 20th, 1661, in the Surtees Collection, is shown to have been cast ashore at that time, and *skeletonised* in order to ornament this old tower. Clusius describes, in 1605, a sperm whale thrown ashore seven years before, near Scheveling, where Cuvier supposed its head to be still preserved, and there is an antiquity of the kind still shown there.

The whale chase is an exciting scene. Sometimes the whale places himself in a perpendicular position, with the head downwards, and rearing his tail on high, beats the water with awful violence. The sea foams, and vapours darken the air; the lashing is heard several miles off, like the roar of a distant tempest. Sometimes he makes an immense spring, and rears his whole body above the waves, to the admiration of the experienced whaler, but to the terror of those who see for the first time this astonishing spectacle. Other motions, equally expressive of his boundless strength, attract the attention of navigators at the distance of miles. The whole structure of the whale exhibits most admirable adaptation to his situations and the element in which he lives, in the toughness and thickness of his skin and disposition of the coating of blubber beneath, which serves the purpose—if we may be permitted to use so homely a simile—of an extra great-coat to keep him warm, and prevent his warm red blood from being chilled by the icy seas. But provision is especially made to enable him to descend uninjured to very great depths. The orifices of the nostrils are closed by valves, wonderfully suited to keep out the water from the lungs,
[pg 183] notwithstanding the pressure. In one species they are shaped like cones, which fit into the orifice like corks in the neck of a bottle, and the greater the pressure the tighter they hold. The most surprising fact in the whale, probably, is the power of descending to enormous depths below the surface of the sea, and sustaining that almost inconceivable pressure of the superincumbent water. On one occasion which fell under Mr. Scoresby’s own observation a whale was struck from a boat. The animal instantly descended, dragging down with him a rope nearly *one mile long*. Having let out this much of the rope, the situation of the boat’s crew became critical. Either they must have cut the line, and submitted to a very serious loss, or have run the risk of being dragged under water by the whale. The men were desired to retire to the stern, to counterbalance the pulls of the whale, which dragged the bow down sometimes to within an inch of the water. In this dangerous dilemma the boat remained some time, vibrating up and down with the tugs of the monster, but never moving from the place where it lay when the harpoon was first thrown. This fact proves that the whale must have descended at once perpendicularly, as had he advanced in any direction he must have pulled the boat along with him. Mr. Scoresby and the crew were rescued by the timely arrival of another boat furnished with fresh ropes and harpoons. A whale when struck will dive sometimes to a depth of 800 fathoms; and as the surface of a large animal may be estimated at 1,500 square feet, at this depth it will have to sustain a pressure equal to 211,000 tons. The transition from that which it is exposed to at the surface, and

which may be taken at about 1,300 tons, to so enormous an increase, must be productive of the utmost exhaustion.

Strange incidents are related of harpooning. On September 24th, 1864, as the *Alexander*, belonging to Dundee, was steaming about in Davis's Straits, a whale of about twelve tons was observed not far distant from her. Boats were put out, and the crew secured the animal. When they cleansed it, they found embedded in its body, two or three inches beneath the skin, a piece of a harpoon about eighteen inches long; on the one side were engraved the words—"*Traveller*," *Peterhead*, and on the other, "1838." This vessel was lost in 1856, in the Cumberland Straits whale-fishery; it is therefore clear that the harpoon must have remained in the animal from that time.

A sailor gives the following description of sleeping *inside* a whale; not, however, quite as Jonah may have done. He says:[50]—"We were on a little expedition in the long-boat one voyage, and we had to encamp for the night with as much comfort as our scant means would afford. The shore was terrible for its wildness and desolation—it was indeed lonely, sad, and sandy, but what was strange and welcome, was, great carcases of whales, stranded like wrecks on the far-reaching shore, in some cases the backbone holding together like a good keel and the great ribs still round, giving you an idea of an elongated hogshead without the staves. We landed for the night, unbent our sails and stretched them over the bleached ribs of a whale's skeleton, and after supper took a comfortable sleep under the most curious roof-tree I ever rested under." This was on the north-west coast of Africa; and the sailor came to the conclusion that whales come ashore
[pg 184] to die. "And to my mind," says he, "it is as poetical as it is welcome. I like to think of these mighty travellers in the mighty deep hugging the shore when the fires of life burn low, and the mighty waves, their playmates from their childhood, giving their last lift up on the beach!"

And now for that great mythical or actual animal the sea-serpent.

For ages an animal of immense size and serpentine form has been believed to inhabit the ocean, though rarely seen. A strong conviction of its existence has always prevailed in Norway and the fiords, where it has been reported to have been frequently seen. It is also said that the coasts of New England have been frequently visited by this marine monster many times during this century.

Bishop Pontoppidan, who, about the middle of the eighteenth century, wrote a history of Norway, his native land, collected a quantity of testimonies as to its occasional appearance. Among other evidence he mentions that of Captain de Ferry, of the Norwegian Navy, who saw the serpent, while in a boat rowed by eight men, near Molde, in August, 1774. A declaration of this was made by the captain and two of the crew before a magistrate. The animal was described as of the
[pg 185] general form of a serpent stretched on the surface in receding coils or undulations, and the head, which resembled that of a horse, elevated some two feet out of the water.

In the summer of 1846 many respectable persons stated that in the vicinity of Christiansand and Molde they had seen the marine serpent. The affidavits of numerous persons were given in the papers, which, with some discrepancies in minute particulars, agree in testifying that an animal of great length (from about fifty to a hundred feet) had been seen at various times, in many cases more than once. All agreed that the eyes were large and glaring; that the body was dark-brown and comparatively slender; and that the head, which for size was compared to a ten-gallon cask, was covered with a long spreading mane.

An account of one of these encounters, which took place on the 28th May, 1845, was published by the Rev. P. W. Demboll, Archdeacon of Molde, those present being J. C. Lund, bookseller and printer, G. S. Krogh, merchant, Christian Flang, Lund's apprentice, and John Elgenses, labourer. These men were fishing on the Romsdal Fjord, and the appearance took place about seven in the evening, a little distance from shore, near the ballast place and the Molde Hove. Lund fired at the animal, which followed them till they came to shallow water, when it dived and disappeared.

In 1817 the Linnæan Society of New England published "A Report relative to a Large Marine Animal, supposed to be a Serpent, seen near Cape Ann, Massachusetts, in August," of that year. A good deal of care was taken to obtain evidence, and the deposition of eleven witnesses of fair and unblemished characters were certified on oath before the magistrates. The length was estimated at fifty to a hundred feet, and the head compared to that of a sea-turtle, a rattlesnake, and a serpent generally, but in this case there was no appearance of a mane.

Again, in the *Boston Daily Advertiser* for November 25th, 1840, there is a communication from the Hon. T. H. Perkins of that city, attesting his own personal observation of the marine serpent at Gloucester Harbour, near Cape Ann, in 1817. This communication took the form of a letter written to a friend in 1820.

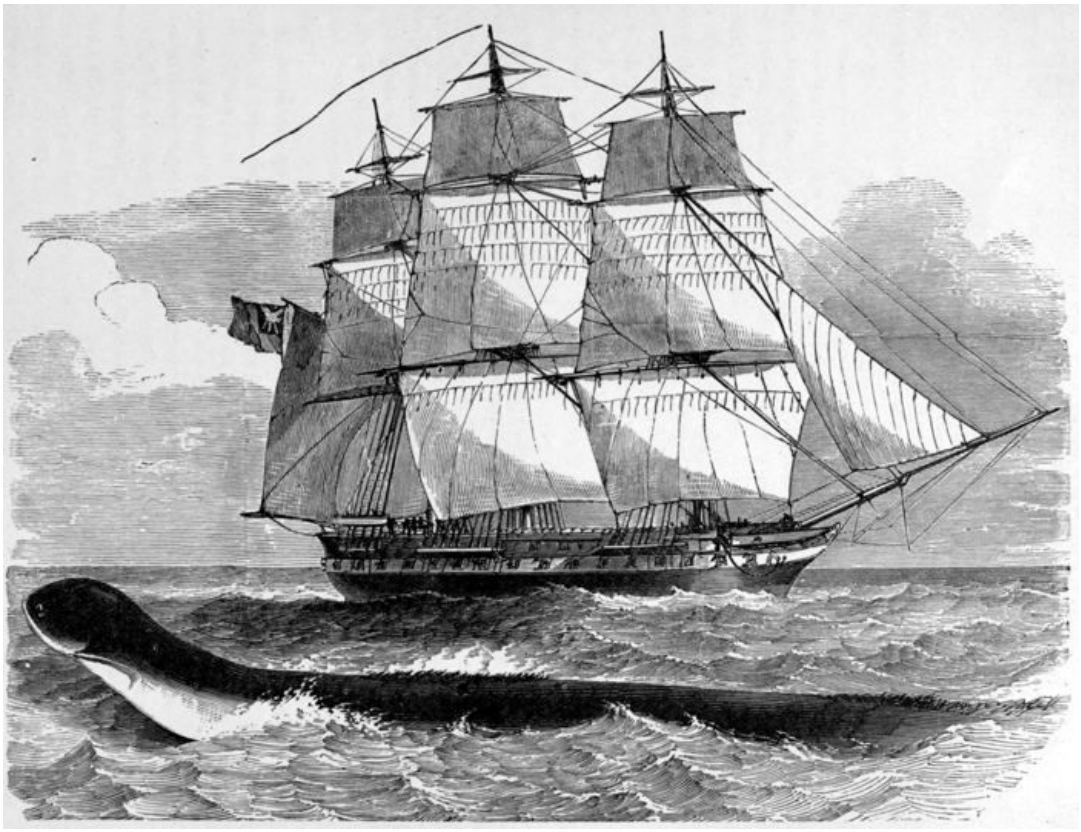
Captain Perkins speaks of the animal's motion being the vertical movement of the caterpillar, and not that of the common snake either on land or water, and this confirms the account of Mr. M'Clean, the minister of a parish in the Hebrides, who saw in 1809 a serpentine monster about eighty feet in length. He distinctly states that it seemed to move by undulations up and down, which is not only contrary to all that is known of serpents, but from the structure of their vertebræ impossible. Hans Egede mentions the appearance of a marine snake off the coast of Greenland in 1734.

On the 15th of May, 1833, a party, consisting of Captain Sullivan, Lieutenant Maclachlan and Ensign Malcolm of the Rifle Brigade, Lieutenant Lyster of the Artillery, and Mr. Ince the ordnance store-keeper at Halifax, started from that town in a small yacht for Mahone Bay, on a fishing excursion. When about half-way they came upon a shoal of grampuses in an unusual state of excitement, and to the surprise of the party they perceived the head and neck of a snake, at least eighty feet in length, following them. An account of this occurrence was published in the *Zoologist* for 1847. The editor stated that he was indebted for it to Mr. W. H. Ince, who received
[pg 186] it from his brother, Commander J. M. R. Ince, R.N. It was written by one of the eye-witnesses, Mr. Henry Ince, and signed as follows:—

W. Sullivan, Captain Rifle Brigade,	June 21, 1831.
A. Maclachlan, Lieut. „ „	August 5, 1824.
G. P. Malcolm, Ensign „ „	August 13, 1830.
B. O'Neal Lyster, Lieut. Artillery,	June 7, 1816.
Henry Ince, Storekeeper at Halifax.	

The dates affixed to the names were those on which the gentlemen received their respective commissions.

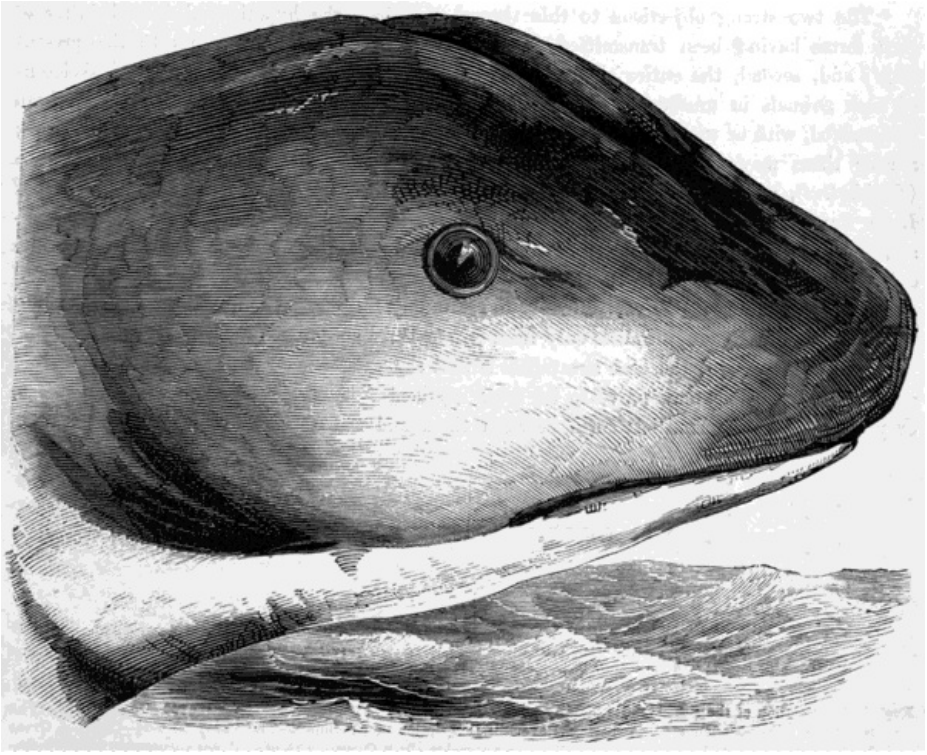
Great interest was excited in 1848 by an account of a great sea-serpent seen in lat. 24° 44′ S., and long. 9° 20′ E., in the tropics, and not very far from the coast of Africa, by the officers and crew of her Majesty's frigate *Dædalus*. It was not, as in other cases, in bright and fine weather, but on a dark and cloudy afternoon, and with a long ocean swell. Captain Peter M'Quhæ, in his report to the Admiralty, published in the *Times* for the 13th of October, describes it with confidence as "an enormous serpent, with head and shoulders kept about four feet constantly above the surface of the sea;" and he adds: "As nearly as we could approximate by comparing it with the length of what our main topsail-yard would show in the water, there was at the very least sixty feet of the animal *à fleur d'eau*, no portion of which was to our perception used in propelling it through the water, either by vertical or horizontal undulation. It passed rapidly, but so close under our lee-quarter that had it been a man of my acquaintance I should have easily recognised his features with the naked eye; but it did not, either in approaching the ship or after it had passed our wake, deviate in the slightest degree from its course to the south-west, which it held on at the pace of from twelve to fifteen miles per hour, apparently on some determined purpose. The diameter of the serpent was about fifteen or sixteen inches behind the head, which was without doubt that of a snake; and it was never during the twenty minutes that it continued in sight of our glasses once below the surface of the water; its colour a dark brown with yellowish white about the throat. It had no fins, but something like the mane of a horse, or rather a bunch of sea-weed washed about its back."



THE GREAT SEA-SERPENT WHEN FIRST SEEN FROM H.M.S. *DÆDALUS*.
(*After a Drawing by Captain M'Quhæ, sent to the Lords of the Admiralty, October, 1848.*)

Drawings prepared from a sketch by Captain M'Quhæ were published in the *Illustrated London News* of 28th October, 1848. Lieutenant Drummond, the officer of the watch at the time, also

printed his own impression of the animal, which differs in some slight points from the Captain's account, particularly in ascribing a more elongated form to the head, in the mention of a back-fin (whereas Captain M'Quhæ expressly says no fins were seen), and the lower estimate of the length of the portion of the animal visible. Lieutenant Drummond's words are:—"The appearance of its head, which with the back fin was the only portion of the animal visible, was long, pointed, and flattened at the top, perhaps ten feet in length; the upper jaw projecting considerably; the fin was perhaps twenty feet in the rear of the head, and visible occasionally. The Captain also asserted that he saw the tail, or another fin about the same distance behind it. The upper part of the head and shoulders appeared of a dark brown colour, and beneath the jaw a brownish white.
[pg 187] It pursued a steady and undeviating course, keeping its head horizontal with the water, and in rather a raised position, disappearing occasionally beneath a wave for a very brief interval, and not apparently for the purposes of respiration. It was going at the rate of perhaps from twelve to fourteen miles an hour, and when nearest was perhaps 100 yards distant. In fact, it gave one quite the idea of a large snake or eel." Lieutenant Drummond's account is the more worthy of regard, as it was derived from his journal, and so gives the exact impressions of the hour, while Captain M'Quhæ's description was written from memory after his arrival in England.



HEAD OF SEA-SERPENT. (*After a Drawing by Captain M'Quhæ.*)

These statements caused much discussion at the time. It was suggested by Mr. J. D. Morriss Stirling, a gentleman long living in Norway, and also by a writer in the *Times* of November 2, 1848, under the signature of "F. G. S.," that the monster had an affinity with the great fossil reptiles known to geologists as the *Enaliosauria*, and particularly adduced the genus *Plesiosaurus*, or gigantic lizard, with a serpent-like neck. This is also the opinion of Professor Agassiz, as given in the report of his lectures in Philadelphia, in 1849, and reaffirmed in his "Geological Researches."

A master in science, Professor Richard Owen, now appeared upon the field, and in a most able article in the *Times*, November 11, 1848, gave his verdict against the serpentine character of the animal, and pronounced it to have been, in his judgment, a seal. He argued this partly from the description of its appearance, and partly from the fact that no remains of any dead marine serpent had ever been found. He says: "On weighing the question whether creatures meriting the name of 'great sea serpent' do exist, or whether any of the gigantic marine saurians of the secondary deposits may have continued to live up to the present time, it seems to me less probable that no part of the carcase of such reptiles should have ever been discovered in a recent or unfossilised state, than that men should have been deceived by a cursory view of a partly submerged and rapidly moving animal, which might only be strange to themselves. In other words, I regard the negative evidence from the utter absence of any of the recent remains of great sea serpents, Krakens, or Enaliosauria, as stronger against their actual existence than the positive statements which have hitherto weighed with the public mind in favour of their existence. A larger body of evidence from eye-witnesses might be got together in proof of ghosts than of the sea serpent."

However, Captain M'Quhæ gallantly returned to the charge, and combated the idea that he had mistaken one of the *Phoca* species for a snake; and he was strongly corroborated by Mr. R. Davidson, Superintending Surgeon, Nagpore Subsidiary Force, in a letter from Kamptee, published in the *Bombay Bi-monthly Times*, for January, 1849. This gentleman says that an

animal, “of which no more generally correct description could be given than that by Captain M‘Quhæ,” passed within thirty-five yards of the ship *Royal Saxon* while he and its commander, Captain Petrie, were standing on the poop, when they were returning to India in 1829.

Again, a letter was printed in the *Zoologist* for 1852, communicated by Captain Steele, 9th Lancers, to his brother, Lieutenant-Colonel Steele of the Coldstream Guards, stating that while on his way to India in the *Bartram* he and *every one on board* saw “the head and neck of an enormous snake.” This was corroborated in a letter from one of the officers of the ship, who says:
[pg 188] —“His head appeared to be about sixteen feet above the water, and he kept moving it up and down, sometimes showing his enormous neck, which was surmounted with a huge crest in the shape of a saw.”

Another theory was put forward in the London *Sun* of the 9th July, 1849, by Captain Herriman, of the British ship *Brazilian*, who, on the 24th February, 1849, was becalmed on almost the same spot that Captain M‘Quhæ saw his monster while on a voyage from the Cape of Good Hope.

“I perceived,” wrote Captain Herriman, “something right abeam, about half a mile to the westward, stretched along the water to the length of about twenty-five to thirty feet, and perceptibly moving from the ship with a steady sinuous motion. The head, which seemed to be lifted several feet above the water, had something resembling a mane running down to the floating portion, and within six feet of the tail it forked out into a sort of double fin.” On approaching in a small boat, however, Captain Herriman discovered that his monster was nothing more formidable than “an immense piece of sea-weed, evidently detached from a coral reef, and drifting with the current, which sets constantly to the westward in this latitude, and which, together with the swell left by the subsidence of the gale, gave it the sinuous snake-like motion.”

In the *Times* of 5th February, 1858, a letter from Captain Harrington, of the ship *Castilian*, stating that he and his crew had seen a gigantic serpent on the 12th December, 1857, about ten miles N.E. of St. Helena, brought out another witness on the sea-weed hypothesis. This was Captain Fred. Smith, of the ship *Pekin*, who gave a very similar account to that of Captain Herriman, stating that in lat. 26° S., long. 6° E., on the 28th December, 1848, he captured what he believed to be a serpent, but what turned out to be a gigantic piece of weed covered with snaky-looking barnacles.

This last imputation brought up “An Officer of H.M. ship *Dædalus*,” whose testimony, in the *Times* of 16th February, 1858, puts *hors de combat* the sea-weed theory in that renowned case. He states that, “at its nearest position, being not more than 200 yards from us, *the eye*, *the mouth*, the nostril, the colour and form, all being *most distinctly visible to us* ... my impression was it was rather of a lizard than a serpentine character, as its movement was steady and uniform, *as if propelled by fins*, not by any undulatory power.”

That there is some mighty denizen of the vasty deep, sometimes but seldom seen, is more than possible, and highly probable; but to which of the recognised classes of created being can this huge rover of the ocean be referred? First of all, is it an animal at all? On two occasions monstrous pieces of weed have been mistaken for the Kraken, but on each occasion the distance from the vessel is estimated at half a mile; while Captain M‘Quhæ says that he was within 200 yards, and Mr. Davidson within thirty-five yards of the animal. Under these circumstances we may fairly dismiss the sea-weed hypothesis.

Professor Owen would place the sea-serpent among the mammalia, but *Phoca proboscidea* is the only seal which will bear comparison with the *Dædalus* animal in dimensions, it reaching from twenty to thirty feet. The officers declare, however, that at least sixty feet of their animal was visible at the surface. Again, the fore paws of the seal are placed at about one-third of the total length from the muzzle, and yet no appearance of fins was seen. To continue, the great *Phoca proboscidea* has no mane, the only seals possessing what may be dignified with the title being the two kinds of sea lions—the *Otaria jubata* and *Platyrhynchus leoninus*—which are far too small to come into the count.

[pg 189] It is quite possible that the great unknown is a reptile, and his marine habits present no difficulty. In the Indian and Pacific Oceans there are numerous specimens of true snakes (*Hydrophidæ*), which are exclusively inhabitants of the sea. None of these, however, are known to exceed a few feet in length, and none of them, so far as is known, have found their way into the Atlantic.

The most probable solution of the riddle is the hypothesis of Mr. Morriss Stirling and Professor Agassiz, that the so-called sea-serpent will find its closest affinities with those extraordinary animals the *Enaliosauria*, or marine lizards, whose fossil skeletons are found so abundantly through the Oolite and the Lias. If the Plesiosaur could be seen alive you would find nearly its total length on the face of the water propelled at a rapid rate, without any undulation, by an apparatus altogether invisible—the powerful paddles beneath—while the entire serpentine neck would probably be projected obliquely, carrying the reptilian head, with an eye of moderate aperture, and a mouth whose gape did not extend behind the eye. Add to this a body of leathery
[pg 190] skin like that of the whale, give the creature a length of some sixty feet or more, and you would have before you almost the very counterpart of the apparition that wrought such amazement on board the *Dædalus*.

In evidence of the existence of such an animal, Captain the Hon. George Hope states that when in H.M.S. *Fly*, in the Gulf of California, the sea being perfectly smooth and clear, he saw at the bottom a large marine animal with the head and general figure of an alligator, except that the neck was much longer, and that, instead of legs, the animal had four large flappers, something like those of turtles.

The two strong objections to this theory are—first, the hypothetical improbability of such forms having been transmitted from the era of the secondary strata to the present time; and, second, the entire absence of any parts of the carcases or unfossilised skeletons of such animals in museums. Many fossil types, however, of marine animals have been transmitted, with or without interruption, from remote geological epochs to the present time; among these may be mentioned the Port Jackson Shark (*Cestracion*), and the gar-pike (*Lepidosteus*), which have come down to us without interruption, the *Chimæra percopsis* of Lake Superior, and soft-shelled tortoises (*Trionychidæ*), with more or less apparent disappearance. The non-occurrence of dead animals is of little weight as disproving the existence of the sea-serpent; its carcase would float only a short time, and the rock-bound coasts of Norway would be very unlikely to retain any fragment cast up by the waves; many whales being known to naturalists only from two or three specimens in many centuries.

The conclusion of the best naturalists is that the existence of the sea-serpent is possibly a verity, and that it may prove to be some modified type of the secondary *Enaliosaurians*, or possibly some intermediate form between them and the elongated *Cetaceans*.

CHAPTER XVII.

By the Sea-Shore.

English Appreciation of the Sea-side—Its Variety and Interest—Heavy Weather—The Green Waves—On the Cliffs—The Sea from there—Madame de Gasparin's Reveries—Description of a Tempest—The Voice of God—Calm—A Great Medusa off the Coast—Night on the Sea—Boating Excursion—In a Cavern—Colonies of Sea-anemones—Rock Pools—Southey's Description—Treasures for the Aquarium—A Rat Story—Rapid Influx of Tide and its Dangers—Melancholy Fate of a Family—Life Under Water.

"In hollows of the tide-worn reef,
Left at low water glistening in the sun,
Pellucid pools, and rocks in miniature,
With their small fry of fishes, crushed shells,
Rich mosses, tree-like sea-weed, sparkling pebbles,
Enchant the eye, and tempt the eager hand
To violate the fairy paradise."

[pg 191] The sea-side is nowhere more thoroughly appreciated than in our own rock and water girt island, as the popularity of so many of our coast watering-places fully attests. The wonders of the shore are so many and varied that they would require volumes like the present to do them full justice. Here, then, the subject can only be briefly discussed.[51]

"The sea-side," says Gosse, a writer who is both artist and scientist in his powers of description, "is never dull. Other places soon tire us; we cannot always be admiring scenery, though ever so beautiful, and nobody stands gazing into a field or on a hedgerow bank, though studded with the most lovely flowers, by the half-hour together. But we can and do stand watching the sea, and feel reluctant to leave it: the changes of the tide and the ever rolling, breaking, and retiring waves are so much like the phenomena of life, that we look on with an interest and expectation akin to that with which we watch the proceedings of living beings." The sea-shore, in all its varied aspects, has beauties and characteristics all its own.

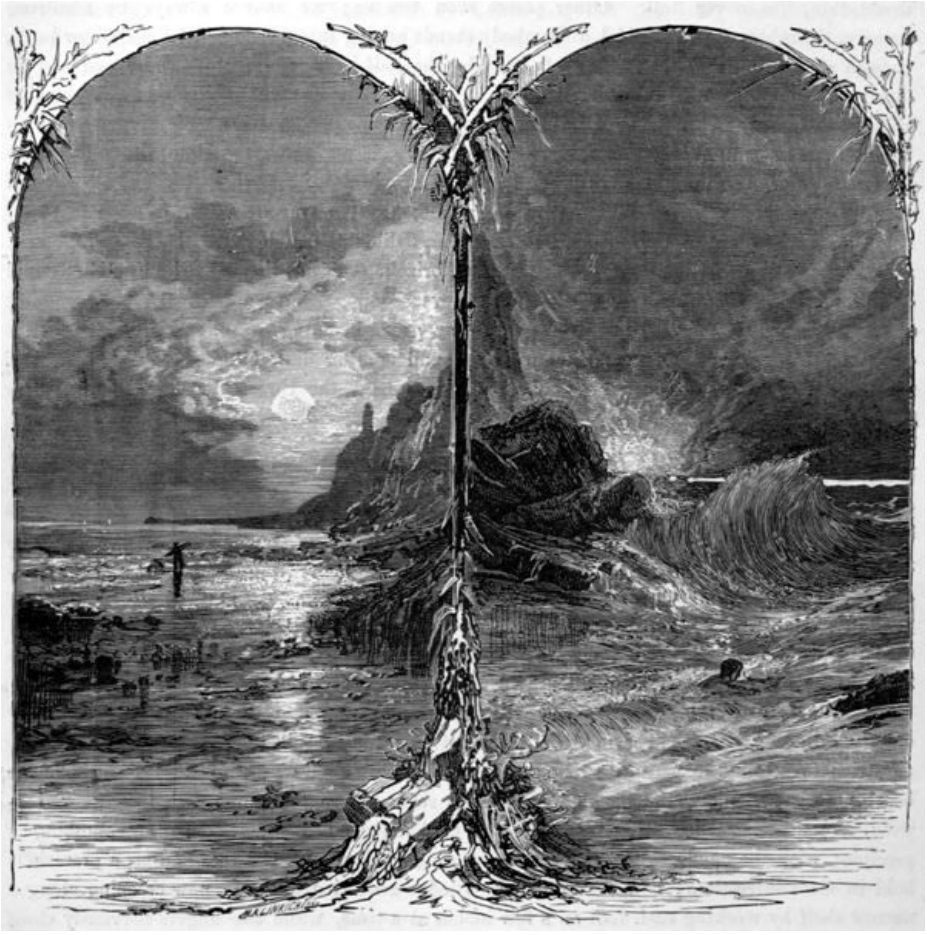
"How grandly," says the same writer, "those heavy waves are rolling in upon this long shingle-beach. Onward they come, with an even, deliberate march that tells of power, out of that lowering sky that broods over the southern horizon. Onward they come! onward! onward! each following its precursor in serried ranks, ever coming nearer and nearer, ever looming larger and larger, like the resistless legions of a great invading army, sternly proud in its conscious strength; and ever and anon, as one and another dark billow breaks in a crest of foam, we may fancy we see the standards and ensigns of the threatening host waving here and there above the mass.

"Still they drive in, and each in turn curls over its green head, and rushes up the sloping beach in a long-drawn sheet of the purest, whitest foam. The drifted snow itself is not more purely spotlessly white than is that sheet of foaming water. How it seethes and sparkles! how it boils and bubbles! how it rings and hisses! The wind sings shrilly out of the driving clouds, now sinking

to a moan, now rising to a roar; but we cannot hear it, for its tones are drowned in the ceaseless rushing of the mighty waves upon the beach and the rattle of the recoiling pebbles. Along the curvature of the shore the shrill, hoarse voice runs, becoming softer and mellower as it recedes; while the echo of the bounding cliffs confines and repeats and mingles it with the succeeding ones till all are blended on the ear in one deafening roar.

“But let us climb these slippery rocks, and picking our way cautiously over yonder craggy ledges, leaping the chasms that yawn between and reveal the hissing waters below, let us strive to attain the vantage-ground of that ridge which we see some fifty feet above the beach. It is perilous work this scrambling over rocks, alternately slimy with treacherous seaweed, and bristling with sharp needle-points of honeycombed limestone; now climbing a precipice, with the hands clutching these same rough points, and the toes finding a precarious hold in their interstices; now descending to a ledge awfully overhung; now creeping along a narrow shelf by working each foot on a few inches at a time, while the fingers nervously cling to the stony precipice, and the mind strives to forget the rugged depths below, and what would happen if—ah! that ‘if!’ let us cast it to the winds. Another long stride across a gulf, a bound upward, and here we are.

“Yes, here we stand on the bluff, looking out to seaward in the very eye of the wind. We might
[pg 192] have supposed it a tolerably smooth slope of stone when we looked at the point from the sea, or from the various parts of the shore where we can see this promontory. But very different is it on a close acquaintance. It is a wilderness of craggy points and huge castellated masses of compact limestone marble, piled one on another in the most magnificent confusion. We have secured a comfortable berth, where, wedged in between two of these masses, we can without danger lean and look wistfully down upon the very theatre of the elemental war. Is not this a sight worth the toil and trouble and peril of the ascent? The rock below is fringed with great insular peaks and blocks, bristling up amidst the sea, of various sizes and of the most fantastic and singular forms, which the sea at high water would mostly cover, though now the far-receding tide exposes their
[pg 193] horrid points, and the brown leprous coating of barnacles with which their lower sides are covered is broadly seen between the swelling seas.



ON THE SEA-SHORE: CALM AND STORM.

“Heavily rolls in the long deep swell of the ocean from the south-west; and as it approaches, with its huge undulations driven up into foaming crests before the howling gale, each mighty wave breasts up against these rocks, as when an army of veteran legions assaults an impregnable fortress. Impregnable, indeed! for having spent its fury in a rising wall of mingled water and foam, it shoots up perpendicularly to an immense elevation, as if it would scale the heights it could not overthrow, only to be the next moment a broken ruin of water murmuring and shrieking in the moats below. The insular blocks and peaks receive the incoming surge in an overwhelming flood, which immediately, as the spent wave recedes, pours off through the interstices in a hundred beautiful jets and cascades; while in the narrow straits and passages the

rushing sea boils and whirls about in curling sheets of snowy whiteness, curdling the surface; or where it breaks away, of the most delicate pea-green hue, the tint produced by the bubbles seen through the water as they crowd to the air from the depths where they were formed—the evidence of the unseen conflict fiercely raging between earth and sea far below.

"The shrieking gusts, as the gale rises yet higher and more furious, whip off the crests of the breaking billows, and bear the spray like a shower of salt sleet to the height where we stand; while the foam, as it forms and accumulates around the base of the headland, is seized by the same power in broad masses and carried against the sides of the projecting rocks, flying hither and thither like fleeces of wool, and adhering like so much mortar to the face of the precipice, till it covers great spaces, to the height of many fathoms above the highest range of the tide. The gulls flit wailing through the storm, now breasting the wind, and beating the air with their long wings as they make slow headway; then yielding the vain essay, they turn and are whirled away, till, recovering themselves, they come up again with a sweep, only to be discomfited. Their white forms, now seen against the leaden-grey sky, now lost amidst the snowy foam, then coming into strong relief against the black rock; their piping screams now sounding close against the ear, then blending with the sounds of the elements, combine to add a wildness to the scene which was already sufficiently savage.

"But the spring-tide is nearly at its lowest; a rocky path leads down from our eminence to a recess in the precipice, whence in these conditions access may be obtained to a sea cavern that we may possibly find entertainment in exploring."

Madame de Gasparin, in her visit to Italy, thus describes her impressions of a thunderstorm, the reveries of an enthusiastic poet-traveller.[52] She says:—"Last night a storm burst over Chiaveri. Three tempests in one! and we in the very centre of the action.

"The thunder, marching on for a long time with that solemn roll which reveals the depths of the skies, suddenly explodes with a crash; the lightnings fall straight and serried—no longer a series of fantastic zig-zags, but a very focus of electric light. Sometimes the brilliancy flashes out behind
[pg 194] the castle, and the outline of its square tower, black as ink, is thrown upon the palazzi opposite to it. Sometimes the fire kindles in the east, and the square, the houses, the fortress, are all lighted up by a flame of unbearable white, which scorches the eyes. The air is rent by the winds in fury, the boom of the waves resounds through an undertone of wild complaint. Angels of destruction are passing by this night; one hears the hiss of their swords. What is human life? A nothing. What is man himself? A worm. In hours like these the boldest among us calls his ways to remembrance.

"I can understand seriousness; I have no patience with fear.

"There was a time when, during heavy storms, my mother was wont to say to me: 'Come!' We used to go out in the full fury of the tempest. 'Listen,' my mother would say; 'it is the voice of God!' Then she made me join my hands; she prayed, and peace descended into my soul."

And again of a storm elsewhere Madame de Gasparin says:—"The mighty voice fills the air with clamour. Not another word; there it is in its frenzy.

"There it is, stretching out to the furthest horizons. The clouds which are driving along alternately dye it grey or black; then the mists are rent, they let the sun pass through, and the intense blue is lit up to the very depths of immensity.

"Near the shore squadrons of green waves of baleful perfidious hue—heavy opaque masses, uplifted by a convulsive throb, shone athwart by a pale ray—roll over and break with thundering noise; and foaming cataracts, precipitated in torrents, dash up, then, suddenly quieted, come and lave the shore with their clear waters.

"Terrible in its rage this sea! full of spite, like a wicked fairy. Howling to the four quarters of the sky, heedlessly breaking proud ships to pieces, intoxicated with cries, calamities, frenzied with might; and then, as in irony, tracing magic circles, enclosing, inundating you, and thrilling with pleasure, running back, leaving the sand strewn with rainbowed bubbles.

"We stand motionless, mere nothings in presence of this brute force. But our soul thrills, feeling herself greater than the sea, stronger than the waves—she who can lay hold on God.

* * * * * * *

"But a ray or light has shone out....

"And now that the sun is lavishingly scattering diamonds over the sea, now that the wrath of the waves breaks into sparkling laughter, let us run on the shore, and defy the spray.

"And so, sometimes flying from, and sometimes braving the wind, we rush into the uproar, we push on to that mass of rocks upon which the waves are crashing. Swelling at a distance, they rear themselves up—they are giants! Hardly have they reached the rocks than they crumble away, and the silly foam throws its flakes on the pine-trees holding on to the mountain side. This is succeeded by a heavenly calm."

"The peaceful main,
One molten mirror, one illumined plane,
Clear as the blue, sublime, o'er-arching sky."

"Down we gazed," says Gosse, in one of his charming sea-side works, "on the smooth sea, becoming more and more mirror-like every moment, as the slight afternoon breeze died away
[pg 195] into a calm, and allowing us from our vantage height to see far down into its depths. Presently I was gratified with the sight of one and then another of that enormous Medusa, the Great Rhizostome, urging its diagonal course at the shining surface. Its great bluish-white disc, like a globe of fifteen or eighteen inches in diameter, moves foremost by alternate contractions and expansions, which remind one of the pulse of an enormous heart, especially as at each stroke a volume of fluid is shot out of the cavity, by the impact of which on the surrounding water the huge body is driven vigorously forward. Meanwhile the compound peduncle, with its eight arms that hang down to the depth of two feet below, is dragged after the disc, its weight and the resistance of the water to its bulk combining to give that slanting direction which this great Medusa always assumes when in motion. We watched the great unwieldy creatures a long time, even till evening had faded into night, and were left almost the only wanderers on the hill. But what a night it was! So calm, so balmy, so solemnly still and noiseless; even the wash of the ripple at the foot of the cliff was hushed. There was no moon, but many stars were twinkling and blinking, and in the north-west a strong flush of light filled the sky, which was rapidly creeping along over the north cliffs. Then those cliffs themselves, all distinctness of feature lost in the darkness, stood like a great black wall in front of us, which being reflected in the placid sea so truly that no difference could be traced between substance and shadow, the dark mass, doubled in height, seemed to rise from a line only a few hundred yards off; and thus everything looked strange and unnatural and unrecognisable, although our reason told us the cause.

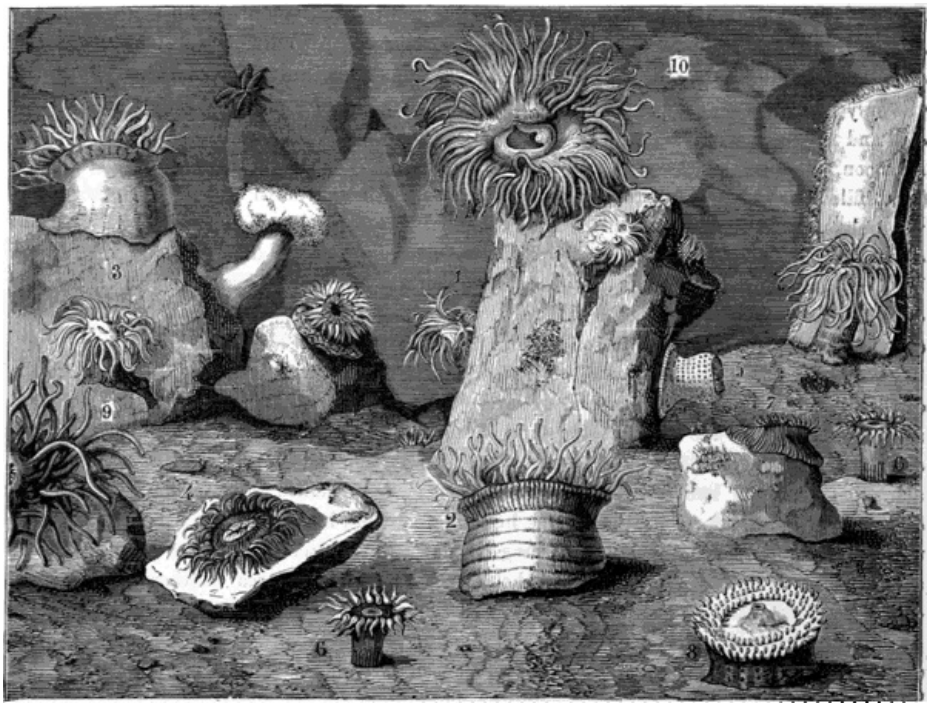
"Let us now scramble down the cliff-side path, tangled with briers and ferns, where the swelling buds of the hawthorn and honeysuckle are already bursting, while the blackbird mellowly whistles in the fast-greening thicket, and the lark joyously greets the mounting sun above us. Yonder on the shingle lies a boat newly painted in white and green for the attraction of young ladies of maritime aspirations; she is hauled up high and dry, but the sinewy arms of an honest boatman, who, hearing footsteps, has come out of his little grotto under the rock to reconnoitre, will soon drag her down to the sea's margin, and 'for the sum of a shilling an hour,' will pull us over the smooth and pond-like sea whithersoever we may choose to direct him.

" 'Jump aboard, please, sir. Jump in, ladies. Jump in, little master.' And now, as we take our seats on the clean canvas cushions astern, the boat's bottom scrapes along with a harsh grating noise over the white shingle-pebbles, and we are afloat.

"First to the caverns just outside yonder lofty point. The lowness of the tide will enable us to take the boat into them, and the calmness of the sea will preclude much danger of her striking upon the rocks, especially as the watchful boatman will be on the alert, boat-hook in hand, to keep her clear. Now we lie in the gloom of the lofty arch, gently heaving and sinking and swaying on the slight swell, which, however smooth at the surface, is always perceptible when you are in a boat among rocks, and which invests such an approach with a danger that a landsman does not at all appreciate.

"Yet the water, despite the swell, is glassy, and invites the gaze down into its crystalline depths, where the little fishes are playing and hovering over the dark weeds.

"The sides of the cavern rise around us in curved planes, washed smooth and slippery by the dashing of the waves of ages, and gradually merge into the massive angles and projections and
[pg 196] groins of the broken roof, whence a tuft or two of what looks like samphire depends. But notice the colonies of the smooth anemone or beadlet (*Actinia mesembryanthemum*) clustered about the sides, many of them adhering to the stone walls several feet above the water. Those have been left uncovered for hours, and are none the worse for it. They are closed, the many tentacles being concealed by the involution of the upper part of the body, so that they look like balls or hemispheres, or semi-ovals of flesh; or like ripe fruits, so plump and glossy and succulent and high-coloured, that we are tempted to stretch forth the willing hand to pluck and eat. Some are greengages, some Orleans plums, some magnum-bonums, so varied are their rich hues; but look beneath the water, and you see them not less numerous, but of quite another guise. These are all widely expanded; the tentacles are thrown out in an arch over the circumference, leaving a broad flat disc, just like a many-petalled flower of gorgeous hues; indeed, we may fancy that here we see the blossoms and there the ripened fruit. Do not omit, however, to notice the beads of pearly blue that stud the margin all around at the base of the over-arching tentacles. These have been supposed by some to be eyes; the suggestion, however, rests upon no anatomical ground, and is, I am afraid, worthless, though I cannot tell you what purpose they do serve."



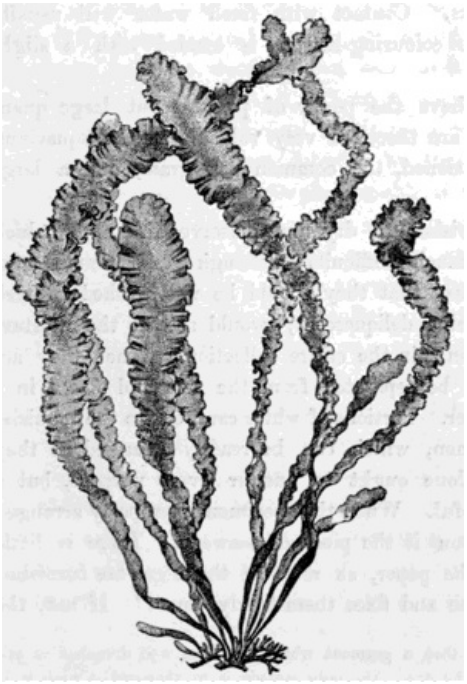
SEA ANEMONES.
1, 2, 3. *A. sulcata*. 4. *Phymactis sanctæ Helenæ*. 5. *Actinia capensis*. 6. *A. Peruviana*. 7. *A. sanctæ Catherinæ*. 8. *A. amethystina*. 9, 10. *Anthea cereus*.

[pg 197] Southey must have had the deep rocky pools of the Devonshire coast in his mind's eye when he wrote—

"It was a garden still beyond all price,
Even yet it was a place of Paradise.
* * * *
And here were coral bowers,
And grots of madrepores,
And banks of sponge, as soft and fair to eye
As e'er was mossy bed
Whereon the wood-nymphs lie
With languid limbs in summer's sultry hours.
Here, too, were living flowers,
Which like a bud compacted,
Their purple cups contracted,
And now, in open blossom spread,
Stretched like green anthers many a seeking head;
And arborets of jointed stone were there,
And plants of fibres fine as silkworm's thread;
Yea, beautiful as mermaid's golden hair,
Upon the waves dispread."

It is among the rock-tide pools that some of the most prized treasures of the aquarium may be obtained. There are the little shrubberies of pink coralline, Southey's "arborets of jointed stone"; there are the crimson banana-leaves of the *Delesseria*, the purple tufts of Polysiphoniæ and Ceramia, the broad emerald green leaves of *Ulva*, and the wavy, feathery *Ptitola* and *Dasya*. Then everywhere is to be found the lovely *Chondrus crispus*, with its expanding fan-shaped fronds cut into segments, every segment of every frond reflecting a lovely iridescent azure.

DELESSERIA.



ULVA.

Mr. Gosse was reclining one evening on the turf, looking down on a Devonshire cove that formed the extremity of a great cavern. Though it was low tide, the sea did not recede sufficiently to admit of any access to the cove from the shore. Presently he saw a large rat come deliberately foraging down to the water's edge, peep under every stone, go hither and thither very methodically, pass into the crevices, exploring them in succession. At length he came out of a hole in the rock, with some white object in his mouth as big as a walnut, and ran slowly off with it by a way the observer had not seen him go before, till he could follow him no longer with his eyes because of the projections of the precipice. What could he possibly have found? He evidently knew what he was about. From his retirement into the cavern, when the sea had quite insulated it, the sagacious little animal had doubtless his retreat in its recesses, far up, of course, out of the reach of the sea, where he would be snugly lodged when the waves dashed and broke wildly through the cove, kindling millions of fitful lamps among the clustering polypes below.

The influx of the tide is frequently, as we all know, very rapid on the sands, and cuts off the communication between rocky islets and the shore in rather a treacherous fashion. Mr. Gosse, in giving an account of such influx on a part of the Devonshire coast says:—

[pg 198] "In the evening we strolled down to look at the place, and were beguiled into staying till it was quite late by the interest which attached to the coming-in of the tide. There was a breeze from the southward, which hove the sea against the opposite entrance of the cavern to that on which we were standing; and the funnel-shaped cliffs on that side concentrated the successive waves, which drove through a sort of 'bore,' and covered with turbulent water large tracts which but a few moments before were dry. We were pushed from stone to stone, and from spot to spot, like a retreating enemy before a successful army; but we lingered, wishing to see the junction of the waters and the insulation of the rock. It is at this point that the advance is so treacherous. There was an isthmus of some twenty feet wide of dry sand, when my wife, who had seen the process before, said, 'It will be all over by the time you have counted a hundred.' Before I had reached

fifty it was a wide wash of water."

A melancholy fate overtook a large family party near here some years ago. They had walked over the sands to Fern Cliff, and made their picnic in a cavern close by, forgetful of the silent march of the tide. When they discovered their isolation escape was cut off, and the overhanging rock forbade all chance of climbing. They were all drowned, and the bodies picked up one by one, as the sea washed them in.

All the species of anemone found on the rocks above the water are to be seen below it, and all displaying their beauties in an incomparably more charming fashion. The whole submerged wall is nothing else than a parterre of most brilliant flowers, taken bodily and set on end. "The eye is bewildered with their number and variety, and knows not which to look at first. Here are the rosy anemones (*Sagartia rosea*), with a firm fleshy column of rich sienna-brown, paler towards the base, and with the upper part studded with indistinct spots, marking the situation of certain organs which have an adhesive power. The disc is of a pale neutral tint, with a crimson mouth in the centre, and a circumference of crowded tentacles of the most lovely rose-purple, the rich hue of that lovely flower that bears the name of General Jacqueminot. In those specimens that are most widely opened this tentacular fringe forms a blossom whose petals overhang the concealed column, expanding to the width of an inch or more; but there are others in which the expansion is less complete in different degrees, and these all give distinct phases of loveliness. We find a few among the rest which, with the characteristically-coloured tentacles, have the column and disc of a creamy white; and one in which the disc is of a brilliant orange, inclining to scarlet. Most lovely little creatures are they all! Commingling with these charming roses there are others which attain a larger size, occurring in even greater abundance. They are frequently an inch and a half in diameter when expanded, and some are even larger than this. You may know them at once by observing that the outer row of tentacles, and occasionally also some of the others, are of a scarlet hue, which, when examined minutely, is seen to be produced by a sort of core of that rich hue pervading the pellucid tentacle. The species is commonly known as the scarlet-fringed anemone (*Sagartia miniata*). The inner rows of tentacles, which individually are larger than those of the outer rows, are pale, marked at the base with strong bars of black. The disc is very variable in hue, but the column is for the most part of the same rich brown as we saw in the rosy. Yet, though these are characteristic colours, there are specimens which diverge exceedingly from them, and some approach so near the roses as to be scarcely distinguishable from them." The loveliness of these submarine gardens cannot be over-rated.

[pg 199]

CHAPTER XVIII.

By the Sea-shore (*continued*).

A Submerged Forest—Grandeur of Devonshire Cliffs—Castellated Walls—A Natural Palace—Collection of Sea-weeds—The Title a Miserable Misnomer—The Bladder Wrack—Practical Uses—The Harvest-time for Collectors—The Huge Laminaria—Good for Knife-handles—Marine Rope—The Red-Seeded Group—Munchausen's Gin Tree Beaten—The Coralline a Vegetable—Beautiful Varieties—Irish Moss—The Green Seeds—Hints on Preserving Sea-weeds—The Boring Pholas—How they Drill—Sometimes through each other—The Spinous Cockle—The "Red-noses"—Hundreds of Peasantry Saved from Starvation—"Rubbish," and the difficulty of obtaining it—Results of a Basketful—The Contents of a Shrimper's Net—Miniature Fish of the Shore.

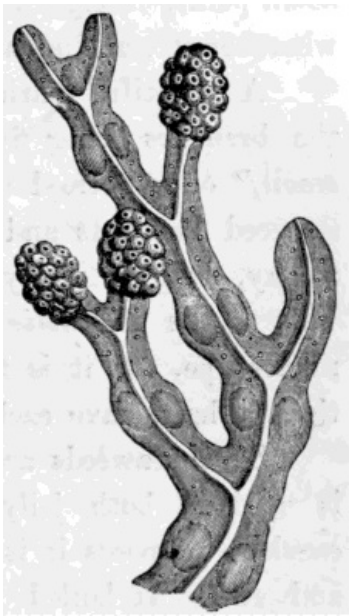
Mr. Gosse tells us in his "Tenby," of a veritable submerged forest near Amroth. Pieces of soft and decayed wood constantly come to the surface, and are called by the peasantry "sea turf." It is very commonly perforated by the shells of *Pholas candida*, being ensconed therein as closely as they can lie without mutual invasion. Other pieces are quite solid, resisting the knife like the good old oak timbers of a ship. Occasionally, during storms, whole trunks and roots and branches are torn away, come floating to the surface of the sea, and are cast on the shore. Some of them have been found "at the recess of the autumnal spring tides, which have marks of the axe still fresh upon them, proving that the encroachment of the sea has been effected since the country was inhabited by civilised man." Several kinds of trees, including elm, willow, alder, poplar, and oak, have been found among the large fragments cast up. An account of the encroachments of the sea on various parts of our coasts would fill a large volume.

Mr. Gosse well describes some of the Devonshire coast scenery. "Now," says he, "we are under Lidstep Head, a promontory in steepness and height rivalling its 'proud' opponents. I never before saw cliffs like these. The stratification is absolutely perpendicular, and as straight as a line, taking the appearance at every turn of enormous towers, castles, and abbeys, in which the fissures bear the closest resemblance to loopholes and doors. Great areas open enclosed as if with vast walls. The sea surface was particularly smooth, and we ventured to pull into one of these, exactly as if into a ruined castle or vast abbey; chamber opening beyond chamber,

bounded and divided by what I must call *walls* of rock, enormous in height, and as straight as the architect's plumb would have made them, with the smooth sea for the floor. If the tide had been high, instead of being low-water of a spring tide, we might have rowed all about this great enclosed court; but as it was, the huge square upright rocks were appearing above water, like massive altars and tables. The sea was perfectly clear, and we could look down to the foundations of the precipices where the purple-ringed Medusæ were playing. Altogether, it was a place of strange grandeur; we felt as if we were in a palace of the sea genii, as if we were where we ought not to be, and when a gull shrieked over our heads, and uttered his short, hollow, mocking laugh, we started and looked at one another as though something uncanny had challenged us, though the sun was shining broadly over the tops of those Cyclopean walls.

"We left this natural palace with regret; but the tide was near its lowest ebb, and I wished to be on the rocks for whatever might be obtainable in natural history. The lads, therefore, gave way,
[pg 200] and we swiftly shot past this coast of extraordinary sublimity. Presently we came to the Droch, where a more majestic cavern than any we had yet seen appears. Up on a beach of yellow sand its immense span is reared with a secondary entrance; the arch of uniting stone is thrown across with a beautiful lightness, and appears as if hewn with the mason's chisel. Dark domes are seen within, far up in the lofty vaulted roof, and pools of still, clear glassy water mirror the rude walls. This is certainly a glorious cave."

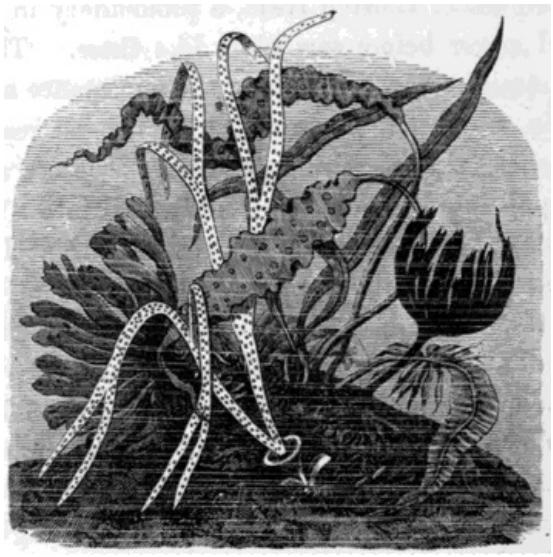
Easiest of all maritime objects to collect are the so-called "sea-weeds," which the Rev. J. G. Wood rightly terms a "miserable appellation," to be employed under protest. They are in reality beautiful sea-plants of oft-times delicate form and colour; and even the larger and commoner varieties have much of interest about them, some having actual uses. One of the first to strike the eye on almost any beach is the common bladder-wrack (*Fucus vesiculosus*), that dark olive-brown sea-weed familiar to all visitors to our coasts. It is distinguished by its air-vessels, which explode when trodden on or otherwise roughly compressed, and which are the delight of all youngsters at the sea-side. This slimy and slippery weed makes rock-walking perilous in a moderate degree, a fact which does not generally stop young British maidens and their companions from slipping about over its tangled masses. A larger species (*Fucus serratus*) sometimes grows to a length of six feet. It is used as manure, and even as food for cattle; while it is excellent to pack lobsters, crabs, &c., if they have to be sent inland. These and kindred *algæ*, the generic term for sea-weed, are known as *Melanosperms*, or black-seeded, so called from the dark olive tint of the seeds or spores from which they spring, and with which they abound.



BLADDER WRACK.
(*Fucus vesiculosus*.)

The best time for the collector who would reap a harvest is at spring-tides, when, Mr. Wood tells us, an hour or two's careful investigation of the beach will sometimes produce as good results as several days' hard work with the dredge. "It is better to go down to the shore about half an hour or so before the lowest tide, so as to follow the receding waters and to save time." The naturalist or amateur collector then finds at these low tides a new set of vegetation, contrasting with the more delicate forms left higher on the beach, as forest-trees with ferns and herbage. Huge plants, some of them measuring eleven feet in length, of the oar-weed (*Laminaria digitata*), are lying about in profusion. It is known by its scientific name on account of the flat thin-fingered fronds it bears. Its stem is used for handles to knives and other implements, so tough and strong is it. One good stem will furnish a dozen handles, and when dry it is as hard as horn.

[pg 201]



LAMINARIA.

Among the same group is to be found a most singular rope-like marine plant, hardly thicker than an ordinary pin at the base, where it adheres to the rock, but swelling to the size of a large swan's-quill in the centre. When grasped by the hand it feels as though oiled, being naturally slimy, and covered by innumerable fine hairs. It is found from the length of one to twenty, thirty, and even forty feet. It may be mentioned that sea-weeds have no true roots, but adhere by discs or suckers. They derive their nourishment from the sea-water, not from the rock or soil.

Another sub-class of *algæ* are named the *Rhodosperms*, or red-seeded, and they are among the most beautiful known to collectors. They are delicate, and some turn brown when exposed to too much light. Above low water-mark may be found growing largish masses of a dense, reddish, thread-like foliage, sometimes adhering to the rock, and sometimes to the stems of the great *Laminaria*. This is one of a large genus, *Polysiphonia* ("many-tubed") the specific name being *Urceolata*, or pitchered—it is actually covered with little jars, or receptacles of coloured liquid.

"That popular author and extensive traveller, Baron Munchausen," says Mr. Wood, "tells us that he met with a tree that bore a fruit filled with the best of gin. Had he travelled along our own sea-coasts, or, indeed, along any sea-coasts, and inspected the vegetation of the waves there, he would have found a plant that might have furnished him with the groundwork of a story respecting a jointed tree composed of wine-bottles, each joint being a separate bottle filled with claret. It is true that the plant is not very large, as it seldom exceeds nine or ten inches in height, but if examined through a microscope it might be enlarged to any convenient size." The scientific name of this marine plant signifies the "jointed juice-branch." It may be found adhering to rocks, or large seaweed, and really resembles a jointed series of miniature red wine bottles.

The common coralline (*Corallina officinalis*) is also one of the red sea-weeds, although long thought to be a true coral. It is a curious plant; it deposits in its own substance so large an amount of carbonate of lime that when the vegetable part of its nature dies the chalky part
[pg 202] remains. When alive it is of a dark purple colour, which fades when removed from the water, and the white stony skeleton alone remains. It is, however, a true vegetable, as may be seen by dissolving away the chalky portions in acid; there is then left a vegetable framework precisely like that of other algæ belonging to the same sub-class. It is a small plant, rarely exceeding a height of five or so inches, but it grows in luxuriant patches wherever it can find a suitable spot.

A beautiful marine plant is the *Delesseria sanguinea*, with its beautiful scarlet leaves, the branches being five or six inches in length. It has a very "ancient and fish-like smell," once noticed not to be forgotten. Then again every one will remember in the little seaweed bouquets and landscapes on card sold at the fashionable seaside watering-places, a gay, bright, pinky-red kind, which is sure to be remarked for its charming beauty. This is the *Plocamium coccineum*, which is found to be even more beautiful under the microscope, for it is there seen that even the tiniest branchlets, themselves hardly thicker than a hair, have each their rows of finer branches.

Some seaweeds are eaten, as for example the so-called "Carrageen," or Irish moss, which is used in both jelly and size, and is one of the *Rhodosperm* algæ. To preserve it for esculent purposes it is washed in fresh water and allowed to dry; it becomes then horny and stiff. If boiled it subsides into a thick jelly, which is considered nutritious, and is used by both invalids and epicures. Calico-printers use it for size. It is used, boiled in milk, to fatten calves.

A pretty little seaweed, *Griffithsia selacea*, has the property of staining paper a fine pinkish-scarlet hue when its membrane bursts. Contact with fresh water will usually cause the membrane to yield, and then the colouring-matter is exuded with a slight crackling noise.

The *Chlorosperms*, or green-seeded algæ, have the power of pouring out large quantities of oxygen under certain conditions, and are therefore very valuable in the aquarium. Among them

are the sea-lettuce, before mentioned, the common sea grass, and a large number of smaller and more delicate forms.

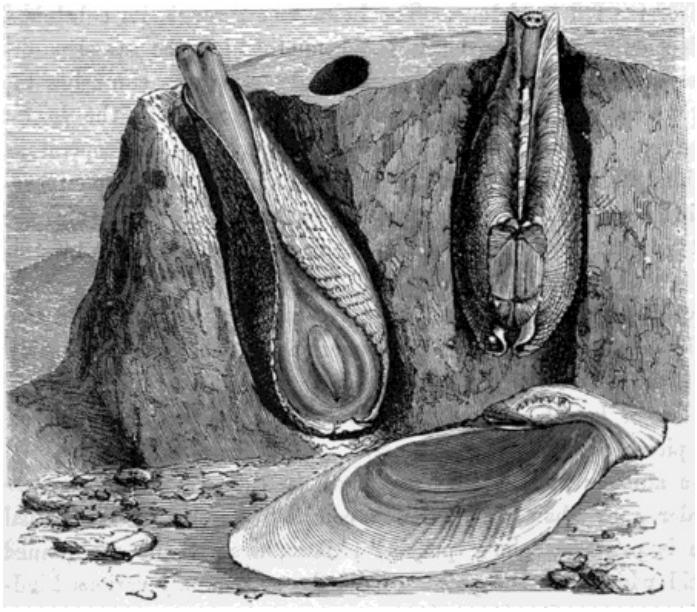
"If," says Mr. Wood, "the naturalist wishes to dry and preserve the algæ which he finds, he may generally do so without much difficulty, although some plants give much more trouble than others. It is necessary that they should be well washed in fresh water, in order to get rid of the salt, which, being deliquescent,[53] would attract the moisture on a damp day, or in a damp situation, and soon ruin the entire collection. When they are thoroughly washed the finest specimens should be separated from the rest and placed in a wide, shallow vessel, filled with clear fresh water. Portions of white card, cut to the requisite size, should then be slipped under the specimen, which can be readily arranged as they float over the immersed card. The fingers alone ought to answer every purpose, but a camel's-hair brush and a needle will often be useful. When the specimen is properly arranged the card is lifted from the water, carrying upon it the piece of seaweed. There is little difficulty in getting the plants to adhere to the paper, as most of the algæ are furnished with a gelatinous substance which acts like glue and fixes them firmly
[pg 203] down." If not, the use of hot water will generally accomplish the desired end. Animal glue or gum-water cannot he recommended.

Every visitor to the sea-shore has observed rocks drilled with innumerable holes, almost as though by art. A few good blows with a stout hammer on the chisel-head serve to split off a great slice of the coarse red sandstone. The holes run through its substance, but they are all empty, or filled only with the black fœtid mud which the sea has deposited in their cavities. These are too superficial; they are all deserted; the stone lies too high above low-water mark; we must seek a lower level. Try here, where the lowest spring-tide only just leaves the rocks bare. See! now we have uncovered the operators. Here lie snugly ensconced within the tubular perforations, great mollusca, with ample ivory-like shells, which yet cannot half contain the whiter flesh of their ampler bodies, and the long stout yellow siphons that project from one extremity, reaching far up the hole towards the surface of the rock.

We lift one from its cavity, all helpless and unresisting, yet manifesting its indignation at the untimely disturbance by successive spasmodic contractions of those rough yellow siphons, each accompanied with a forcible *jet d'eau*, a polite squirt of sea-water into our faces; while at each contraction in length, the base swells out till the compressed valves of the sharp shell threaten to pierce through its substance.

Strange as it seems, these animals have bored these holes in the stone, and they are capable of boring in far harder rock than this, even in compact limestone. The actual mode in which this operation is performed long puzzled philosophers. Some maintained that the animal secreted an acid which had the power of dissolving not only various kinds of stone, but also wood, amber, wax, and other substances in which the excavations are occasionally made. But it is hard to imagine a solvent of substances so various, and to know how the animal's own shells were preserved from its action, while, confessedly, no such acid had ever been detected by the most careful tests. Others maintain that the rough points which stud the shell enable it to serve as a rasp, which the animal, by rotating on its axis, uses to wear away the stone or other material; but it was difficult to understand how it was that the shell itself was not worn away in the abrasion.

Actual observation in the aquarium has, however, proved that the second hypothesis is the true one. M. Cailliaud in France, and Mr. Robertson in England, have demonstrated that the Pholas uses its shell as a rasp, wearing away the stone with the asperities with which the anterior parts of the valves are furnished. Between these gentlemen a somewhat hot contention was maintained for the honour of priority in this valuable discovery. M. Cailliaud himself used the valves of the dead shell, and imitating the natural conditions as well as he could, actually bored an imitative hole, by making them rotate. Mr. Robertson at Brighton exhibited to the public living Pholades in the act of boring in masses of chalk. He describes it as "a living combination of three instruments, viz., a hydraulic apparatus, a rasp, and a syringe." But the first and last of these powers can be considered only as an accessory to the removing of the detritus out of the way when once the hole was bored, the rasp being the real power. If you examine these living shells you will see that the fore part, where the foot protrudes, is set with stony points arranged in transverse and longitudinal rows; the former being the result of elevated ridges radiating from
[pg 204] the hinge, the latter that of the edges of successive growths of the shell. These points have the most accurate resemblance to those set on a steel rasp in a blacksmith's shop. It is interesting to know that the shell is preserved from being itself permanently worn away by the fact that it is composed of arragonite, a substance much harder than those in which the Pholas burrows. Yet we see by comparing specimens one with another, that such a destructive action does in time take place, for some have the rasping points much more worn than others, many of the older ones being nearly smooth.



PHOLADES IN A BLOCK OF GNEISS.

The animal turns in its burrow from side to side when at work, adhering to the interior by the foot, and therefore only partially rotating to and fro. The substance is abraded in the form of fine powder, which is periodically ejected from the mouth of the hole by the contraction of the branchial siphon, a good deal of the more unpalpable portions being deposited by the current as it proceeds, and lodging as a soft mud between the valves and the stone. Mr. Hudson, who watched some Pholades at work in a tide-pool in the chalk, observed the periodic ejection of the cloud of chalk powder, and noticed the heaps of the same material deposited about the mouth of each burrow. The discharges were made with no regularity as to time. Mrs. Merrifield records a curious fact:—"A lady watching the operations of some Pholades which were at work in a basin of sea-water, perceived that two of them were boring at such an angle that their tunnels would meet. Curious to ascertain what they would do in this case, she continued her observations, and found that *the larger and stronger Pholas bored straight through the weaker one*, as if it had been merely a piece of chalk rock."

SPINOUS COCKLE.
(*Cardium edule*.)

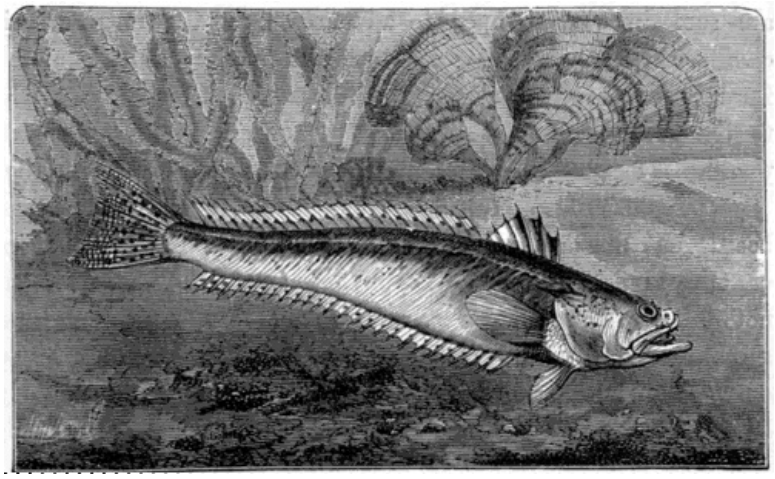
"What," says Mr. Gosse, "is that object that lies on yonder stretch of sand, over which the shallow water ripples, washing the sand around it and presently leaving it dry? It looks like a stone; but there is a fine scarlet knob on it, which all of a sudden has disappeared. Let us watch the movement of the receding wave, and run out to it. It is a fine example of the great spinous cockle (*Cardium rusticum*) for which all these sandy beaches that form the bottom of the great sea-bed
[pg 205] of Torbay are celebrated. Indeed, the species is scarcely known elsewhere, so that it is often designated in books as the Paignton cockle. A right savoury *bonne bouche* it is, when artistically dressed. Old Dr. Turton—a great authority in his day for Devonshire natural history, especially on matters relating to shells and shell-fish—says that the cottagers about Paignton well know the 'red-noses,' as they call the great cockles, and search for them at low spring tides, when they may be seen lying in the sand with the fringed siphons appearing just above the surface. They gather them in baskets and panniers, and after cleansing them a few hours in cold spring-water, fry the animals in a batter made of crumbs of bread. The creatures have not changed their habits nor their habitats, for they are still to be seen in the old spots just as they were a century ago; nor have they lost their reputation; they are, indeed, promoted to the gratification of more refined palates now, for the cottagers, knowing on which side their bread is buttered, collect the sapid cockles for the fashionables of Torquay, and content themselves with the humbler and smaller species (*Cardium edule*), which rather affects the muddy flats of estuaries than sand beaches, though not uncommon here. This latter, though much inferior in sapidity to the great spinous sort, forms a far more important item in the category of human food, from its very general distribution, its extreme abundance, and the ease with which it is collected. Wherever the receding tide leaves an area of exposed mud, the common cockle is sure to be found, and

hundreds of men, women, and children may be seen plodding and groping over the sinking surface, with naked feet and bent backs, picking up the shell-fish by thousands, to be boiled and eaten for home consumption, or to be cried through the lanes and alleys of the neighbouring towns by stentorian boys who vociferate all day long, 'Here's your fine cockles, here! Here they are! Here they are! Twopence a quart!' " It is on the north-western coast of Scotland, however, that the greatest abundance of these mollusca occurs, and there they form not a luxury but even a necessary of life to the poor semi-barbarous population. The inhabitants of these rocky regions enjoy an unenviable notoriety for being habitually dependent on this mean diet. "Where the river meets the sea at Tongue," says Macculloch, in his "Highland and Island Homes of Scotland," "there is a considerable ebb, and the long sandbanks are productive of cockles in an abundance which is almost unexampled. At that time (a year of scarcity) they presented every day at low water a singular spectacle, being crowded with men, women, and children, who were busily digging for these shell fish as long as the tide permitted. It was not unusual to see thirty or forty
[pg 206] horses from the surrounding country, which had been brought down for the purpose of carrying away loads of them to distances of many miles. This was a well-known season of scarcity, and, without this resource, I believe it is not too much to say that many individuals must have died for want."

One of the easiest forms of collecting is from the *débris*, as it were, of fishermen's nets and baskets; but it is exceedingly difficult to induce trawlers to bring home any of their "rubbish." Money, that in general "makes the mare to go" in any direction you wish, seems to have lost its stimulating power when the duty to be performed, the *quid pro quo*, is the putting a shovelful of "rubbish" into a bucket of water instead of jerking it overboard. No, they haven't got time. You try to work on their friendship; you sit and chat with them, and think you have succeeded in worming yourself into their good graces sufficiently to induce them to undertake the not very onerous task of bringing in a tub of "rubbish."

The thing is not, however, utterly hopeless. Occasionally Mr. Gosse had a tub of "rubbish" brought to him; but much more generally worthless than otherwise. The boys are sometimes more open to advances than the men, especially if the master carries his own son with him, in which case the lad has a little more opportunity to turn a penny for himself than when he is friendless. "If ever," says Gosse, "you should be disposed to try your hand on a bucket of trawler's 'rubbish,' I strongly recommend you, in the preliminary point of 'catching your hare,' to begin with the cabin-boy.

"The last basketful I overhauled made an immense heap when turned out upon a board, but was sadly disappointing upon examination. It consisted almost entirely of one or two kinds of hydroid zoophytes, and these of the commonest description. It does not follow hence, however, that an intelligent and sharp-eyed person would not have succeeded in obtaining a far greater variety; a score of species were doubtless brushed overboard when this trash was bundled into the basket; but being small, or requiring to be picked out singly, they were neglected, whereas the long and tangled threads of the *Plumularia falcata* could be caught up in a moment like an armful of pea-haulm in a field, its value being estimated, as usual with the uninitiated, by quantity rather than by quality, by bulk rather than variety."

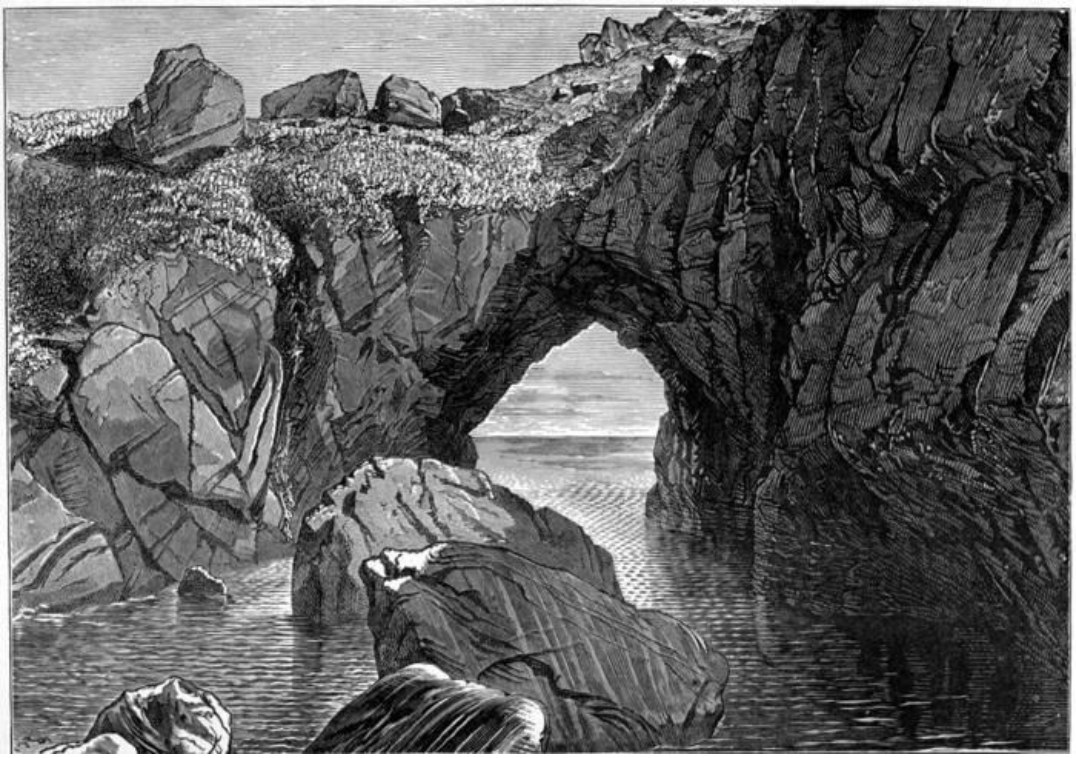


THE WEEVER FISH. (*Trachinus communis.*)

Mr. Gosse found on several occasions when examining the contents of shrimpers' nets, a pretty little flat-fish, a constant inhabitant of sandy beaches and pools, and often found in company with shrimps, some of which it hardly exceeded in size, although sometimes reaching a maximum growth of four or five inches. Small as it is, it is allied to the magnificent turbot. The naturalist above mentioned took it home, and observed its habits at leisure. "In a white saucer," says he, "it was a charming little object, though rather difficult to examine, because, the instant the eye with the lens was brought near, it flounced in alarm, and often leaped out upon the table. When its fit of terror was over, however, it became still, and would allow me to push it hither and thither, merely waving the edges of its dorsal and ventral fins rapidly as it yielded to the impulse." This is

the Top-knot, so called from an elongation of the dorsal fin. The little Sand Launce, with its pearly lustrous sides, is a commonly-found fish on the shore. It has a remarkable projection of the lower jaws, a kind of spade, as it were, by the aid of which it manages to scoop out a bed in the wet sand, and so lie hidden. The Lesser Weever, called by English fishermen Sting-bull, Sting-
[pg 207] fish, and Sea-cat, because of its power of inflicting severe inflammatory wounds, a little fish of four or five inches long, is another denizen of the sands. So also the young of the Skate. The Wrasse, the Globy, the Blenny, and many other small fish, are met with in the pools and caverns of our shores.

Of crabs, prawns, and crustaceans, of shell-fish and rock fish, and the mollusca generally, these pages have already given a sufficient account. They are even more at home in the sea than on the shore.



THE DEVIL’S FRYING PAN, COAST OF CORNWALL.

CHAPTER XIX.

Sketches of our Coasts.—Cornwall.

The Land’s End—Cornwall and her Contributions to the Navy—The Great Botallack Mine—Curious Sight Outwardly—Plugging Out the Atlantic Ocean—The Roar of the Sea Heard Inside—In a Storm—The Miner’s Fears—The Loggan Stone—A Foolish Lieutenant and his Little Joke—The Penalty—The once-feared Wolf Rock—Revolving Lights—Are they Advantageous to the Mariner—Smuggling in Cornwall—A Coastguardsman Smuggler—Landing 150 Kegs under the Noses of the Officers—A Cornish Fishing-town—Looe, the Ancient—The Old Bridge—Beauty of the Place from a Distance—Closer Inspection—Picturesque Streets—The Inhabitants—Looe Island and the Rats—A Novel Mode of Extirpation—The Poor of Cornwall Better Off than Elsewhere—Mines and Fisheries—Working on “Tribute”—Profits of the Pilchard Season—Cornish Hospitality and Gratitude.

The Land’s End has a particular interest to the reader of this work, for its very name indicates a point beyond which one cannot go, except we step into the great ocean. Round the spot a certain air of mystery and interest also clings. What is this ending place like? It is the extreme western termination of one of the most rugged of England’s counties, one which has produced some of her greatest men, and has always been intimately connected with the history of the sea. Cornwall has afforded more hardy sailors to the royal navy and merchant marine than any other county whatever, Devonshire, perhaps, excepted. One must remember her sparse population in making any calculation on this point. Her fishermen and miners are among the very best in the world. Some sketches therefore of Cornish coasts and coast life may be acceptable.[54]

One of the great features of the Land's End is the famed Botallack Mine, which stretches out thousands of feet beyond the land, and under the sea. Wilkie Collins, in an excellent description of his visit to the old mine says:—"The sight was, in its way, as striking and extraordinary as the first view of the Cheese-Wring itself. Here we beheld a scaffolding perched on a rock that rose out of the waves—there a steam-pump was at work raising gallons of water from the mine every minute, on a mere ledge of land half down the steep cliff side. Chains, pipes, conduits, protruded in all directions from the precipice; rotten-looking wooden platforms, running over deep chasms, supported great beams of timber and heavy coils of cable; crazy little boarded houses were built where gull's nests might have been found in other places. There did not appear to be a foot of level space anywhere, for any part of the works of the mine to stand upon; and yet, there they were, fulfilling all the purposes for which they had been constructed, as safely and completely, on
[pg 208] rocks in the sea, and down precipices in the land, as if they had been cautiously founded on the tracts of the smooth solid ground above!"

THE BOTALLACK MINE, CORNWALL.

The Botallack is principally a copper and tin mine, and has in days gone by yielded largely. Mr. Collins descended it to some depth, and found the salt water percolating from the ocean above, through holes and crannies. In one place he noted a great wooden plug the thickness of a man's leg driven into a cranny of the rock. It was placed there to prevent the sea from swamping the mine! Fancy placing a plug to literally keep out the Atlantic Ocean!

"We are now," says Mr. Collins in his narrative, "400 yards out *under the bottom of the sea*, and twenty fathoms, or 120 feet below the sea level. Coast trade vessels are sailing over our heads. Two hundred and forty feet beneath us men are at work, and there are galleries deeper yet, even below that.... After listening for a few moments, a distant, unearthly noise becomes faintly audible—a long, low, mysterious moaning, that never changes, that is felt on the ear as well as heard by it—a sound that might proceed from some incalculable distance—from some far invisible height—a sound unlike anything that is heard on the upper ground, in the free air of heaven, a sound so sublimely mournful and still, so ghostly and impressive when listened to in the subterranean recesses of the earth, that we continue instinctively to hold our peace, as if enchanted by it, and think not of communicating to each other the strange awe and astonishment which it has inspired in us both from the very first.

"At last the miner speaks again, and tells us that what we hear is the sound of the surf lashing the rocks a hundred and twenty feet above us, and of the waves that are breaking on the beach

beyond. The tide is now at the flow, and the sea is in no extraordinary state of agitation, so the sound is low and distant just at this period. But when storms are at their height, when the ocean hurls mountain after mountain of water on the cliffs, then the noise is terrific; the roaring heard down in the mine is so inexpressibly fierce and awful that the boldest men at work are afraid to continue their labour; all ascend to the surface to breathe the upper air and stand on the firm earth, dreading, though no such catastrophe has ever happened yet, that the sea will break in on them if they remain in the caverns below."

THE LOGGAN STONE.

One of the great sights of the Land's End is the famous Loggan Stone. After climbing up some perilous-looking places you see a solid, irregular mass of granite, which is computed to weigh eighty-five tons, resting by its centre only on another rock, the latter itself supported by a
[pg 210] number of others around. "You are told," says Wilkie Collins, "by the guide to turn your back to the uppermost stone; to place your shoulders under one particular part of its lower edge, which is entirely disconnected all round with the supporting rock below, and in this position to push upwards slowly and steadily, then to leave off again for an instant, then to push once more, and so on, until after a few moments of exertion you feel the whole immense mass above you moving as you press against it. You redouble your efforts, then turn round and see the massy Loggan Stone set in motion by nothing but your own pair of shoulders, slowly rocking backwards and forwards with an alternate ascension and declension, at the outer edges, of at least three inches. You have treated eighty-five tons of granite like a child's cradle; and like a child's cradle those eighty-five tons have rocked at your will!"

In the year 1824 a lieutenant in the royal navy, commanding a gunboat then cruising off that coast, heard that it was generally believed in Cornwall that no human power could or should ever overturn the Loggan Stone. Fired with an ignoble ambition, he took a number of his crew ashore, and by applying levers did succeed in upsetting it from its pivot. His little joke was observed by two labourers, who immediately reported it to the lord of the manor.

All Cornwall was in arms, and the indignation was general, from that of philosophers, who believed that the Druids had placed it on its balance, to those who regarded it as one of the sights of the county, and as a holiday resort. The guides who showed it to visitors, and the hotel-keepers, were furious. Representations were made to the Admiralty, and the unfortunate lieutenant was ordered to replace it.

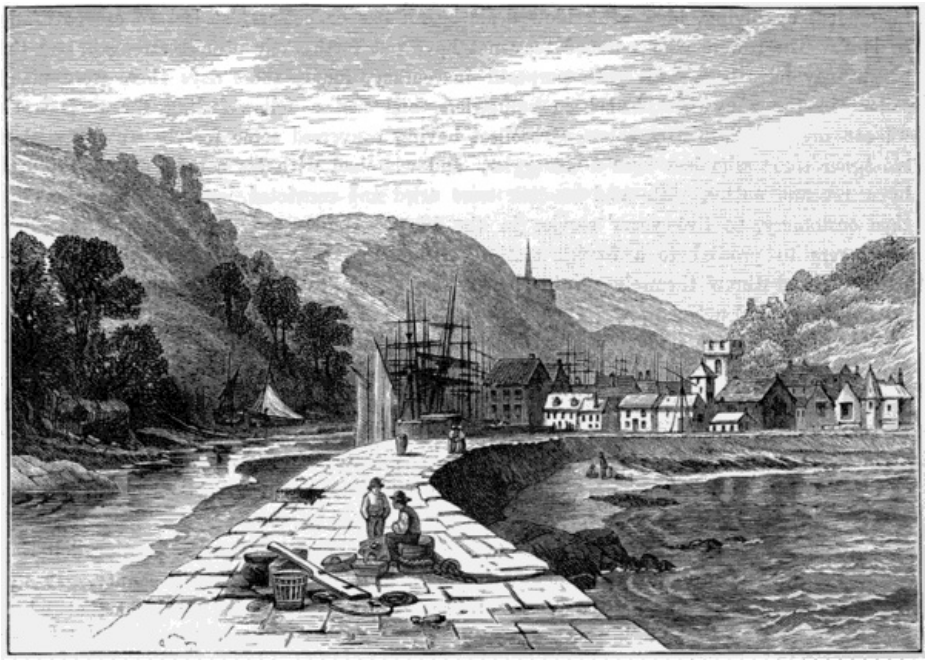
Fortunately the great stone had not toppled completely over, or it would have crashed down a precipice into the sea, but it had stuck wedged in a crevice of the rock below. By means of strong beams, chains, pulleys, and capstans, and a hard week's work for a number of men, it was replaced, although it is said never to have regained its former balance. The lieutenant was nearly ruined by it, and is said not to have completely paid the cost of this reparation at the day of his death.

About eleven miles from the Land's End there lies a dark porphyry rock, the highest point of which rises seventeen feet above low water. It is called "The Wolf," and previous to the construction of a sea-tower upon it no rock had been more fatal to the mariner. It is beaten by a terrific sea, being exposed to the full force of the Atlantic, and it lies just in the track of vessels entering or leaving the channel. In 1860 the Trinity House commenced the erection of a lighthouse on it, 116 feet high, with a revolving dioptric light. "The first flash," said a leading journal, "from the Wolf Lighthouse was shot forth on the 1st of January, 1870, and within the last ten years it is difficult to calculate what good it has done, by standing like a beneficent monitor in the centre of the greatest highway for shipping in the world." The Wolf light flashes alternately red and white at half-minute intervals. A great authority on the subject, Sir William Thomson, however, expostulates vigorously against all revolving lights, asserting that, for example, the Wolf is more difficult "to pick up," in nautical parlance, than the fixed beacon of the Eddystone.

THE LIZARD LIGHT.

[pg 211] The Rev. C. A. Johns, writing about 1840,[55] says that smuggling was still practised till within a few years previously. Most families on the coast were more or less engaged in it, and many of the houses had, and still have, secret underground chambers, which could be entered only through the parlour cupboard, which was furnished with a false back. Old grey-headed adventurers talked with evident pleasure of the exciting adventures of their younger days, and of their frequent hairbreadth escapes. One sturdy veteran in particular, who since he had dropped his profession of smuggler had on many occasions risked his life in the effort to save the crews of shipwrecked vessels, told how he was chased by a king's boat, how he threw himself overboard and swam for dear life, and how he eluded, by diving, blow after blow dealt by an oar or cutlass, at last to escape safely to land. The rowers who pursued may not have put forth their utmost strength, and the blows may have been dealt with purposed inaccuracy, for in those days there were many sailors in the navy who had been smugglers, and had a fellow-feeling for their kind. "I can myself," says Mr. Johns, "recollect having conversed some forty years ago with a coastguardsman who had been a smuggler, and who had with his comrades been captured by a revenue cutter. He and another were tried and convicted, and sentenced, as was then customary, to five years' service in the navy. While on board the vessel in which they were to proceed to a foreign station, anchored at Spithead, they escaped from confinement, and threw themselves into the sea by night, with the intention of swimming ashore. They had not, however, gone far when they were descried by the sentinel on board, who gave the alarm, and they were fired at. My informant reached the shore in safety, hid himself for a short time, and being afraid to return to his own neighbourhood, entered into the preventive service, and was at the very time I saw him, after the lapse of some years, visiting his friends in his native village, and close to the scene of his early feats of daring. His comrade was not so fortunate; either he was struck by a bullet, or became exhausted before he reached the shore, and was drowned. At all events, he was never seen again."

About the same period, Mr. Johns tells us, he was, one fine summer evening, loitering about the beach, near a small fishing-village, in a remote part of the county. It was about four o'clock, the sea was as smooth as glass, and the wind so light that whatever vessels and boats were in sight were either stationary or sluggishly impelled by oars. One fishing-boat only, about a hundred yards from shore, had its sails hanging idly from the mast, but yet appeared to be creeping towards a quay which ran out between the beach on which he was standing and the houses in which the coastguard resided. At the very instant that she had advanced so far that the pier was interposed between her hull and the houses a great splashing, as of boxes or kegs, or something else, rapidly thrown in the water, was heard. Simultaneously a number of men ran down the beach into the water up to their waists, and then scampered up to their houses, each bearing an armful of something. In a few minutes the boat capsized; probably this was done on purpose, but as it was in shallow water no harm resulted. Some innocent-looking fishermen soon righted her and baled her out. Mr. Johns learned later on that no less than 150 kegs of spirits were landed on that occasion right under the very noses of the coastguard. It was a desperate venture, but the fishermen-smugglers had calculated that the officers would not expect any attempt of the kind in
[pg 212] calm weather, and had reckoned rightly. Smuggling was almost invariably carried on in stormy weather, or on dark, cloudy nights. On some occasions the people of these fishing-towns and the country behind rose *en masse* and resisted the revenue officers, even to the extent of stoning and firing upon them.



LOOE.

The antiquities of Cornwall have called forth a very considerable quantity of learned literature, but, with the exception of the picturesque and graphic matter furnished by Wilkie Collins, Philip Henry Gosse, and, in lesser degree, by the writer just quoted, the county is not popularly known. Mr. Collins's description of Looe, an ancient Cornish fishing-town, will be read with interest. He says: "The first point for which we made in the morning was the old bridge, and a most picturesque and singular structure we found it to be. Its construction dates back as far as the beginning of the fifteenth century. It is three hundred and eighty-four feet long, and has fourteen arches, no two of which are on the same scale. The stout buttresses built between each arch are hollowed at the top into curious triangular places of refuge for pedestrians, the roughly-paved roadway being just wide enough to allow the passage of one cart at a time. On some of these buttresses, towards the middle, once stood an oratory, or chapel, dedicated to St. Anne, but no traces of it now remain. The old bridge, however, still rises sturdily enough on its old foundations; and, whatever the point from which its silver-grey stones and quaint arches of all shapes and sizes may be beheld, forms no mean adjunct to the charming landscape around it.

[pg 213] "Looe is known to have existed as a town in the reign of Edward I., and it remains to this day one of the prettiest and most primitive places in England. The river divides it into East and West Looe, and the view from the bridge, looking towards the two little colonies of houses thus separated, is in some respects almost unique. At each side of you rise high ranges of beautifully-wooded hills; here and there a cottage peeps out among the trees, the winding path that leads to it being now lost to sight in the thick foliage, now visible again as a thin serpentine line of soft grey. Midway on the slopes appear the gardens of Looe, built up the acclivity on stone terraces one above another, thus displaying the veritable garden architecture of the mountains of Palestine, magically transplanted to the side of an English hill. Here, in this soft and genial atmosphere, the hydrangea is a common flower-bed ornament, the fuchsia grows lofty and luxuriant in the poorest cottage garden, the myrtle flourishes close to the sea-shore, and the tender tamarisk is the wild plant of every farmer's hedge. Looking down the hills yet, you see the town straggling out towards the sea along each bank of the river in mazes of little narrow streets; curious old quays project over the water at different points; coast-trade vessels are being loaded and unloaded, built in one place and repaired in another, all within view; while the prospect of hills, harbour, and houses thus quaintly combined together is closed at length by the English Channel, just visible as a small strip of blue water pent in between the ridges of two promontories which stretch out on either side to the beach.

"Such is Looe as beheld from a distance; and it loses none of its attractions when you look at it more closely. There is no such thing as a straight street in the place, no martinet of an architect has been here, to drill the old stone houses into regimental regularity. Sometimes you go down steps into the ground floor, sometimes you mount an outside staircase to get to the bed-rooms. Never were such places devised for hide-and-seek since that exciting nursery game was first invented. No house has fewer than two doors leading into two different lanes; some have three, opening at once into a court, a street, and a wharf, all situated at different points of the compass. The shops, too, have their diverting irregularities, as well as the town. Here you might call a man Jack-of-all-trades, as the best and truest compliment you could pay him—for here one shop combines in itself a smart drug-mongering, cheese-mongering, stationery, grocery, and oil and Italian line of business; to say nothing of such cosmopolitan commercial miscellanies as wrinkled apples, dusty nuts, cracked slate pencils, and fly-blown mock jewellery. The moral good which you derive, in the first pane of a window, from the contemplation of brief biographies of murdered missionaries, and serious tracts against intemperance and tight lacing, you lose in the second, before such fleshly temptations as ginger-bread, shirt studs, and fascinating white hats

for Sunday wear at two-and-ninepence a-piece. Let no man rightly say that he has seen all that British enterprise can do for the extension of British commerce until he has carefully studied the shop-fronts of the tradesmen of Looe.

"Then, when you have at last threaded your way successfully through the streets, and have got out on the beach, you see a pretty miniature bay formed by the extremity of a green hill on the right, and by fine jagged slate rocks on the left. Before this seaward quarter of the town is erected a strong bulwark of rough stones, to resist the incursion of high tides. Here the idlers of
[pg 214] the place assemble to lounge and gossip, to look out for any outward-bound ships that are to be seen in the Channel, and to criticise the appearance and glorify the capabilities of the little fleet of Looe fishing-boats riding snugly at anchor before them at the entrance of the bay.

"The inhabitants number some fourteen hundred, and are as good-humoured and unsophisticated a set of people as you will meet with anywhere. The fisheries and the coast trade form their principal means of subsistence. The women take a very fair share of the hard work out of the men's hands. You constantly see them carrying coals from the vessels to the quay in curious hand-barrows; they laugh, scream, and run in each other's way incessantly; but these little irregularities seem to assist rather than impede them in the prosecution of their tasks. As to the men, one absorbing interest appears to govern them all. The whole day long they are mending boats, painting boats, cleaning boats, rowing boats, or, standing with their hands in their pockets, looking at boats. The children seem to be children in size, and children in nothing else. They congregate together in sober little groups, and hold mysterious conversation, in a dialect which we cannot understand. If they ever tumble down, soil their pinafores, throw stones, or make mud-pies, they practise these juvenile vices in a midnight secresy that no stranger's eye can penetrate."

A mile or so out at sea rises a green triangularly-shaped eminence, called Looe Island. Several years since a ship was wrecked on the island, but not only were the crew saved, but several free passengers of the rat species, who had got on board, nobody knew how, where, or when, were also preserved by their own strenuous exertions, and wisely took up permanent quarters for the future on the *terra firma* of Looe Island. In course of time these rats increased and multiplied; and, being confined all round within certain limits by the sea, soon became a palpable and tremendous nuisance. Destruction was threatened to the agricultural produce of all the small patches of cultivated land on the island—it seemed doubtful whether any man who ventured there by himself might not share the fate of Bishop Hatto, and be devoured by rats. Under these circumstances, the people of Looe decided to make one determined and united effort to extirpate the whole colony of invaders. Ordinary means of destruction had been tried already, and without effect. It was said that the rats left for dead on the ground had mysteriously revived faster than they could be picked up and skinned or cast into the sea. Rats desperately wounded had got away into their holes, and become convalescent, and increased and multiplied again more productively than ever. The great problem was, not how to kill the rats, but how to annihilate them so effectually that the whole population might certainly know that the reappearance of even one of them was altogether out of the question. This was the problem, and it was solved practically and triumphantly in the following manner:—All the inhabitants of the town were called to join in a great hunt. The rats were caught by every conceivable artifice; and, once taken, were instantly and ferociously *smothered in onions*; the corpses were then decently laid out on clean china dishes, and straightway eaten with vindictive relish by the people of Looe. Never was any invention for destroying rats so complete and so successful as this. Every man, woman, and child that could eat could swear to the death and annihilation of all the rats they had eaten. The local returns of dead rats were not made by the bills of mortality, but by the bills of fare; it was getting
[pg 215] rid of a nuisance by the unheard-of process of stomaching a nuisance! Day after day passed on, and rats disappeared by hundreds, never to return. They had resisted the ordinary force of dogs, ferrets, traps, sticks, stones, and guns, arrayed against them; but when to these engines of assault were added, as auxiliaries, smothering onions, scalding stew-pans, hungry mouths, sharp teeth, good digestions, and the gastric juice, what could they do but give in? Swift and sure was the destruction which now overwhelmed them—everybody who wanted a dinner had a strong personal interest in hunting them down to the very last. In a short space of time the island was cleared of the usurpers. Cheeses remained intact; ricks were uninjured. And this is the true story of how the people of Looe got rid of the rats!

Many causes, Mr. Collins tell us, combined to secure the poor of Cornwall from that last worse consequence of poverty to which the poor in most of the other divisions of England are more or less exposed. The number of inhabitants in the county is stated by the last census at 341,269—the number of square miles that they have to live on being 1,327. This will be found, on proper computation and comparison, to be considerably under the average population of a square mile throughout the rest of England. Thus, the supply of men for all purposes does not appear to be greater than the demand in Cornwall. The remote situation of the county guarantees it against any considerable influx of strangers to compete with the natives for work on their own ground. Mr. Collins met a farmer there who was so far from being besieged in harvest time by claimants for labour on his land, that he was obliged to go forth to seek them in a neighbouring town, and was doubtful whether he should find men enough left him unemployed at the mines and the fisheries to gather in his crops in good time at two shillings a day and as much "victuals and drink" as they cared to have.

Another cause which has of late years contributed, in some measure, to keep Cornwall free from

the burthen of a surplus population of working men must not be overlooked. Emigration has been more largely resorted to in that county than, perhaps, in any other in England. Out of the population of the Penzance Union alone nearly five per cent. left their native land for Australia or New Zealand in 1849. The potato blight is assigned as the chief cause of this, for it has damaged seriously the growth of a vegetable from the sale of which in the London markets the Cornish agriculturist derived large profits, and on which (with their fish) the Cornish poor depended as a staple article of food.

It is by the mines and fisheries that Cornwall is compensated for a soil too barren in many parts of the country to be ever cultivated except at such an expenditure of capital as no mere farmer can afford. From the inexhaustible treasures in the earth, and from the equally inexhaustible shoals of pilchards which annually visit the coast, the working population of Cornwall derived their regular means of support where agriculture would fail them. At the mines the regular rate of wages is from forty to fifty shillings a month; but miners have opportunities of making more than this. By what is termed working “on tribute,” that is, agreeing to excavate the mineral lodes for a percentage on the value of the metal they raise, some of them have been known to make as much as six and even ten pounds a month. Even when they are unlucky in their working speculations, or perhaps thrown out of employment altogether by the shutting up of a mine, they
[pg 216] have a fair opportunity of obtaining farm labour, which is paid for (out of harvest time) at the rate of nine shillings a week. But this is a resource of which they are rarely obliged to take advantage. A plot of common ground is included with the cottages that are let to them; and the cultivation of this helps to keep them and their families in bad times, until they find an opportunity of resuming work; when they may perhaps make as much in one month as an agricultural labourer can in twelve.

The fisheries not only employ all the inhabitants of the coast, but in the pilchard season many of the farm people work as well. Ten thousand persons, men, women, and children, derive their regular support from the fisheries, which are so amazingly productive that the “drift,” or deep-sea fishing, in Mount’s Bay alone, is calculated to realise, on the average, £30,000 per annum.

To the employment thus secured for the poor in the mines and fisheries is to be added, as an advantage, the cheapness of rent and living in Cornwall. Good cottages are let at from fifty or sixty shillings to some few pounds a year. Turf for firing grows in abundance on the vast tracts of common land overspreading the country. All sorts of vegetables are plenteous and cheap, with the exception of potatoes, which have so decreased, in consequence of the disease, that the winter stock is now imported from France, Belgium, and Holland. The early potatoes, however, grown in May and June, are still cultivated in large quantities, and realise on exportation a very high price. Corn generally sells a little above the average. Fish is always within the reach of the poorest people. In a good season a dozen pilchards are sold for one penny. Happily for themselves the poor in Cornwall have none of the foolish prejudices against fish so obstinately adhered to by the lower classes in many other parts of England. Their national pride is in their pilchards; they like to talk of them, and especially to strangers; and well they may, for they depend for the main support of life on the tribute of these little fish, which the sea yields annually in almost countless shoals.

“Of Cornish hospitality,” says Wilkie Collins, “we experienced many proofs, one of which may be related as an example. Arriving late at a village, we found some difficulty in arousing the people of the inn. While we were waiting at the door we heard a man, who lived in a cottage near at hand, and of whom we had asked our way on the road, inquiring of some female member of his family whether she could make up a spare bed. We had met this man proceeding in our direction, and had so far outstripped him in walking, that we had been waiting outside the inn about a quarter of an hour before he got home. When the woman answered this question in the negative, he directed her to put clean sheets on his own bed, and then came out to tell us that if we failed to obtain admission at the public-house, a lodging was ready for us for the night under his own roof. We found on inquiry afterwards that he had looked out of window after getting home, while we were still disturbing the village by a continuous series of assaults on the inn door, had recognised us in the moonlight, and had therefore not only offered us his bed, but had got out of it himself to do so. When we finally succeeded in gaining admittance to the inn, he declined an invitation to sup with us, and wishing us a good night’s rest, returned to his home. I should mention, at the same time, that another bed was offered to us at the vicarage, by the clergyman of the parish, and that after this gentleman had himself seen that we were properly accommodated by our landlady, he left us, with an invitation to breakfast with him the next
[pg 217] morning. This is hospitality practised in Cornwall, a county where, it must be remembered, a stranger is doubly a stranger, in relation to provincial sympathies; where the national sympathy is almost entirely merged in the local feeling; where a man speaks of himself as *Cornish* in much the same spirit as a Welshman speaks of himself as Welsh.

“In like manner, another instance drawn from my own experience will best display and describe the anxiety which we found generally testified by the Cornish poor to make the best and most grateful return in their power for anything which they considered as a favour kindly bestowed. Such anecdotes as I here relate in illustration of popular character cannot, I think, be considered trifling; for it is by trifles, after all, that we gain our truest appreciation of the marking signs of good or evil in the dispositions of our fellow-beings, just as in the beating of a single artery under the touch we discover an indication of the strength or weakness of the whole vital frame.

VIEW ON THE CORNISH COAST.

"On the granite cliffs at the Land's End I met with an old man, seventy-two years of age, of whom I asked some questions relative to the extraordinary rocks scattered about this part of the coast. He immediately opened his whole budget of local anecdotes, telling them in a high quavering treble voice, which was barely audible above the dash of the breakers beneath, and the fierce whistling of the wind among the rocks around us. However, the old fellow went on talking incessantly, hobbling along before me, up and down steep paths, and along the very brink of a fearful precipice, with as much coolness as if his sight was as clear and his step as firm as in his youth. When he had shown me all that he could show, and had thoroughly exhausted himself with talking, I gave him a shilling at parting. He appeared to be perfectly astonished by a remuneration which the reader will doubtless consider the reverse of excessive, thanked me at the top of his voice, and then led me in a great hurry, and with many mysterious nods and
[pg 218] gestures, to a hollow in the grass, where he had spread on a clean handkerchief a little stock-in-trade of his own, consisting of barnacles, bits of rock and ore, and specimens of dried sea-weed. Pointing to these, he told me to take anything I liked as a present in return for what I had given him. He would not hear of my buying anything; he was not, he said, a regular guide, and I had paid him more already than such an old man was worth. What I took out of his handkerchief I must take as a present only. I saw by his manner that he would be really mortified if I contested the matter with him, so as a present I received one of his pieces of rock. I had no right to deprive him of the pleasure of doing a kind action because there happened to be a few more shillings in my pocket than in his."

CHAPTER XX.

Sketches of our Coasts.—Cornwall (*continued*).

Wilkie Collins's Experiences as a Pedestrian—Taken for "Mapper," "Trodger," and Hawker—An Exciting Wreck at Penzance—The Life-line sent out—An Obstinate Captain—A Brave Coastguardsman—Five Courageous Young Ladies—Falmouth and Sir Walter Raleigh—Its Rapid Growth—One of its Institutions—A Dollar Mine—Religious Fishermen—The Lizard and its Associations for Voyagers—Origin of the Name—Mount St. Michael, the Picturesque—Her Majesty's Visit—An Heroic Rescue at Plymouth—Another Gallant Rescue.

Mr. Collins's experiences as a pedestrian are amusing. Says he:—"We enter a small public-house by the road-side to get a draught of beer. In the kitchen we behold the landlord and a tall man, who is a customer. Both stare as a matter of course; the tall man especially, after taking one look at our knapsacks, fixes his eyes firmly on us, and sits bolt upright on the bench without saying a word—he is evidently prepared for the worst we can do. We get into conversation with the landlord, a jovial, talkative fellow, who desires greatly to know what we are, if we have no objection. We ask him what he thinks we are? 'Well,' says the landlord, pointing to my friend's knapsack, which has a square ruler strapped to it for architectural drawing, 'Well, I think you are both of you *Mappers*; mappers, who come here to make new roads; you may be coming to make a railroad, I dare say. We've had mappers in the county before this. I know a mapper myself. Here's both your good healths.' We drink the landlord's good health in return, and disclaim the honour of being 'mappers;' we walk through the country, we tell him, for pleasure alone, and take any roads we can get, without wanting to make new ones. The landlord would like to know,

if that is the case, why we carry these loads at our backs? Because we want to carry our luggage about with us. Couldn't we pay to ride? Yes, we could. And yet we like walking better? Yes, we do. This last answer utterly confounds the tall customer, who has been hitherto listening intently to the dialogue. It is evidently too much for his credulity; he pays his reckoning, and walks out in a hurry without uttering a word. The landlord appears to be convinced, but it is only in appearance; he looks at us suspiciously in spite of himself. We leave him standing at his door, keeping his eye on us as long as we are in sight, still evidently persuaded that we are 'mappers,' but 'mappers' of a bad order, whose perseverance is fraught with some unknown peril to the security of the Queen's highway.

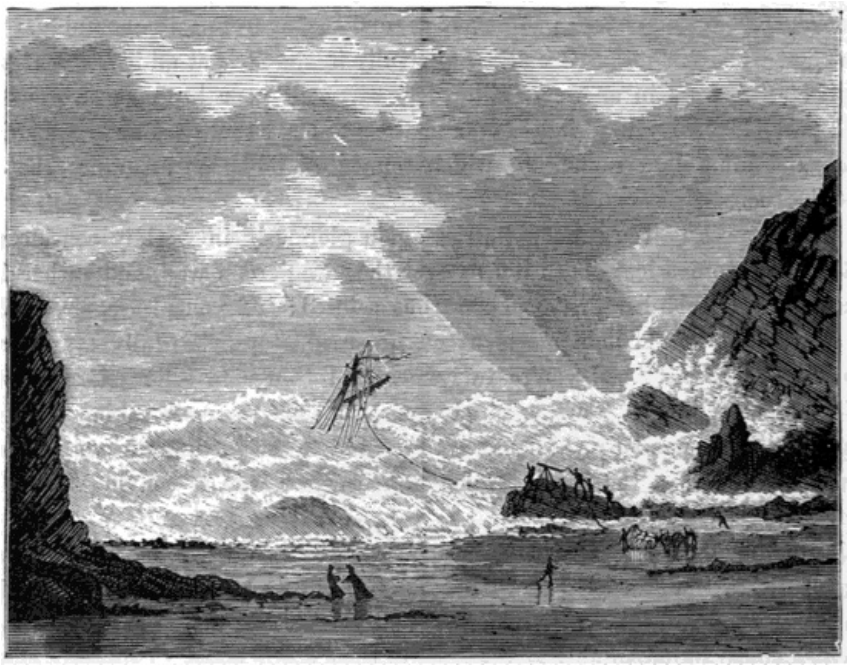
[pg 219] "We get on into another district. Here public opinion is not flattering. Some of the groups gathered together in the road to observe us begin to speculate on our characters before we are quite out of hearing. Then this sort of dialogue, spoken in serious, subdued tones, just reaches us. Question—'What can they be?' Answer—'*Trodgers!*'

"This is particularly humiliating, because it happens to be true. We certainly do trudge, and are therefore properly, though rather unceremoniously, called trudgers, or 'trodgers.' But we sink to a lower depth yet a little further on. We are viewed as objects of pity. It is a fine evening. We stop and lean against a bank by the road-side to look at the sunset. An old woman comes tottering by on high pattens, very comfortably and nicely clad. She sees our knapsacks, and instantly stops in front of us, and begins to moan lamentably. Not understanding at first what this means, we ask respectfully if she feels at all ill? 'Ah! poor fellows, poor fellows!' she sighs in answer, 'obliged to carry all your baggage on your own backs! very hard! poor lads! very hard indeed!' and the good old soul goes away groaning over our evil plight, and mumbling something which sounds very like an assurance that she has no money to give us.

"In another part of the county we rise again gloriously in worldly consideration. We pass a cottage; a woman looks out after us over the low garden wall, and rather hesitatingly calls us back. I approach her first, and am thus saluted: 'If you please, sir, what have you got to sell?' Again, an old man meets us on the road, stops, cheerfully taps our knapsacks with his stick, and says, 'Aha! you're tradesmen, eh! things to sell? I say, have you got any tea?' (pronounced *tay*). Further on we approach some miners breaking ore. As we pass by we hear one asking amazedly, 'What have they got to sell in those things on their backs?' and another answering, in the prompt tones of a guesser who is convinced that he guesses right, 'Guinea-pigs!'

"It is, unfortunately, impossible to convey to the reader any adequate idea by mere description of the extraordinary gravity of manner, the looks of surprise, and the tones of conviction which accompanied these various popular conjectures as to our calling and station in life, and which added immeasurably at the time to their comic effect. Curiously enough, whenever they took the form of questions, any jesting in returning an answer never seemed either to be appreciated or understood by the country people. Serious replies fared much the same fate as jokes. Everybody asked whether we could pay for riding, and nobody believed we preferred walking, if we could. So we soon gave up any idea of affording any information at all, and walked through the country comfortably as mappers, trodgers, tradesmen, guinea-pig mongers, and poor back-burdened vagabond lads, altogether, or one at a time, just as the peasantry pleased."

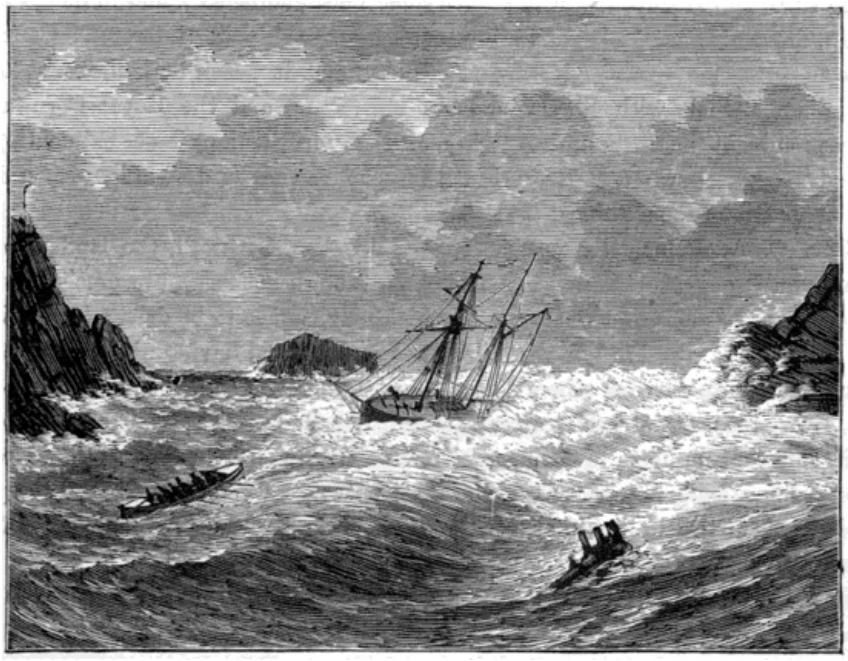
Penzance is itself the most westerly port of England. It has a noble pier, 700 feet long, and a lighthouse, the red light of which can be seen nine miles off. It has a lifeboat, the crew of which has done many a gallant deed. Out of a population of twelve or thirteen thousand in and about the town, at least twenty-five per cent. are hardy men of the sea—fishermen or sailors. It was the scene, only a couple of years ago, of a most exciting event.



ROCKET LINE THROWN TO A WRECK NEAR PENZANCE.

A French brig, the *Ponthieu*, went ashore near the town, during the prevalence of a strong south-west gale. The Marazion rocket apparatus was worked successfully, and the line was thrown over
[pg 220] the wreck, but the crew, being ignorant of the mode of working it, fastened it loosely on board, instead of hauling it in taut. One of the crew managed, however, to get safely ashore by it. The Penzance lifeboat was then got out, but on her arrival at the ill-fated vessel, the French crew, though in infinite peril, great seas washing over them, took no notice, the captain apparently forbidding them to leave, or even throw a line to the boat. The wind and sea rapidly increased in fury; the vessel was evidently doomed, and must soon break up. In vain the life-boatmen entreated. They were actually warned off, and had, after earnest warning, to leave. But seeing the inevitable loss of life that must ensue, the brave coxswain of the boat determined to return. Result: five lives saved. The captain still remained obstinate, and at length a coastguardsman, all honour to him! volunteered for the perilous duty of going out to the wreck by the rocket line, taking with him a letter from the French Consul, urging the captain to leave. In the presence of hundreds of intensely-excited spectators, the coastguard made his way, often under the waves for several seconds, and in peril of being washed off. The captain was watching him from the brig, but stood motionless, even when his deliverer had arrived under the bows. Just then a furious sea broke over the hero of the rocket line, and washed him away, and it was feared by all on shore that he must perish. Happily, however, he regained the rope, and more dead than alive, was washed ashore. Meanwhile the brig was fast breaking up. The masts fell over the side. The stern, on which the captain was standing, was first battered in, and then clean carried away. It was supposed that the captain had perished, but presently he was seen among the wreckage, mounting to the foreyard, the sail of which somewhat sheltered him. The coastguardsmen fired
[pg 221] two more rockets, and one line falling close to the captain, he seized it, but even then seemed irresolute whether to save himself or perish with his brig. After a quarter of an hour the love of life constrained him to fasten the rope round his body, and the foolhardy man was dragged ashore. Within an hour nothing was to be seen of the vessel but a few floating spars. The cheers which greeted the captain’s rescue were but feeble compared with those that had welcomed the return of the coastguardsman whose life had been risked in attempting to save him. Brave Gould!

The coastguardsmen, however, do not enjoy a monopoly of bravery in Cornwall. There are courageous women there, some of them very young.



LIFE-BOAT GOING TO A WRECK ON DOOM BAR, PADSTOW.

Towards the end of October, 1879, a well-earned presentation was made at Padstow, to five young ladies of an equal number of silver medals and testimonials inscribed on vellum, the vote of the National Life-boat Institution. The four Misses Prideaux Brune and Miss Nora O’Shaughnessy had taken a boat through a heavy sea, at the risk of their own lives, to save an exhausted sailor from a capsized boat, two of the companions of whom had perished before their arrival. Samuel Bate, late the assistant coxswain of the Padstow life-boat, was towing the ladies’ boat astern of his fishing smack, when seeing the accident, they requested to be cast off, and that being done, though against his convictions, he states that they rowed “like tigers” to the rescue through a furious sea, and he has no doubt that the man would have perished like his companions but for their prompt arrival. Such noble-hearted girls make us still more proud of Cornwall, which has given England—aye, the world—so many noble men.

[pg 222] The Cornish coast, in spite of its picturesque character and points of interest, is not so well

known by tourists and artists as it should be.

Falmouth has an interesting history. When Sir Walter Raleigh visited it on his return from the Guinea coast, where guinea-pigs came from, he found but one solitary house outside of the family mansion of an ancient county family. His quick eye noted the admirable harbour and entrance, the former capable of holding 500 vessels, and he represented to the Council the advantage of making it a port. From that time its fortunes grew; soon it became a packet station for the arrival and departure of the foreign mails. Now on the lofty headland, St. Anthony's Point, a lighthouse, flashing brilliantly every twenty seconds, serves to guide the entering ships and steamships, which have sometimes numbered 2,000 in one year. It has a patent slip, dry and other docks, and all conveniences for shipping interests. Connected with the town is an extensive oyster and trawling fishery, and it has a little fleet of pilot cutters. It has a sailors' Bethel, with library and reading-room; and the Royal Cornwall Sailors' Home is a prominent institution. Another of the "institutions" of Falmouth might be copied to advantage elsewhere. Every boatman who rescues a drowning person is entitled to receive a reward of one guinea.

The Rev. C. A. Johns tells us that near Gunwalloe, Cornwall, the land rises, and the coast becomes bold for a short distance. The cliffs, though not lofty, are precipitous, and offer no chance of escape to any unfortunate vessel which may chance to be driven in within reach of the rocks. About the year 1785, a vessel laden with wool, and having also on board two and a half tons of money, was driven ashore a few hundred yards west of the church, and soon went to pieces. Ever since, at intervals, after a storm, dollars have been picked up on the beach, but never in sufficient numbers to compensate for the time wasted in the search. No measures, however, on a large scale for recovering the precious cargo were adopted until the year 1845, when people were startled to hear that a party of adventurers were going to sink a dollar-mine in the sea.

This is not the only unsuccessful search for treasure which has been made at Gunwalloe. In the sand-banks near the church, or, as others say, at Kennack Cove, the notorious buccaneer Captain Avery is reported to have buried several chests of treasure previous to his leaving England on the voyage from which he never returned. So strongly did this opinion prevail that Mr. John Knill, collector of the Customs at St. Ives, procured, about the year 1770, a grant of treasure trove, and expended some money in a fruitless search.

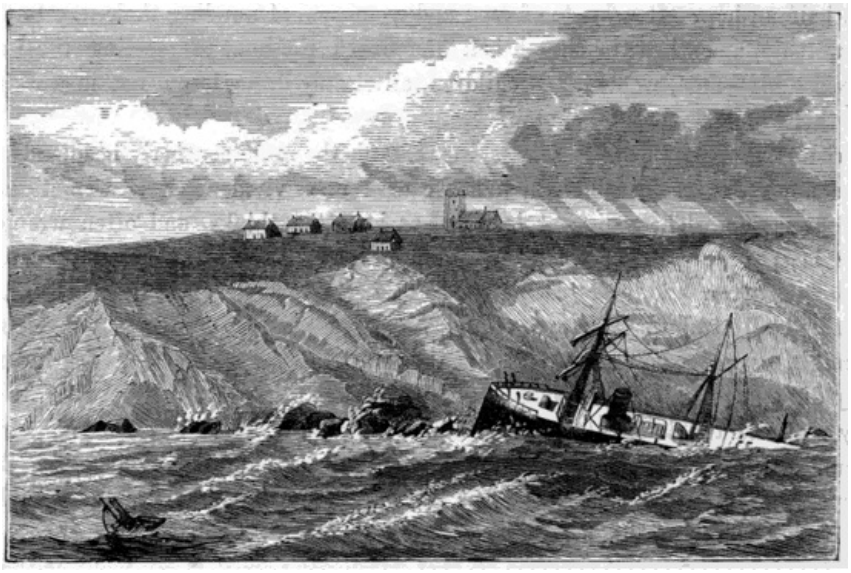
The vessel had gone to pieces between two rocks at a short distance from the base of the cliff, and here it was proposed to construct a kind of coffer-dam, from which the water was to be pumped out, and the dollars to be picked up at leisure. Mad though the scheme was, operations were actually commenced; a path was cut in the face of the cliff, iron rods were fixed into the rocks, and several beams of timber laid down, when a breeze set in from the south-west, and in the course of a few hours the work of as many weeks was destroyed. The wood-work was ripped up as effectually as though it had been a mere wicker cage, and the coast was soon lined with the fragments. It is not likely the attempt will be renewed. The speculators were in this instance strangers, which accounts for the enterprise having been taken in hand at all, for any one acquainted with the coast must have been well aware that though the sea is tolerably calm
[pg 223] sometimes for many consecutive days, it is never so for a period long enough to allow the completion of a work which requires time, and which, in the most favourable weather, is beset with difficulties; indeed, an ordinary breeze setting on this shore excites the sea to such a state of fury that certainly no unfinished mechanical structure could withstand the force of the breakers.

The lower classes of Cornwall are generally Methodists, and decidedly religious. In Scotland also, strict Sabbatarianism is the rule among the poor. *The Northern Ensign*, in reply to a journalist who had been advocating the prosecution of the herring fishery on the Sabbath day, had an article showing that there is no class in Scotland, taken as a whole, who love, revere, and enjoy the Sabbath more than the men and women who live by the sea. At Wick, the largest herring fishery station in the world, where the fishers congregate from all parts of the coast, at ten o'clock one Sabbath morning not a single fisherman was to be seen in the street; in half an hour after knots of men and women were wending their way to the various places of worship, and when the church bell announced the hour of meeting the streets were almost impassable—men, women, and children, all cleanly dressed, and not in working clothes, streamed this way and that to church.

No visitor to Cornwall ever misses the Lizard, the most southerly headland promontory in Britain, a piece of rocky land which has caused more vivid and varied emotions than any other on our coasts. The emigrant leaving, as he often thinks, and often wrongly thinks, his native land for ever; the soldier bound for distant battle-fields, and the sailor for far distant foreign ports; the lover just parted from his beloved one; the husband from his wife; have each and all strained their eyes for a last parting glimpse of an isle they loved so much and yet might never see again! And when the lighthouses' flash could no longer be discerned, how sadly did one and all "turn into" their berths to think, aye, "perchance to dream," of the happy past and the doubtful future. How different the emotions of the homeward bound, the emigrant with his gathered gold, the bronzed veteran who has come out of the fiercest conflict unscathed, and the sailor who has safely passed the ordeal of fearful climes; the lover ready now for the girl he adores; and the husband jubilant with such good news for his faithful spouse. The first glimpse of that strangely-named rocky point is the signal for heartiest huzzas and congratulation.

The Lizard Rock owes its name, according to various authorities, firstly to its form; secondly to

the serpent-like colour of its cliffs; and thirdly is said to be derived from the Cornish word Liazherd, signifying a projecting headland. Its two splendid lights can be seen out at sea at a distance of twenty miles.



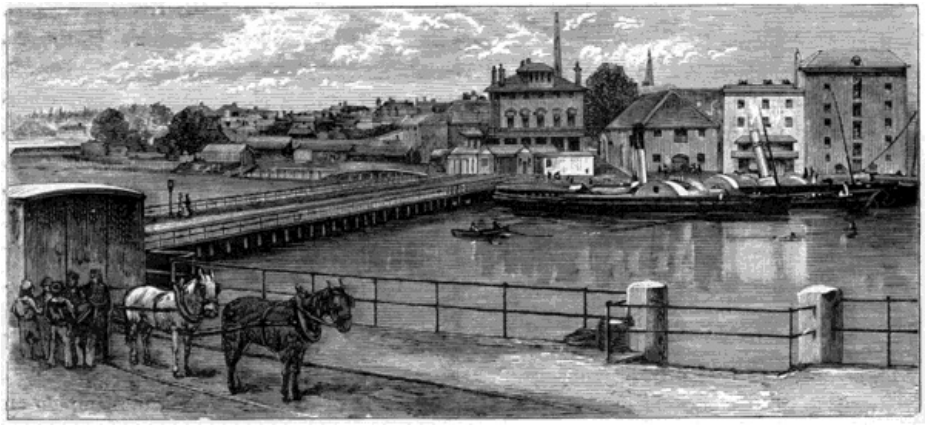
WRECK OF A STEAM-SHIP NEAR LIZARD POINT.

Mount’s Bay, a few miles further west, has a fine anchorage, but is more interesting to the visitor as containing an isolated pyramidal collection of grand rocks, which, with their castle, are the delight of the landscape artist. The old castle on the rocky islet rises to a height of 230 feet. The island is connected with Marazion, a village on the mainland, 400 yards distant, by a causeway of stones. In 1846 her Majesty Queen Victoria and Prince Albert paid a visit to the spot, and the event is commemorated on a tablet let into the wall of the pier, and by a brass foot-plate placed on the spot first touched by the Royal feet when they conveyed Her Majesty ashore. There is a snug little harbour, and the pier just named will allow several hundred vessels to unload at the same time. The population of Mount St. Michael is composed almost entirely of pilots and fishermen.

[pg 224] Plymouth, Devon, with its grand breakwater and many associations, has often been mentioned in these pages. Comparatively recently it was the scene of a most gallant rescue. Five boys were playing on the beach in front of the Hoe, when they entered a cave in the rocks, and remained there until the tide, which flowed in with unusual rapidity on account of a gale outside, completely hemmed them in. Their screams were heard from the road and promenade above, and hundreds of people quickly congregated. The waves were dashing furiously on the beach, and surging into the cave where the terrified lads were crouching, shivering with wet and cold, and trembling at their apparently inevitable fate. No boat could live in the surf, or dare approach the rocks. But seamen’s proverbial ingenuity came to the rescue; ropes were procured, and two seafaring men, George Andrews and Thomas Penny by name, were lowered over the precipitous crags through the blinding spray and dashing foam to the mouth of the rocky recess. Here, still attached to the ropes, they allowed themselves to be washed by the sea into the cave far enough to seize a boy, when, the signal being given, they were hauled out and up. This was repeated, until amid enthusiastic cheering, the fifth and last boy was saved.

Has the reader ever visited Dartmouth, one of the loveliest spots in Britain? The men, and, if history tells us aright, the women too, of that ancient town rendered a good account of themselves when the French, in 1404, after burning and sacking Plymouth, thought they would have an easy prey. The inhabitants of Dartmouth pluckily resisted the invaders, and with such success, that the commander of the fleet, three barons, and twenty knights, were taken prisoners. But then out of a comparatively small population, then as now, a large proportion were men of the sea.

[pg 225]



SOUTHAMPTON.

CHAPTER XXI.

Sketches of our South Coasts.

Southampton: its Antiquity—Extensive Commerce—Great Port for Leading Steamship Lines—Vagaries of a Runaway Steamer—The Isle of Wight—Terrible Loss of the *Eurydice*—Finding of the Court-martial—Raising Her from the Bottom—"London by the Seaside"—Newhaven and Seaford—Beachy Head—An Attempt to Scale it—A Wreck there—Knowledge Useful on an Emergency—Saved by Samphire—The Coast-guard: Past and Present—Their Comparatively Pleasant Lot To-day—The Coast-guard in the Smuggler Days—Sympathies of the Country against them.

Southampton, one of the most important towns in the South of England, is a place of great antiquity, having been in existence prior to the Conquest, while many Roman remains are to be found in its neighbourhood. What schoolboy is not familiar with the story of King Canute and his courtiers, who flattered their royal master that even the winds and waves would do his bidding? The Danish monarch was made of too stern material to believe such nonsense; and to convince his fawning courtiers that he did not possess attributes which belong to the Creator alone, he is said to have seated himself by the seaside, and in a loud voice commanded the waves to stay. But the fleecy billows obeyed him not, and in due course reached the feet of the king and his obsequious court. The spot upon which this memorable circumstance occurred is still pointed out in the neighbourhood of Southampton.

Nearly surrounding the town remains of the ancient buttresses and towers of the wall which once environed it are still to be seen; while on the western shore the old Water-gate, from which the merchants embarked, still exists. In the old Domesday Book it is described as an important burgh. Southampton grew in importance at the time of the Crusades, when thousands of troops and crusaders and mailed knights embarked thence, or, weather-bound, remained encamped in the place. It soon became a great port of call for Flemish and other merchant-traders.

[pg 226] Southampton has great natural advantages for communication with the sea. The town is situated on a swelling point of land, bounded by the confluences of the rivers Test and Itchen, and communicating with the Solent and English Channel by the fine arm of the sea known as Southampton Water, surrounded by charming scenery, and navigable for the largest steamers. At its mouth is Calshot Castle, a coastguard station at the water's edge, while half-way between that point and the town are the picturesque ruins of Netley Abbey. It has a tidal dock covering sixteen acres, and several graving and other docks. Consequently, it is the point of departure for the fine vessels of the Peninsular and Oriental line, the Royal Mail (West Indies and Central America), the North German Lloyds', Hamburgh, and Havre steamships for New York, and the Union Line for African ports, besides an infinity of smaller steamships and steamboats for Havre, the Channel Islands, and the Isle of Wight. Its inhabitants consider it the Liverpool of the South; and even if this is rather an exaggerated view of the case, it has undoubtedly grown to be one of the principal ports of the kingdom. It ranks fifth in the list.[56]

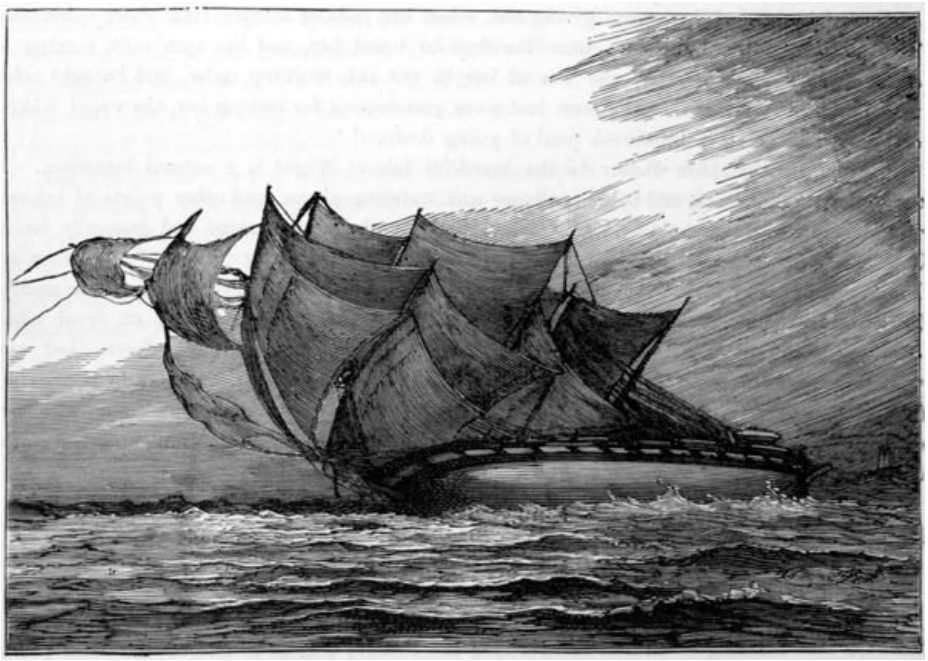
And now for the story of a steamboat which attempted to run away from Southampton on her own account. This strange circumstance occurred some few years ago, and might well have been attended with disastrous results. The steam-tug *Belmont* was towing out to sea the *Walton Hood*, a passenger vessel bound for Australia, and after taking her down to the Channel, the sails were set on the ship, and the *Belmont* proceeded to cast her off, previous to returning to Southampton. In doing so, by some unexplained cause the ship collided with the tug, striking her with a violent crash, which knocked over her mast and funnel, and threw her upon her side. The shock also had

the effect of increasing the activity of the crew, who, one and all, leaped on board the *Walton Hood*, leaving their steamer in charge of a dog and two cats. The steam of the *Belmont* was up, and after a succession of plunges and croakings she righted, and cleared the ship. Tearing away her bulwarks, she took a sweep round and made a bolt for the land. Her fate now appeared inevitable, whilst her strange manœuvres made her look like an insane vessel, rushing wildly from some pursuer. Her mast and funnel hung over the side, her bulwarks were smashed, and the long tiller was dashing wildly to and fro; the dog on board was barking, howling, and yelling fiercely, rendering the scene both ludicrous and serious. Something evidently had to be done to save her. The captain and crew, having recovered their composure, obtained a boat from the ship and started in pursuit. “Pull away, my boys; give it her!” was the quick command. “Aye, aye, sir!”
[pg 227] was the ready response, and the tough oars bent to the stalwart efforts of the oarsmen. The boat sped onward in the chase, but ere this the steam-tug had on her own account altered her coarse, and by some cause or other came round, and made again for the point whence she had started. Having described a complete circle, she again started off on a voyage *en zigzag*, and then made direct for Calshot lighthouse. Here the men on the look-out descried her position, and having launched and manned their own boat, also started in pursuit. The race now became truly exciting, the course of the steam-tug being utterly uncertain and irresponsible, according as her helm shifted to and fro at the sport of the waters of the Channel. By this time, however, she had run some distance, and at length her speed gradually diminished, her steam giving out, when her paddles stopped from sheer exhaustion. The crew from the lighthouse were the first to board her, and her own crew coming up about twenty minutes after, she was at length got into working order, and brought safely into dock. It appears that the crew had some justification for leaving her, the vessel leaking seriously, and being in imminent peril of going down.

From Southampton Water to the beautiful Isle of Wight is a natural transition. To fully describe its coasts and fishing-villages and watering-places, and other points of interest, would occupy a large volume. Cowes and Ryde, with their regattas and generally festive look; Osborne, with its royal residence; Shanklin and Blackgang “Chines”; Ventnor and Niton; Alum Bay and “the Needles,” will be familiar to the larger number of our readers. Inseparably connected with the gay little island must ever be remembered an event which cast a gloom not merely over the households of hundreds of direct sufferers, but over the length and breadth of the entire land. Need it be said that we refer to the terrible loss of that fine training-ship the *Eurydice*, with its living freight of three hundred young and promising sailor lads, in sight of land and home, and just as they were nearing, after long foreign service, the haven of their hopes.

> “For there came down a squall, and the snow swept the wave
> Like a white winding-sheet for the brave man’s lone grave;
> And with scarce time to glance a farewell at the sky,
> The three hundred went down without e’en a cry.”

On the morning of March 25th, 1878, the country awoke to one of the most painful and unlooked-for catastrophes that have befallen the navy during the present century—that of the *Captain* hardly excepted, for certain doubts had always been felt as to how the bulky ironclad would behave in a heavy gale. “One of the finest corvettes of her class that ever floated,” said a competent authority, “commanded by a captain and officered by men of the highest professional experience, and with a crew young, but sufficiently trained, and numerous enough in nautical parlance to have ‘torn her to pieces’, capsizes, with the loss of every soul on board her but two. Such a calamity, taken in all its bearings and with such a loss of life, is unparalleled in the modern history of the navy. It is true that about forty years ago a man-of-war schooner (the *Pincher*), very much over-masted, was, off the ‘Owers,’ not very far from the same spot, capsized in a heavy squall, and all her hands were lost, although she was in company with a corvette at the time. But the *Eurydice* was not over-masted, and she went down in broad daylight and in smooth
[pg 228] water. Yet where is the officer or the man—let him be the best seaman in the world—who can say, ‘Such would not have been the *Eurydice’s* fate had I commanded her?’ The fact is, the disaster, truly lamentable as it is, might have happened to any seaman. With a fair wind, smooth water, and within a short distance of her anchorage, running along too close under the high land of the Isle of Wight to notice the hurricane-like squall rushing down upon her in time to prepare for it, the ship was literally forced under water, the accumulating weight of which eventually capsized her beyond recovery. Adverse comments have been made on the ports being open; but with a fair wind, smooth water, and Spithead close by, what danger could possibly be apparent, to cause them to be closed after a sea-voyage so nearly ended? Had the *Eurydice* met with the same squall at sea she would have weathered it.”[57]



H.M.S. “EURYDICE” ON HER BEAM-ENDS JUST AFTER THE SQUALL.

The court-martial which assembled on the 27th of August, 1878, on board the *Duke of Wellington* flagship, under the presidency of Admiral Fanshawe, C.B., Commander-in-Chief at Portsmouth, reported that the ship had foundered from pressure of wind upon her sails during a sudden and exceptionally dense snowstorm, which overtook her when its approach was partially hidden by the proximity of the ship to high land. “Some of the upper half-ports on the main-deck were open
[pg 229] at the time, which materially conduced to the catastrophe; but the court considers that the upper half-ports having been open was justifiable and usual under the state of the wind and weather up to the time of the actual occurrence of the storm.” The finding of the court-martial mentioned the fact that the captain was frequently on deck during the afternoon; and attributed blame to no one on board. It considered the ship, which had had ten years’ sea service, to have been thoroughly stable. A large number of other authorities, however, thought very differently—that she was top-heavy, and that she was undoubtedly carrying too much sail.

After exactly twenty-three weeks from the day of her foundering the *Eurydice* was, on Sunday, the 1st of September, safely towed into Portsmouth harbour. “As an example of perseverance and determination to succeed, the recovery of the ship is unique. The elements, which throughout the operations may truly be said to have fought against the efforts to float her being successful, made a final attempt to render those endeavours abortive on the Thursday night and Friday morning, with such effect that the Admiralty deemed it inexpedient that further attempts should be made, and had even gone to the extent of ordering her to be taken to pieces where she lay. Rear-Admiral Foley, and those who had so ably and perseveringly worked with him, were, however, reluctant to abandon the attempt to recover the ship, and he pledged himself that he would undertake to bring her into harbour. This pledge was redeemed.”[58] The divers throughout the operations could work only at slack tides and in very fine weather, the under-currents on the Isle of Wight coast being exceptionally strong.

The *Eurydice* lay at first in seven fathoms and a half (forty-five feet) of water, and to this must be added eight or nine feet of mud into which the wreck was embedded. Strong wire ropes were attached to the inner sides of the ports; the other ends of the ropes were made fast to the four floating hulls placed over and across the *Eurydice*, and when everything was ready and the tide at its lowest ebb, the process of pinning down was commenced—that is, the ropes were hauled “taut,” and made fast to the lifting vessels, so that as the tide gradually rose to its highest point the whole mass of lighters with the sunken vessel lifted as well. Then it was that the steam-tugs took up their positions, and towed the ill-fated craft towards shallower water, till she was left on a bank under the Culver cliff, with one side and her upper deck above the water at low tide. Even yet the efforts to float her were interfered with. Frequently all would be ready for lifting, when the sea would roughen, and everything have to be abandoned, the lighters returning to Portsmouth. It was raised partially in August, 1878, after four months’ continuous labour. After lying for a few days under the Culver cliff, the *Eurydice* was again sufficiently lifted to clear the bottom, and towed together with the lifting vessels to St. Helen’s Sands. When lifted finally, and towed to Portsmouth by the *Grinder*, she had two tugs on her port side and one on her starboard, with their steam-pumps working, and constantly pumping her hold.

Brighton—“London by the Sea-side” as it is often styled—is to many one of the most fascinating of
[pg 230] the English watering-places. It is both popular and fashionable, the resort alike of the masses and

of the “upper ten.” Its position on the sea is charming, while at an easy distance are any number of pleasant sea-coast and inland resorts. It has sprung up from a little fishing-village to a town of at least 120,000 souls. One feature of the place is the solidity and elegance of its public and private buildings, while its streets are the best kept in the whole kingdom. It extends, with its suburbs Kemp Town and Cliftonville, for *four miles* along the coast, and is in great part defended by a sea-wall. The celebrated chain-pier is 1,130 feet in length; while its Aquarium, already described in the proper place, is the finest in the world.

The climate of Brighton is temperate and mild both summer and winter, in the latter season resembling that of Naples; and to these facts is doubtless due its great success as a resort for the invalid, debilitated, or fagged-out business man. Capital bathing, boating, and yachting, are all at the command of the visitor; there are no finer promenades anywhere; while riding or driving on the Downs, or to the neighbouring rural retreats (among them that most beautiful of England’s ancestral homes, Arundel), is a treat open to all whose circumstances are moderately easy. In the whirl and din of fashionable life there one is apt to forget its practical connection with the sea, but it possesses a perfect fleet of mackerel and herring boats, and several lifeboats, belonging to the Lifeboat Institution, the Humane Society, and the town.

BRIGHTON.

In the year 1833, at New Stoke, near Arundel, the remains of an ancient boat were discovered in the bed of what was formerly a creek running into the river Arun. It had been constructed of half the trunk of an oak tree, hollowed out as the Indians of North-west America do to-day. It was thirty-five feet four inches in length, by four feet six inches. In 1822, a still larger oak boat was found in the bed of the river Rother, near Maltham, Kent, which was sixty-three feet by fifteen feet, half decked, caulked with moss, and had carried at least one mast.

These discoveries sink into insignificance with that made in 1880 on the farm of Gokstad, not far from Sandefjord, a favourite watering-place of the Norwegians. A hill or mound, which tradition pointed out as the burial-place of some mighty king or chief, was found to contain the entire hull of an old ship of the Viking days. It is of course a very venerable relic, being probably more than 1,000 years old. The Gokstad vessel, built entirely of oak, is seventy-five feet long between stem and stern, and sixteen feet broad amidships; and appears to be of a low build, drawing only five feet. The deals were riveted together by iron nails; and the ribs, of which there are twenty, are connected with the deals at the top by rivets, but at the bottom with ties. Amidships, in the bottom of the ship, is a heavy beam, both ends of which are fashioned in the shape of a fish’s tail. This beam served as a support for the mast, of which there is still a piece standing in its place; while the upper part, which had been cut off, was found in the vessel. The mast appears to have been about twenty-two feet long. Remains of two or three small boats were found; some pieces inside the ship, and some pieces close to it. In the fore part of the vessel a large copper kettle and water-cask were also found, with remains of sails and ropes, and some large oars. She had been built for sixteen oars. A hundred wooden shields had been once placed in a row under the gunwale of the ship, corresponding to the number of the crew, the centre pieces of iron, or bosses, still remaining. The arrangement of the shields is the same as that in the famous Bayeux
[pg 231] tapestry, on which are represented (among other things) the ships of William the Conqueror. The old vessel had been used as the last resting-place of a great Viking. It was their custom so to bury their chiefs. The ship was usually placed with its stem towards the sea, so that when Odin, the Jove of the northern mythology, should call the gallant chief, he could set sail straight off land for Valhalla, the heaven of his hopes.

Newhaven, a little farther to the east, has a fair tidal harbour and some local commerce, but its chief feature is the very rapidly-increasing passenger traffic between it and Dieppe, for Paris or London, and the traveller who has not tried that route can be recommended to do so. The boats, some of them of steel and containing all modern improvements, are among the finest in the Channel service, making the trip to Dieppe usually in five or five-and-a-half hours. The trip through Normandy and the valley of the Seine is varied and interesting, and preferable to that from Calais or Boulogne. Near Newhaven is the once flourishing town of Seaford, though it is now little better than a picturesque fishing-village, in the bay of which mackerel are sometimes taken in prodigious quantities, and which affords shelter and anchorage for large vessels during the prevalence of strong easterly winds.

Still farther east, and at the extreme southern point of Sussex, stands the bold promontory Beachy Head, the scene of many a shipwreck in days gone by. It would be a most difficult feat to scale this great chalk cliff; and yet the slope of broken *débris*, mingled with scanty grass and samphire, steep though it be, does not look impracticable, nor indeed is it up to a certain point. The writer and his brother once managed to get within a very respectable distance of the top, but then the rocky stones commenced rolling down, bringing both climbers with them. After many an ineffectual attempt to secure a hold by clinging to the samphire, and intervals of momentary rest, neither was very sorry to reach the stony beach, albeit considerably bruised, battered, and torn. There they found the sea had cut off their retreat towards Eastbourne, and before they could reach the shore they had to wade through the fast-rising tide round one or two projecting corners of the cliff.

In the month of November, 1821, a dreadful storm visited Beachy Head, during which a French vessel was driven ashore and wrecked. All on board were swept into the sea, and only four escaped the general destruction, by climbing to the top of a heap of rocks which had fallen, at different times, from the overhanging cliffs. Their perilous situation can easily be conceived; the tide was encroaching upon them step by step, and it was certain destruction to attempt to gain the land. The night was extremely dark, and the thunder and lightning rendered it still more awful. The poor men, finding that they would either be swallowed up by the rising tide or dashed to pieces against the rocks, determined to deliver themselves up to the mercy of the waves, with the forlorn hope of being cast on some place of safety. At this time one of the men saw, during some flashes of lightning, a plant growing amongst the stones on which they stood, which he knew was samphire, and which he also happened to know never grew where it could be entirely covered with water. He at once acquainted his fellow-sufferers with this fact, and persuaded them to remain where they were till morning, being convinced that the height of the tide would
[pg 232] not be quite equal to that of the place on which they stood. The event proved the correctness of his information and the value of his knowledge, for when daylight broke the poor fellows were seen, and rescued from their dangerous situation.

DISCOVERING THE SAMPHIRE ON THE ROCK.

No part of the south coast formerly required more vigilant guarding than that for many miles on either side of Beachy Head. The coastguardsman had his hands full then; his lot is better now. “Amongst the most agreeable objects that enliven the shores of our island,” writes the *Saturday Review*, “are the groups of cottages occupied by the coastguard. Picturesque one can scarcely call them, for the architecture is simple to baldness, and suggestive of Government contracts kept down by close competition, and yet they have generally the picturesqueness of comfortable contrast with surroundings that are often bleak and inhospitable. Dating from the days when our

coasts were regularly picketed, and a blockade was methodically established against the enterprise of the free-traders, we come upon them in every variety of situation. Now they are arranged bastion-wise on a commanding eminence, in the suburb of some seaport or watering place, in a snug, compact, little square, with a tall flagstaff in the centre. Again we stumble on them unexpectedly, sheltered in the recess of some ‘gap’ or ‘chine’ where a little stream comes
[pg 233] trickling down to the sands through the deep cleft that time seems to have worn in the chalk cliffs. Most frequently they are perched on the crest of the line of sand-hills, with a broad look-out in all directions over ‘promontory, cape, and bay.’ And often they form a conspicuous landmark on some flat stretch of grass-grown sand, where the slow-shelving shore is intersected by a labyrinth of changing channels, and where mud-banks submerged by the rising tides are a perfect paradise for the clamorous sea-fowl. But whatever the situation, the general effect is almost invariably the same. They are substantial and watertight; suggestive of cheery shelter in bright interiors when the wind is howling through the shrouds of the flagstaff, driving the sand and gravel in flying scud along the beach, and churning and grinding the pebbles in the surf with dull, monotonous roar. There are low flat roofs with projecting eaves, and small, strongly-secured casements, and the gleam of their spotless whitewash catches any sunlight that may be going. In the neatly-palisaded little gardens that stretch before the door, a hard and not-unsuccessful struggle is always going on with the unfriendly elements, while the shell-strewn walks are invariably kept in the most perfect order. As you approach them of a warm summer afternoon you are conscious of the briny breeze just tainted with a faint amphibious smell of tar. It may not be so balmy or romantic as the resinous odours that breathe from the pine-woods of Bayonne or Arcachon, under the fiercer rays of the sun of Gascony; but it is decidedly wholesome, and rather
[pg 234] savoury than otherwise. The promiscuous use of pitch and tar gratifies the nautical affections of the inmates. Everything is paid, caulked, and seamed, from the keels of the white-painted boats that are hauled up bottom upwards, to the felt-covered shingles over the out-houses, and the frames of the cottage windows, and the palings of the enclosure. Everything, even to the concealed refuse-heaps, is trim and ship-shape, showing the presence of an easy discipline and the predominance of habits of tidiness and order.”

Then the *Review* goes on to describe the exciting and perilous post of the coastguard when import duties were excessive, and lucky smugglers made rapid fortunes. “The sympathies of the whole adjacent country were against them. Half the country people were employed from time to time in running illicit cargoes, and made a very good thing of it. Those were the days of hard drinking, and farmers almost openly encouraged a trade that dropped kegs of cheap hollands and runlets of pure French brandy at their very doors. As for the women, of course—to say nothing of their romantic sympathies with daring law-breakers—they were all in favour of the men who filled and sweetened the cheering tea-cup, that would otherwise have been altogether beyond their means. Even gentlemen holding His Majesty’s commission of the peace were said to connive at the ‘fair trade’ for a consideration, and to express no surprise at the production of mysterious casks that had been concealed in out-of-the-way corners of their premises. There were certain depôts, in dry caverns, in remote homesteads or sequestered barns, the secret of which was religiously preserved, although it was the common property of highly questionable characters. There were codes of signals which could be clearly read by all but the preventive men, and which gave notice of danger or of a favourable opportunity, as the case might be. The officer in charge of the station had his faculties preternaturally sharpened, and could scent something wrong in the most natural incidents. The wreaths of smoke rising from a heap of burning weeds might convey a warning to some expected vessel. A fishing-boat putting out to sea, engaged apparently in its lawful business, might really be bound on a similar errand. Then it was the business of the day-watch to scan carefully each craft that appeared off the coast, and his natural vigilance was stimulated by the prize-money that might fall to his share. Then the nocturnal promenade was no mere formality. The thicker the night the more likely that something might be going on under cover of the fog; and the ear of the look-out was always bent to distinguish, amidst the murmur of the waves, the sound of suppressed voices, or the plash of muffled oars. Nor was the walk by any means free from personal danger, and indeed it was seldom taken in solitude; for, even apart from the inveterate animosity existing between the smugglers and the preventive men, those were days when deeds of violence were common, and the life of a man was of little account compared to the safety of a cargo that might be worth hundreds or thousands of pounds. If he chanced to fall over the cliff by accident, everything might be satisfactorily settled before he was replaced; for when a smuggling lugger stood in for the coast there were plenty of ready hands to help to discharge her cargo; and unless the men of the nearest preventive station got assistance from elsewhere, there was little left for them but to look on helplessly. Boats from the nearest fishing hamlets swarmed in about the smuggler; strings of horses, in charge of people armed to
[pg 235] the teeth, made their way to the coast from the inland farms. The contraband goods, in kegs and bags of convenient size for easy landing, were transferred from the ship to the boat, from the boat to the beach, from the beach to the pack-saddle, with incredible celerity; and when the mounted caravans set themselves in motion, those who had assisted at the landing hastened to vanish as they had come. On these occasions the smugglers scored a trick in the game, and the coastguard had nothing for it but to wait their turn of revenge with redoubled vigilance. More frequently, however, they succeeded in spoiling sport, for it paid the smuggler amply to run one cargo in three. The Government people would keep such a sharp look-out that, oftener than not, the friends of the free-traders could only help them by signalling danger, and the richly-freighted lugger had to put up her helm in despair, perhaps with one of the revenue cutters in hot pursuit; or, what was better still, the enemy was surprised in the very act of unlading, and a valuable capture was effected. Of course a successful exploit of this kind was by no means all pleasure and pride. The smugglers with their friends, disguised by blackened faces, were sure to show fight if

they had any chance. As they were busy in the bay, and the unloading was going briskly forward, their sentinels would give the signal of alarm, and the long galleys of the coastguard would be seen pulling fast inshore, and stealing like wolves on their prey from round the nearest headland. The attacking force would make free play with its muskets and carbines, if it came within reach, and the attacked had to consider that their enemies on the water had probably allies on the land in the shape of excise officers backed up by soldiers. So the next act in the drama was a *sauve qui peut*, conducted with more or less order, and covered with a lavish use of cutlasses and firearms. Very possibly the victors had to count the dead, and pick up the wounded; and thus the romance and excitement of those days were spiced with a very sensible element of danger."

CHAPTER XXII.

Sketches of our South Coasts (*concluded*).

Eastbourne and its Quiet Charms—Hastings—Its Fishermen—The Battle of Hastings—Loss of the *Grosser Kurfürst*—The Collision—The Catastrophe—Dover—The Castle—Shakespeare's Cliff—"O'er the Downs so free"—St. Margaret's Bay—Kingsdown—Deal—A Deed of Daring—Ramsgate and Margate—The Floating Light on the Goodwin Sands—Ballantyne's Voluntary Imprisonment—His Experiences—The Craft—The Light—One Thousand Wild Ducks caught—A Signal from the "South Sand Head"—The Answer—Life on Board.

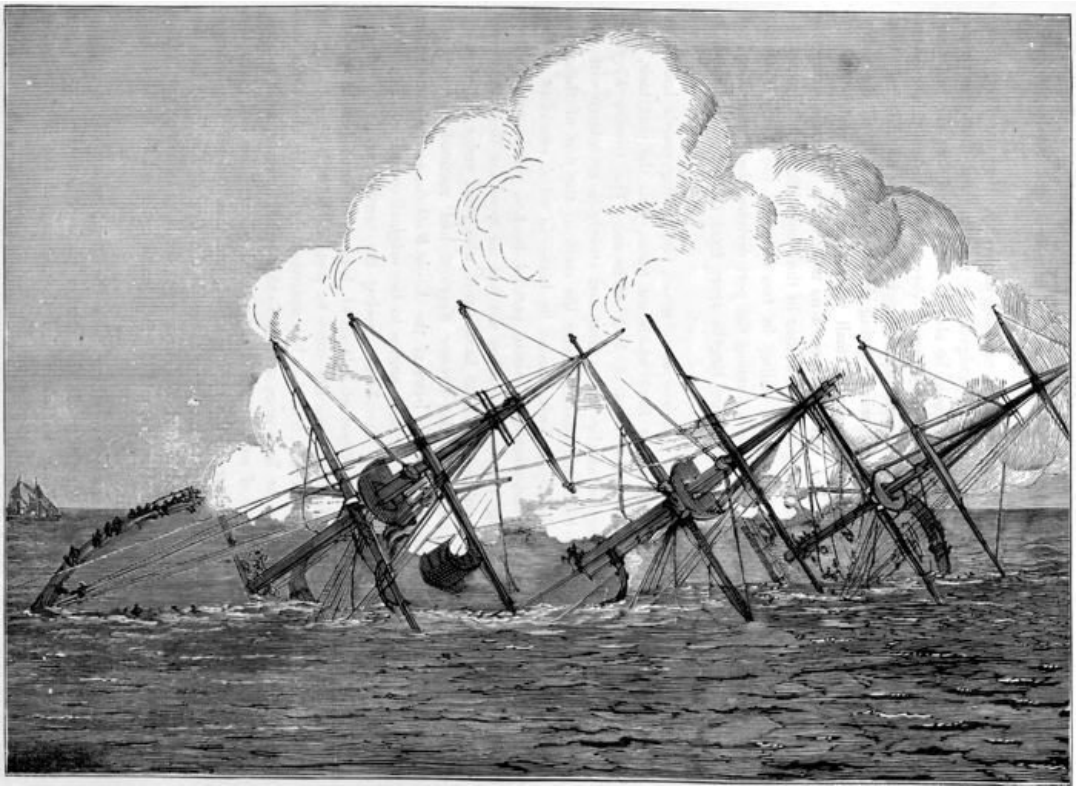
The coast north-east from Beachy Head is rugged and interesting till Eastbourne is reached, one of the quietest and prettiest of the south-coast watering-places, and one which has been very greatly improved of late by the lavish expenditure of his Grace the Duke of Devonshire, the principal landowner in the neighbourhood. Some of the promenades are planted with trees *à la boulevard*. The bathing and boating are both excellent; while in the neighbourhood are the ruins of Pevensey, an old Norman castle, and Hurstmonceaux, a red-brick castle of the mediæval period, ivy-and creeper-covered, and embowered in trees. It is the delight of artists, who annually
[pg 236] besiege it in great numbers. Eastbourne has some hundred fishermen engaged in the herring and mackerel fisheries. They have a benefit association or club, into which they pay a monthly subscription, and when their nets are damaged or lost a part of the money needed to repair or replace them is found. There is also a lifeboat, which has done excellent work.

And next in sequence comes historical Hastings, which extends for near a mile along the sea at the present time, or, if we include the fashionable town of St. Leonard's-on-Sea, its sea front must be reckoned at nearly three miles. Many readers will be familiar with the charming glen or vale in which it is situated, and which opens to the sea on the south. Hastings is otherwise sheltered by high hills and cliffs, and has a warm, even, and yet bracing climate; for salubrity it will rank with any of the popular sea-side resorts. It has a steady population of about 35,000, of whom 700 are fishermen and boatmen. In one week the herring catch has been worth £5,000. A boat fitted for the herring or mackerel season is worth £350, and for trawling £200. The mackerel season commences in April and continues till the latter end of July, while the trawling commences and ends two or two and a half months later. The herring season commences in September and ends in the latter part of November. There is a church at Hastings, under the eastern cliffs, for the special accommodation of fishermen.

The famous battle of Hastings was fought A.D. 1066, Oct. 14. The alarm sounded, both parties immediately prepared for action; but the English spent the night previous to it in riot and jollity, whilst the Normans were occupied in the duties of religion. On the morning the Duke called together his principal officers, and ordered the signal of battle to be given. Then the whole army, moving at once, and singing the hymn or song of Roland, advanced in order and with alacrity towards the English.

Harold had seized the advantage of a rising ground, and, having secured his flanks with trenches, resolved to stand upon the defensive, and to avoid an engagement with the cavalry, in which he was inferior. The Kentish men were placed in the van, a post of honour which they always claimed as their due. The Londoners guarded the standard; and the King himself, accompanied by his two valiant brothers, Gurth and Leofwin, dismounting from his horse, placed himself at the head of his infantry, and expressed his resolution to conquer or to die. The first attack of the Normans was desperate, but was received with equal valour by the English, and the former began to retreat, when William hastened to their support with a select band. His presence restored the courage of his followers, and the English in their turn were obliged to retire. They rallied again, however, assisted by the advantage of the ground, and William, in order to gain the victory, had recourse to a stratagem, which, had it failed, would have resulted in his total ruin. He commanded his troops to allure the enemy from their position by the appearance of flight. The English followed with precipitation; the Normans faced upon them in the plain, and drove them back with considerable slaughter. The artifice was a second time repeated, with the same success; yet a great body of the English still maintained themselves in firm array, and seemed

determined to dispute the victory. While they were galled by the Norman archers behind, they were attacked by the heavy-armed infantry in front; and Harold himself was slain by an arrow as he combated with great bravery at the head of his men. The English, discouraged by the fall of
[pg 238] their prince, fled on all sides. The memory of the eventful fight is kept green by the name of Hastings, and Battle Abbey, in its immediate neighbourhood.



THE LAST OF THE *GROSSER KURFÜRST*.

Sadly must all readers look back upon the morning of Friday, May the 31st, 1878, when the *Grosser Kurfürst* went down off Sandgate, so near to land that the people on shore felt certain that the commander would be able to beach her before she had time to sink, unhappily an entirely erroneous supposition. Very shortly before this ever-to-be-lamented catastrophe occurred, the German squadron, in command of Admiral Von Batsch, was sailing with a light easterly wind blowing down Channel with all the pomp and pardonable display of a force so numerically small yet so grandly powerful. The sea was perfectly smooth, the weather fine, and there seemed no more reason for anticipating the impending danger than if they had been lying at anchor in the sunlit harbour of Bremen.

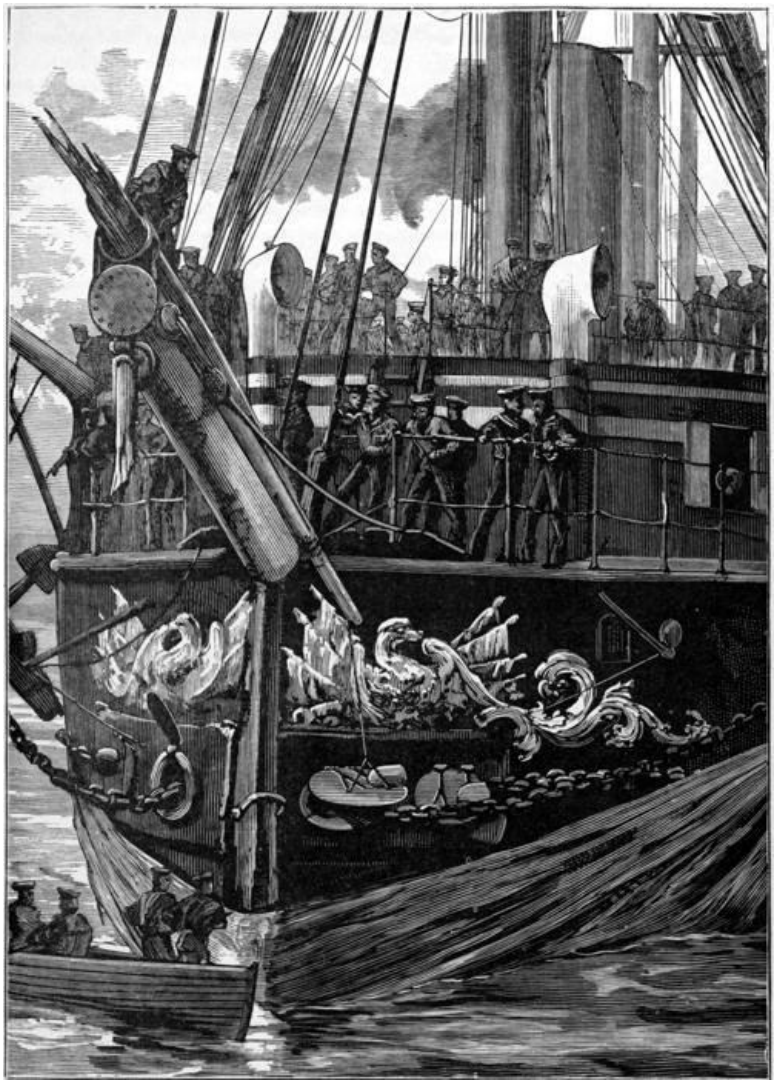
The squadron consisted of three vessels, sailing in two columns—the *König Wilhelm*, carrying the admiral's flag, and the *Preussen* forming the port division, the *Grosser Kurfürst* forming the starboard, and less than two ships' lengths apart from the admiral; indeed, it is said that scarcely one length intervened.

"In this formation the German squadron came across two sailing vessels hauled to the wind," says the writer of the article from which we quote, "on the port tack, and consequently standing right across the bows of both divisions. The *Grosser Kurfürst* had first to give way, which she did at the proper time and strictly in accordance with the rule of the road, porting her helm and passing under the stern of the first of these two sailing ships. But the *König Wilhelm*, which it must be borne in mind was close to the *Grosser Kurfürst* at this time, and steering a course parallel to her, endeavoured at first to cross the bows of the sailing vessel, but finding she had no room for this manœuvre, rapidly changed her plan, and, putting her helm hard a-port, also stood under the stern of the sailing vessel. In the meanwhile the *Grosser Kurfürst* had resumed her original course, and thus was lying right across the bows of the *König Wilhelm*, as she came under the stern of the sailing barque almost at right angles to the original course.... The captain of the *Grosser Kurfürst*, Graf Von Montz, seeing the terrible proximity of the *König Wilhelm*, immediately put his vessel at full speed, hoping to cross her bows, but the space would not allow it. He then gave the order to port his helm, hoping to lay his ship parallel to the course of the *König Wilhelm*, but unfortunately for this also there was neither time nor space." All might have gone well up to this point, however, as it appears the *König Wilhelm* was in charge of an "able and experienced officer;" he had given the order to port the helm to steer clear of the sailing vessel, and then ordered the helm to be "immediately steadied," intending to range up alongside the *Grosser Kurfürst*; but the helmsman had become bewildered, and instead of steadying put the helm still more port. The *König Wilhelm* was put at full speed astern, and the fatal crash could not be avoided. All now was confusion on both vessels.

The *König Wilhelm* carried away everything from the point where she struck the *Grosser Kurfürst*

to the stern, “ripping off the armour plating like the skin of an orange.” The bowsprit of the *König Wilhelm* fouled the rigging of the ill-starred ship and brought down the mizzen top-gallant-mast on the quarter-deck, and the quarter boats were swept away “like strips of paper.”

[pg 239] The doomed iron-clad went down in seven minutes; on board there was scarcely time left the officers and crew to think much less to act with effect. The boats that had not been smashed could hardly be got into the water; the hammocks had been stowed in some unusual place, so that it was useless to attempt to get at them, and thus a very perfect means of escape was cut off from the 280 poor fellows that were drowned.



THE “KÖNIG WILHELM” ENTERING PORTSMOUTH HARBOUR AFTER THE COLLISION.

The experience of the first lieutenant when the vessel was going down under the very eyes of a number of people on shore is interesting in the extreme. He felt himself sucked in, and describes a sensation of enormous pressure on his ribs, as if the water were forcing him down. Then he came across another column of water, which as promptly vomited him up to the surface again, when he caught hold of a spar, and saved his life. A dreadful fate befell some thirty unfortunate sailors, who, in spite of the commands and entreaties of the boatswain, who was standing on the forecastle, threw themselves over the bows, and endeavoured to swim away. But the sinking ship was too fast for them, and they were caught in the netting which is stretched under the jibboom, and, thus entangled, were carried down with the ship. The disabled *König Wilhelm* was almost immediately towed into Portsmouth for repairs.[59]

Dover is by no means so generally known as many less interesting places on the south coast, for the larger number of those who depart for or arrive from the Continent usually pass it by. It has been often incidentally mentioned in these pages, but no description of its special attractions has yet been given.

It is situated not far from the South Foreland, in the extreme south-east corner of Kent, on the narrowest part of the British Channel, and only some twenty miles from the opposite coast of France. Hence it is the port for steamers crossing to Calais on the Continental service, a trip usually made in about one hour and three-quarters. If the reader should cross on the now-famous

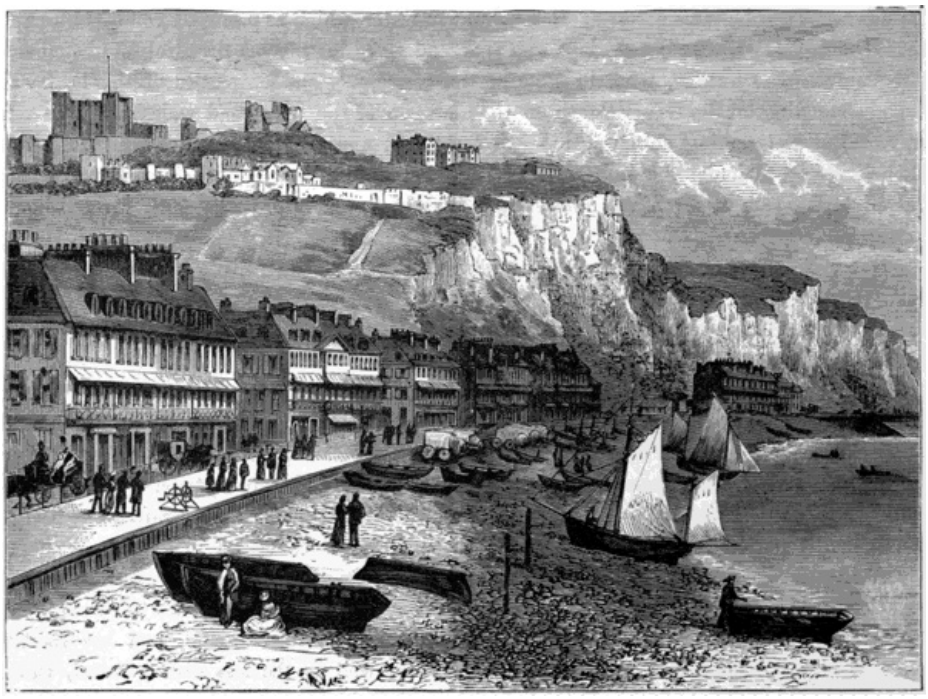
Calais-Douvres, the luxurious and easy-riding twin vessel, he will hardly require the advice relative to the *mal de mer* contained in a previous chapter. Dover, though comparatively little used as a watering-place, possesses excellent accommodation for visitors—bathing-machines, and all the usual paraphernalia of such places. Its grand hotel, "The Lord Warden," is second to none in England, and has sheltered scores of crowned heads and coroneted aristocrats, as well as the less distinguished, though perhaps equally worthy, Jones, Brown, Smith, and Robinson.

On the eastern side of the town stands that elevated and noble fortress the Castle, of which some description has already been given. A short distance from it the chalk cliff rises 370 feet above the sea, and hard by stands a beautiful piece of brass ordnance, 24 feet in length, which bears the name of "Queen Elizabeth's Pocket Pistol," and was presented to her Majesty by the States of Holland. It is said to carry a 12-lb. ball to a distance of seven miles. It is curiously adorned with a variety of devices, typifying the blessings of peace and the horrors of war. On its breech is the following motto in Dutch, which, freely translated, signifies:—

"O'er hill and dale I throw my ball,
Breaker my name of mound and wall."

[pg 240] To the westward of the town rises the majestic headland named after our immortal bard. Shakespeare's cliff rears its lofty head *at the present time* to an altitude of 350 feet, but in the great dramatist's day its summit was much higher, as indicated by the enormous boulders and heaps of *débris* at its base, the result of frequent landslips and falls. Shakespeare well describes this grand precipice:—

"Come on, sir; here's the place: stand still. How fearful
And dizzy 'tis, to cast one's eyes so low!
The crows and choughs that wing the midway air
Show scarce so gross as beetles: half way down
Hangs one that gathers samphire—dreadful trade!
Methinks he seems no bigger than his head:
The fishermen that walk upon the beach
Appear like mice; and yon tall anchoring bark,
Diminished to her cock; her cock, a buoy,
Almost too small for sight. The murmuring surge,
That on the unnumbered idle pebbles chafes,
Cannot be heard so high. I'll look no more,
Lest my brain turn, and the deficient sight
Topple down headlong."



DOVER.

From the heights about Dover the views are magnificent. Seaward is the beautiful bay, the
[pg 241] Straits and the Downs, with its ever-changing fleets, the ships of all nations. Stretching one's vision a little farther are seen the lofty white cliffs of the French coast; Cape Grisnez, near Calais (which itself lies on low land, and is therefore undiscernible), and the heights of Boulogne.

The antiquity of Dover is undeniable. Julius Cæsar here made his first descent on Britain, in August, B.C. 55. Picts and Scots, Danes and Normans, successively attacked it; while at the period of the Conquest, 1066, the town suffered fearfully, the whole place being reduced to ashes except

twenty-nine houses. But when it became one of the Cinque Ports it soon rose in importance, and Dover men largely helped that brilliant attack on Philip IV.'s fleet, by which France lost 240 vessels. That enraged monarch retaliated on Dover by burning the larger part of the town; but before the year 1296 the British navy had not merely swept the enemy from the Channel, but had made several reprisals on the coast of France. At the period of the Armada, Dover, with the other Cinque Ports, fitted out, at a cost of £43,000, six large ships for the Queen's service, which were the means of decoying the great *Galleas* of Spain on a shoal, afterwards engaging and burning her.

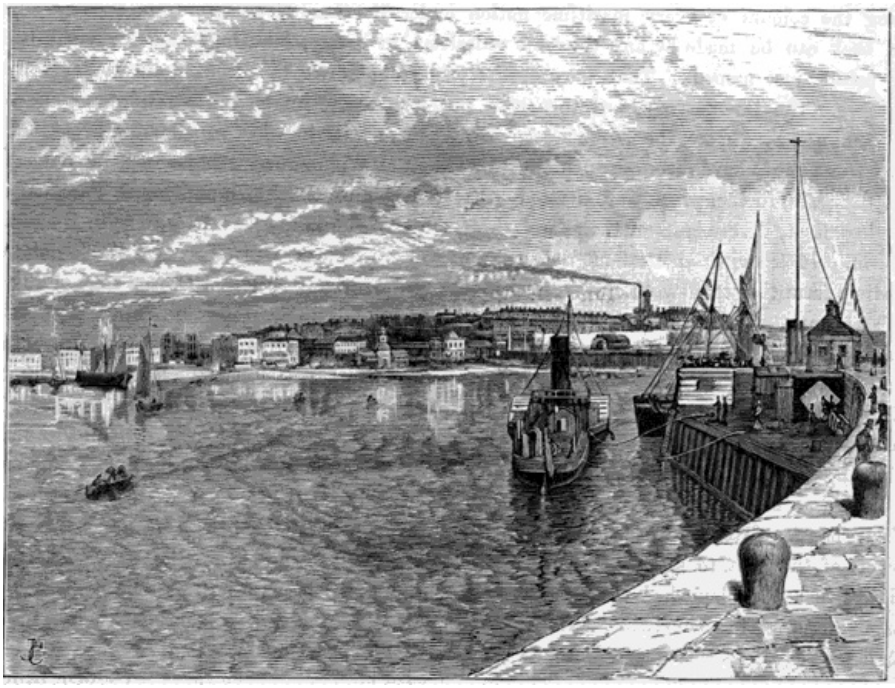
Riding or walking over the Downs some interesting places may be seen on or near the coast. At
[pg 242] St. Margaret's Bay, seven miles north from Dover—to the merits of the lobsters of which the present writer can testify, having both caught and eaten them—there is a pretty little fishing-village, with "Fisherman's Inn" embowered in trees, at the base of lofty cliffs. Here the preliminary borings for the possible Channel Tunnel of the future were made. Farther on is Kingsdown, a fishing village and lifeboat station, the men and boat of which have done specially good service in saving life. Visible from thence is Walmer Castle and quaint old Deal, so often mentioned in these pages in connection with lifeboat work on the Goodwin Sands, themselves also plainly in sight. Riding at anchor in Deal Roads, or outward bound, or on the homeward tack, are seen ships, great and little, flying the colours of every maritime nation under the sun. The trip from Dover to Deal and back can be made by any tolerable pedestrian in a day, allowing time for visits to all the points just named. That part of the trip from Dover to St. Margaret's Bay can be made over the Downs only, but thence to Deal the coast can be easily followed.

Coming nearer home, the writer must record a case of "derring-do," which will prove—if after what these pages have recorded of the men of Deal and Walmer and Kingsdown, of Ramsgate and Margate, further proof were needed—that the men of the North and South Foreland are not degenerate descendants of their forefathers, who sailed and fought and died with Blake and Nelson. It occurred in Deal on a Sunday morning in bleak December. A whole gale was blowing from the south-west and vessels in the comparatively sheltered Downs were riding to both anchors. As the various congregations were leaving their respective places of worship umbrellas were blown inside out, and children were taken off their feet or clung frightened to their parents' limbs, the wind and spray along Deal beach being blinding. Let the "Chaplain" (*nom de plume* of the excellent clergyman who superintends the Missions to Seamen) tell the tale. "Just then," he writes, "in answer to the boom of the distant gun, the bell rang to man the lifeboat, and the Deal boatmen gallantly answered to the summons. A rush was made for the life-belts and for the coxswain's house. The coxswain, Robert Wilds, has for fifteen years held the yoke-lines through the surf on the sands, and knows the powers of the boat to save. Fourteen men besides the coxswain were the crew, and with a mighty rush they launched the good boat down the steep beach to the rescue. There were three vessels on the Goodwins. The crew of one took to their boats, and not being in the worst part of the sands got safe round the North Foreland to Margate. Another schooner, supposed to be a Dane, disappeared, and was lost with all hands. The third, a German barque, the *Leda*, with a crew of seventeen 'all told,' was stuck fast in the worst part of the sands—viz., the South Spit, on which even on a fine day the writer has encountered a dangerous and peculiar boil or tumble of seas. The barque's main and mizen masts by this time were gone, and the crew were clinging to the weather bulwarks, while sheets of solid water made a clean breach over them—so much so that from cold and long exposure the captain was almost exhausted. The Deal life-boat, the *Van Kook*, fetched a little to windward of the devoted barque, and dropping anchor, veered down on her. One cable being too short, another was bent on to it, and closer and closer came the lifeboat. If the cable parted and the lifeboat struck the ship with full force, not a man would probably have survived to tell the tale; or if they got to leeward of the barque the crew of the wreck would have been lost, as the lifeboat could not again have worked 'to weather' to drop down as before. No friendly steam-tug was at hand to help the lifeboat to
[pg 243] windward in case of failure in this their first attempt, and both the crew in distress and their rescuers were well aware of the stake at issue, and that this was the last chance. But the lifeboat crew said, 'We're bound to save them,' and with all the coolness of the race, yet 'daring all that men dare do,' they concentrated their energies on getting close enough to the wreck to throw their line, and yet to keep far enough off to ensure the boat's safety. They were now beaten and hustled by the tremendous seas breaking into and over them, and no other boat could have lived a moment in the cauldron of waters seething and raging around them. Notwithstanding the self-emptying power of the wondrous boat, the seas broke into her in such quick succession that she was and remained full up to her thwarts while alongside the vessel, and as each cataract came on board the coxswain sang out, 'Look out, men!' and they grasped the thwarts and held on with both hands, breathless, for dear life. One sea hurled the lifeboat against the ship, and stove in her fore air-box, so that the safety of all made it necessary to sheer off. Another sea prostrated two men under her thwarts. The lifeboat's throw-line was at last got on board the barque, and communication being established the crew were drawn on board the lifeboat through the raging waves by ones or twos, as the seas permitted. Thus saved from the jaws of death, so astonished were the rescued crew at the submerged condition of the lifeboat and the awful turmoil of water around them that some of them wished to get back to their perishing vessel; but the coxswain and crew knew the powers of their gallant boat. 'Up foresail and cut the cable,' and with its goodly freight of thirty-four souls the lifeboat, hurled like a feather, sometimes dead before the wind, and next moment 'taken aback,' plunged into the surf for home. One of the rescued crew had twice before been saved by the same boat (the *Van Kook*), and encouraged his comrades with a recital of his previous deliverances. Some rum, which was brought for the use of the lifeboat crew, was generously given by them and all used by the perishing men of the barque. And so at

last, sodden through and through, exhausted, but gloriously successful, they landed the staggering and grateful Germans on the Deal beach, where, despite the storm, crowds met them with wondering and thankful hearts."

Among nearly all classes who dwell near and love the sea the same heroic spirit prevails. Only in 1879 Lord Dunmore, with John M'Rae, Ewen M'Leod, and Norman Macdonald, put out to sea in a furious Atlantic gale, in the noble Scottish peer's *undecked* cutter, the *Dauntless*, when no other boat would venture out at all, and saved the lives of several men, women, and children from the yacht *Astarte*, wrecked on a small island-rock between Harris and the North Uist coast (west coast of Scotland). The noble hero of this gallant band is a Murray of the ducal tree of Atholl, sharing the savage motto, "Forth fortune, and fill the fetters." The spirit of daring adventure which spurred his forefathers to feats of reckless foray and ruthless feud has, in a milder age, developed into the performance of deeds of valour for the benefit of suffering humanity.

Sad to say, occasionally, there is another story to be told. In February, 1880, some strapping fishermen refused to make up the complement of the Blackpool lifeboat—some of her own men being away fishing off North Wales, and others at Fleetwood—and remained leafing on the beach while they let the coxswain take in two joiners and a stonemason, and then start two short of the complement. Nevertheless four persons were saved from the wreck of the *Bessie Jones*, under circumstances most honourable to the rescuers. On their return, being obliged to run over the
[pg 244] bank with a tremendous sea running, they had the narrowest escape from being capsized; one man was washed out of the boat, but was recovered, and most of the loose tackle was swept overboard and irretrievably lost.



RAMSGATE.

Popular Ramsgate, with its fashionably select annexe St. Lawrence-on-Sea, is so well known by all, that no lengthened description is required here, for its actual and practical connection with the sea, in the noble work done by its lifeboatsmen, has already been detailed. Ramsgate has a fine harbour and piers, from which the "husbands' boat" is often, more especially on Saturdays, watched and longed for by hundreds of wives and daughters.

Margate had, in Queen Elizabeth's reign, fifteen boats and other vessels, ranging from one to eighteen tons, there being four of the latter. It had 108 inhabited houses. It now has a floating population of 50,000 to 70,000 people, the permanent residents being about 15,000 in number. There are several pilots, and a large number of luggers employed in fishing and in seeking for casualties; it owns a certain number of coasting vessels; while a large number of coasters and French fishing-boats come in during the winter months and fishing season for refuge, repairs, and provisions. Margate has a Seaman's Room and Observatory, and Ramsgate a Seaman's
[pg 245] Infirmary. The local agents of the Shipwrecked Mariners' Society have their hands full in winter, and generally at other seasons in stormy weather.

THE GULF STREAM LIGHT VESSEL ON THE GOODWIN SANDS.

Who that has visited Ramsgate or Margate, has not, some time or other in his or her life, nourished an all-absorbing curiosity to peep into the interior and solve the mysteries of those distant beacons, the “Floating Light Ships.” Those who have seen them either lying peacefully on the tranquil bosom of the sunlit ocean, or trembling and shaken in Neptune’s angry moods, still valiant and isolated, nobly doing their duty, must often have wished to get a closer view. That natural curiosity can be gratified at last; the curtain has been raised, so that we may peep into the mysteries of the flame-coloured sphinxes, by a writer[60] who went into voluntary imprisonment for one week on the Gulf Stream Light Vessel, one of three floating lights which mark the Goodwin Sands.

“That curious, almost ridiculous-looking craft,” writes Mr. Ballantyne, “was among the aristocracy of shipping. Its important office stamped it with nobility. It lay there, conspicuous in its royal colour, from day to day and year to year, to mark the fair-way between Old England and the outlying shoals, distinguished in daylight by a huge ball at its mast-head, and at night by a magnificent lantern, with argand lamps and concave reflectors, which shot rays like lightning far and wide over the watery waste, while in thick weather, when neither ball nor light could be discerned, a sonorous gong gave its deep-toned warning to the approaching mariner, and let him know his position amidst the surrounding dangers.”

Here the writer bestows well-deserved praise upon the services, “disinterested and universal,” of this lonely craft, and afterwards tells you what would meet the eye, if, leaning against the stern, you gazed along the deck forward.

“It was an interesting kingdom in detail. Leaving out of view all that which was behind him, and which, of course, he could not see, we may remark that just before him stood the binnacle and compass, and the cabin skylight. On his right and left the territory of the quarter deck was seriously circumscribed and the promenade much interfered with by the ship’s boats, which, like their parent, were painted red, and which did not hang at the davits, but, like young lobsters of the kangaroo type, found shelter within their mother when not at sea on their own account. Near to them were two signal carronades. Beyond the skylight rose the bright brass funnel of the cabin chimney, and the winch by means of which the lantern was hoisted. Then came another skylight and the companion hatch about the centre of the deck. Just beyond this stood the most important part of the vessel—the lantern-house. This was a circular wooden structure about six feet in diameter, with a door and small windows.

“Inside was the lantern—the beautiful piece of mechanism for which the light-ship, its crew and appurtenances, were maintained. Right through the centre of this house rose the thick, unyielding mast of the vessel. The lantern, which was just a little less than its house, surrounded the mast and travelled upon it.” Immediately at sundown the order “Up lights” was given, regular as the sun itself. The lantern was connected with the rod and pinion, by means of which with the clock-work beneath, the light was made to revolve and “flash” once every third of a minute. The glass of the lantern is frequently broken, not by wind and wave, but by the sea-birds, which dash
[pg 246] violently against it. In a single night, nine panes of a light-house were shattered from this cause. On one occasion one thousand wild ducks were caught by the crew of a light-ship. It is necessary to defend with trellis-work the lights most exposed.

The cabin of the Floating Light was marvellously neat and clean. Everything was put away in its proper place, not only as the result of order and discipline, but on account of the extreme smallness of the cabin. The author of the work from which we quote depicts a scene on board

during a night of storms when a wreck and unexpected rescue took place:—“A little before midnight, while I was rolling uneasily in my ‘bunk,’ contending with sleep and sea-sickness, and moralising on the madness of those who choose ‘the sea’ for a profession, I was roused—and sickness instantly cured—by the watch on deck suddenly shouting down the hatchway to the mate, ‘South Sand Head light is firing, sir, and sending up rockets.’ The mate sprang from his ‘bunk,’ and was on the cabin-floor before the sentence was well finished. I followed suit, and pulled on coat, nether garments, and shoes, as if my life depended on my own speed. There was unusual need for clothing, for the night was bitterly cold. On gaining the deck, we found the two men on duty actively at work—the one loading the lee gun, the other adjusting a rocket to its stick. A few hurried questions from the mate elicited all that it was needful to know.

“The flash of the gun from the ‘South Sand Head’ light-ship, about six miles off, had been distinctly seen a third time, and a third rocket went up, indicating that a vessel had struck upon the fatal Goodwin Sands. The report of the gun could not be heard, owing to the gale carrying the sound to leeward, but the bright line of the rocket was distinctly visible. At the same moment the glaring light of a burning tar-barrel was observed. It was the signal of the vessel in distress, just on the southern tail of the sands.

“By this time the gun was charged, and the rocket in position.

“One of the crew dived down the companion-hatch, and in another moment returned with a red-hot poker, which the mate had thrust into the cabin fire at the first alarm. He applied it in quick succession to the gun and rocket. A blinding flash and deafening crash were followed by the whiz of the rocket as it sprang with a magnificent curve far away into the surrounding darkness.

“This was their answer to the South Sand Head light, which, having fired three guns and sent up three rockets to attract the attention of the *Gull*, then ceased firing. It was also their first note of warning to the look-out on the pier of Ramsgate Harbour. Of the three light-ships that guarded the sands, the *Gull* lay nearest to Ramsgate; hence, which ever of the other two happened to send up signals, the *Gull* had to reply, and thenceforward to continue repeating them until the attention of the Ramsgate look-out should be gained, and a reply given.

“The steam tug *Aid*, which always attends upon, and takes in tow, the Ramsgate life-boat, soon hove in sight, going to the rescue, thus showing the great value of steam in such matters. Having learnt the direction of the wreck from the mate of the light-ship, they proceeded on their course.”

The life of the crew of every light-ship is pretty much the same on Sunday. At dawn the lantern is lowered and cleaned and prepared for the next night’s work. At 8 a.m. all hands must be on the
[pg 247] alert, the hammocks stowed, and breakfast served. At 10.30 the men assemble for prayers, and the captain or mate performs divine service. After sunset the men meet again for prayers. With the exception of the services, the routine on week days is the same as on Sunday. The captain and mate take turn and turn—a month on board and a month on shore; the men do duty for two months on board for one on shore; and, monotonous as their life may seem to the uninitiated, it is doubtful whether there is not a beneficial moral activity in existence on a floating light that tends to elevate the character of both officers and men.

CHAPTER XXIII.

Sketches of our East Coasts:—Norfolk—Yorkshire.

Harwich; its fine Harbour—Thorpeness and its Hero—Beautiful Situation of Lowestoft—Yarmouth; its Antiquity—Quays, Bridges—The Roadstead—Herring and Mackerel Fishing—Curing Red Herrings and Bloaters—A Struggle for Life—Encroachments of the Sea—A Dangerous Coast—Flamborough Head—Perils of the Yorkshire Fisherman’s Life—“The sea gat him!”—Filey and its Quiet Attractions—Natural Breakwater—A Sad Tale of the Sea—Scarborough; Ancient Records—The Terrible and the Gay—The *Coupland* Helpless—Lifeboat out—Her men thrown out—Boat crushed against Sea Wall—Two Killed—Futile Attempts at Rescue—A Lady’s Description of a Scarborough Gale—Whitby—Robin Hood’s Bay—An Undermined Town.

Proceeding now to the east coast of our island, we come to a series of places interesting to the men of the sea, and some of them renowned as watering-places. Leaving the mouth of the Thames, we soon arrive at Harwich, which is acquiring considerable importance in view of the Continental routes with which it is connected. It is situated on high land at the mouth of the Stour, and near the confluence of the latter with the Orwell, immediately opposite the well-known Landguard Fort. The shore is bold, and the views of the German Ocean, with its ever-shifting fleets of native and foreign vessels, are grand and extensive. It has a breakwater, dockyard, and magnificent harbour, in which, it is said, more than 100 vessels of the Royal Navy and between 300 and 400 colliers have ridden at one time. There are steamers constantly plying to Ipswich,

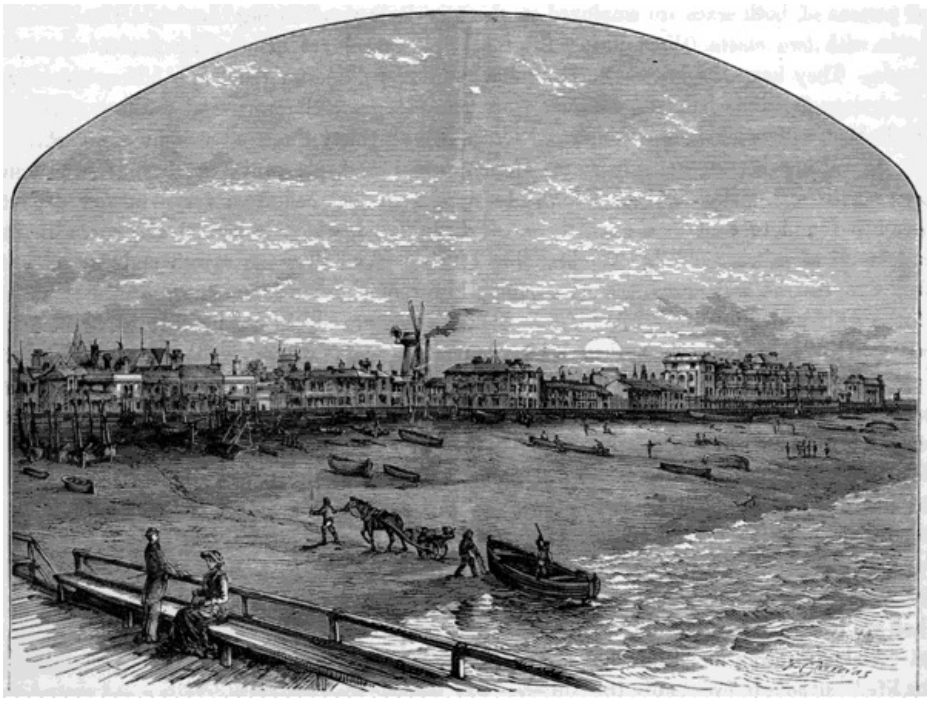
about twelve miles up the Orwell—a river famous for the beautiful scenery of its banks. Ipswich itself, celebrated as the birthplace of Cardinal Wolsey, is the largest market town and port of Suffolk, and possesses respectable-sized docks and ship-yards, and any quantity of interesting buildings of the mediæval period.

HARWICH.

Thorpeness, a dreary little place near Aldborough, on our way up the coast, would not attract the tourist, but it was long the residence of one of Suffolk's heroes. Joseph Chard commenced life as a carpenter, but was soon found at Thorpeness, where he lived in a little cottage built by himself, and owned an old boat, which cost him originally fifty shillings, in which he followed the calling of bumboatman, or purveyor of provisions and odds and ends to passing ships, from which he frequently conveyed messages to shore. Gradually he saved money, and, uniting his old and new trades, built a fine boat, which cost him twenty-five pounds. In three or four years more he was rich enough to purchase a fast-sailing yawl, which a gang of smugglers were obliged to relinquish about that time, and with which Chard won the prize at the next Aldborough Regatta from a host of born watermen. Not content with these successes, he bought and studied a coasting-book and
[pg 248] chart, and soon emerged a full-fledged pilot for one of the most dangerous localities, the Sands of the Swin—a study almost as difficult as biquadratic equations. He assisted at various times in saving 109 lives, no less than eighty of which were rescued in his own boat, appropriately named the *Thorpeness Stormy Petrel*.

Farther north, and standing upon the most easterly point in all England, the important seaport of Lowestoft is situated. The town is placed on a lofty eminence, from which fine sea-views are obtained, and the side of the cliff descends gradually in hanging gardens or terraces covered with trees and shrubs, below which is a long line of buildings appropriated to the curing of fish. It has two harbours, with piers. The herring (more especially) and the mackerel fisheries employ from 1,500 to 2,000 men and boys, while the industries connected with the sea commence at twine and rope making and end in ship-building. There is a chapel for British and foreign sailors, six almshouses for poor master fishermen, and two lifeboats.

Yarmouth next demands our attention. It derives its name from its situation at the mouth of the river Yare, and it is, as all know, both a flourishing fishing-town and a watering-place. Its antiquity is great; there are records of it anterior to Roman times. In the eleventh century, at the time of the Conquest, it was known as *Moche Gærnemouth*, or Great Yarmouth. In 1004, Sweyn, king of Denmark, arrived before it with a powerful fleet, and plundered and burnt the town. It
[pg 249] soon rose again. In 1132, artisans, implements, and looms were brought over from the Continent, and spinning was commenced at Worstead, a small town which gave to the yarn the name it still bears. The old town of Yarmouth was formerly defended by walls of which the ruins still remain.



YARMOUTH.

Among the features of Yarmouth are the great broad quays, extending about a mile-and-a-quarter, the principal streets running parallel with them. There are several substantial bridges across the Yare and Bure rivers, one over the latter having been erected on the spot where nearly eighty people were suddenly precipitated into the water by the fall of the old bridge some thirty-eight years ago. There are several small docks and shipyards. Yarmouth Roads afford safe anchorage, and are constantly resorted to by vessels in distress, the captains of which do not dare to brave the elements outside. Forty thousand sail, exclusive of fishing boats, annually pass this part of the coast. The Roads are formed by several very dangerous sands, which, in foggy weather, or when heavy gales sweep the coasts, occasion many fearful shipwrecks. More than 500 vessels have been stranded, wrecked, or utterly lost off this coast in the short period of three years; as a necessary consequence, the loss of life is also considerable, and the number of shipwrecked mariners who are landed at Yarmouth year after year is very large. The Shipwrecked Mariners' Society has an important branch there. There is a fine Sailors' Home, which has lodged 600 to 700 poor seamen in a single year. It was established to provide a home
[pg 250] for the mariners of all nations, when wrecked, detained by stress of weather, or paid off, in the latter cases giving them board and medical attendance, if required, at the lowest possible charge. It possesses a museum, library, and reading-room, and a collection of charts and nautical instruments. The two lifeboats of Yarmouth have been the means of saving several thousand lives. There is also a little church and mission for fishermen and sailors near the beach, and a mariners' chapel.

The mackerel fisheries of Yarmouth alone employ one thousand men, but the herring fishery is the most important source of revenue to the town, the produce exceeding one hundred thousand barrels per annum, or one-fifth of the entire yield of the kingdom. A large number of persons of both sexes are employed on shore in drying and curing the fish. The Yarmouth boats with two masts (three during the mackerel season) are manned by twelve or thirteen hands. They have the letters Y. H. and a number painted on the bows. They are now of about sixty-five tons builders' measurement, many of graceful forms, and are fast sailers. A single boat will often take a hundred and twenty or thirty thousand fish in one night.

In salting herrings the fish are simply gutted and placed in the barrels in alternate layers with salt. Having been allowed to remain in that condition for some few days the barrel is found to contain a quantity of floating liquid, which is poured off; more herrings and layers of salt are added. The branding consists of affixing the month and day on which they were caught and cured, the name and address of the curer, and the presence or absence of the gills and alimentary canal. "Red" herrings are made so by first being placed in salt for three or four days, then being hung on spits which hold about twenty fish apiece. These spits are plunged several times in cold water, and after being sufficiently washed, are then removed to the open air and dried. Next they are suspended from the roof of the smoking-house, which has wood fires on the floor. Those for English use are smoked for ten days or so, but those for exportation often remain as long as three weeks before being packed. As has been mentioned elsewhere, they are used by the negroes of the West Indies as a medicinal corrective to the bad effects of a constant vegetable and fruit diet. Bloaters are cured more speedily. They are placed for a few hours only in a strong brine, are then spitted and well washed in cold water, and are smoked very slightly for about eight hours only, when they are ready for packing.

And now for an incident which occurred some years since, and which was indeed a "struggle for life," although eventually the sufferer was landed at Yarmouth. It is a sad truism that danger is

never so near to us as when we have least apparent cause to fear its presence, and the narrow escape of a seaman, named Charles Hayman, from a melancholy death, with his vessel in sight of his native soil, is only another of the many exemplifications of this stern truth. He belonged to the schooner *Osprey*, of London, and had just made a successful passage from Lagos, on the West Coast of Africa, with a cargo of palm oil. The *Osprey* was brought up and anchored off the North Foreland, when a tremendous sea rose and tore her from her anchors, driving her helpless and unmanageable into the North Sea.

Those on board at once made signals of distress, which were seen by the gallant little smack, *Fear Not*, truly a most appropriate name, and her sturdy crew at once went to the assistance of the disabled schooner. The master of the smack offered to take the crew of the *Osprey* on board, and the mate of the *Osprey*, believing her past all power of saving, gladly accepted the generous
[pg 251] offer. The hurricane was still raging furiously, and it was with the greatest difficulty that a boat could be lowered from the *Osprey*, but pluck and perseverance succeeded at last, and the valuables and ship's papers were, without delay, stowed away in the boat. The mate and Charles Hayman were the first to embark in the tiny craft, which was attached to the schooner by a rope, and the remainder of the crew were about to follow them, when a heavier sea than they had had as yet to contend against snapped the line and cast the boat adrift.

The waves washed over and into the boat, threatening to swamp it at any moment. Hayman and the mate failed completely to bale the water out, in spite of their incessant endeavours to do so, and Hayman, foreseeing the inevitable, stripped himself to the skin, and waited for the moment to come when the boat would capsize. He did not have to wait long in his nudity and the bitter cold; the boat spun over, and carried both men under water; however, they soon rose to the surface, succeeded in reaching the boat, which was floating bottom upwards, and clung to it with the despairing energy of drowning men. Heavy seas broke over them so persistently that scarcely a minute was allowed them for respiration, and the mate, a weakly man, with a low harrowing cry sank for the last time and for ever. Hayman battled on with the courage of a tiger. The smack bore down to him in the teeth of the gale. He was saved and succoured when death seemed about to seize him, and he was supplied with raiment and stimulants by his noble rescuers, and eventually landed at Yarmouth.

The sea has made, and still makes, many encroachments on the Norfolk coasts. Thus at the not inconsiderable fishing station of Sherringham several yards of cliff have been undermined and washed away in a few years' time; and in 1810 a large inn, placed too near the sea, was thrown in a heap of ruins on the beach. The coast onward to Cromer, a now fashionable watering-place, protected by a breakwater and sea-wall, is extremely dangerous, and between it and Yarmouth there are five lights.

But we now approach a still more dangerous part of the coast—the eastern shores of Yorkshire. Flamborough Head first demands our attention.

The Head is the termination of the chalky Yorkshire Wolds, and it is surrounded by islands of chalk, showing plainly that the sea has cut them off from their former connection with the land. The cliffs around Flamborough Head are riddled and tunnelled by the sea waves, and there are many arches and caverns. The "Matron of Flamborough" is a fine pyramidal "needle," standing boldly out of the water. Under the lighthouse are some remarkable broken cliffs, and then two great pillars of chalk called the "King and Queen" arrest attention. One of the largest and most rugged caverns is called "Robin Lyth's Hole," and it can be easily explored from the eastern side. The Head is, therefore, specially interesting to the artist, and, for other reasons, it is equally so to the naturalist. Crowds of sea birds startle the visitor, who is doubtless regarded as an intruder, as they flock out from all the crevices of the cliffs filled with their eggs, and cover both land and sea in their circling flight. The somewhat giddy feat of descending the face of the cliff with the aid of ropes, for the sake of the eggs, is one by which the Flamborough men gain their living in the summer. "A more familiar hazard is run by the bold fishers of this coast, who, in their little cobles, set forth from the north or the south landing to visit, perhaps, the Dogger Bank, possibly
[pg 252] to return no more. 'The sea gat him,' is too often the reply to your inquiry for some honest fisherman who may have been your boatman round the promontory, or your guide through the windings of the caves."[61] Many a fisherman's widow or mother thinks sadly there of the husband or son who will no more return.

> "Down on the sands, where the red light pales,
> I sit and watch for the fisher's sails;
> And my heart throbs still with the old, old pain,
> For the boat that will never come back again:
> But a new world waits for my love and me,
> A world of peace, where is no more sea.
>
> "For God is good, and the gift He gave
> Is held a while by the silver wave.
> Not lost, but hidden; I may not weep,
> While he is at rest in the silent deep,
> And the voice of an angel speaks to me
> Of the fair new home, where is no more sea."[62]

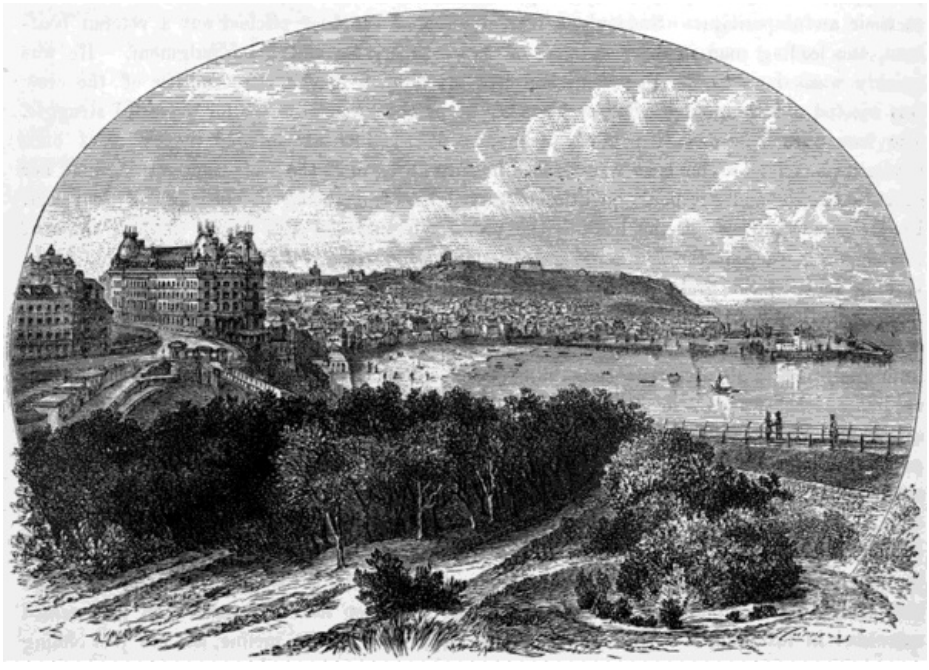
Filey, a quiet watering-place, is sheltered by the above-named headland, and its pretty terraces,

squares, shrubs, trees, and flowers, its sands where a band plays daily during the season, afford a strong contrast to the ofttimes turbulent ocean without. The title of the place is derived from the ancient name, “The File,” given to a rocky tongue of land which shoots out into the sea, and serves in every respect as a breakwater to the place. Outside, in heavy seas, great pieces of rock may be seen rolling and tumbling about, swayed at the will of the waves. This is called Filey “Brig” (bridge), and the promontory is said to have a great resemblance to the mole at Tangiers. Its extremity can be reached at low water, and from thence most lovely views of Scarborough cliffs and its castle and Flamborough Head are obtained. At high water the Brig is overflowed, and the waves often cause a white spray against its rocks, which throw it high in the air. The effect from the esplanade is, for want of a better simile, very much like a concentration of white plumes.

One Sunday afternoon, but one on which no Sabbath bell could be heard at sea, nor on the usual quiet shores of Filey, a sad event occurred. It was seven in the evening; the wind had suddenly chopped round from south to north, and now there fell, with the noise of an angry sea rushing over a sandy desert, a terrific shower of hailstones, and tempestuous weather continued through the night. At daybreak the sea ran mountains high, and the storm continued with unabated fury. The wind blew a hurricane; the sleet came down as dense as a London fog, and obscured the sea from the eyes of the anxious inhabitants of Filey, and Filey from the eager eyes and listening ears of the tempest-tossed sailor. At nine o’clock the sky cleared, and the people of Filey beheld a stout brig, in company with three or four more vessels, labouring on in the heavy sea under close-reefed topsails, and distant scarcely three miles.

She showed signs as if she had been in collision with some other vessel, or was terribly battered and storm-riven. After getting about two miles south of the buoy, she was seen to heel over on to her beam ends, stagger, struggle to right herself, and, as if aware of the entire fruitlessness of the attempt, and giving up in despair, to go down with an awful suddenness, taking all hands with
[pg 253] her—her name unknown, her history unrecorded. The only epitaph in memory of the brave fellows who had found her both their coffin and their sepulchre was that stamped indelibly upon the hearts of the loved ones they had left behind.

Of Scarborough there are most ancient records. Its name is Saxon—from Scar, a rock, and Burg, a fortified place. A Northern historian records an invasion by the Danes in the ninth and tenth centuries in the following manner:—“Towards the end of the reign of Adalbricht, King of Northumberland, an army of Danes under Knut and Harold, sons of Gorin, invading England, subdued a great part of this province; upon which Adalbricht, meeting the enemy, and fighting a battle at Clifland or Cleveland, in the north, routed the Danes with great slaughter. But soon after this the Danes, leading their forces to Scardaborga, fought and obtained the victory; then marching to York, they subdued the inhabitants, and passed some time in peace.” The venerable castle dates from the reign of King Stephen.



SCARBOROUGH.

The harbour of Scarborough is the only place of refuge on a dangerous coast reaching from the Humber to Tynemouth Haven. It possesses lifeboats, mortar apparatus for aiding ships, a Seamen’s Hospital, Trinity House, and Mariners’ Asylum. The place itself has become a most fashionable watering-place. But sometimes here, as at many other seaside resorts, the terrible

mingles with the gay. Such was particularly the case in November, 1861, when events occurred which threw a general gloom over both the inhabitants and visitors.

[pg 254] A schooner, the *Coupland*, attempted the harbour during a fearful gale, but could not succeed in entering. She drifted rapidly amid foaming billows that chased each other like huge mad cataracts, until she struck immediately opposite the Spa promenade. In the meantime the lifeboat was manned, and sent out to the relief of the vessel, now in most imminent danger. The sea broke upon the sea-wall with such terrific violence that the massive stones on the parapet were dislodged. The rebound of the waves caused such a sea as no small craft but the lifeboat could have borne. Arrived at this point, she was watched, and her crew spoken to by the people on the Spa. The crew of the lifeboat seemed terror-stricken at their awful position. Suddenly a fearful lurch of the boat pitched out a veteran boatman, the leading man in her, and one of great experience and good judgment. He was quickly washed up to the Spa wall, and was saved by a life-buoy. Another of the crew was ejected a few minutes after, and was saved by the same means, after a fearful struggle. The oars were now dashed out of the hands of the lifeboatmen, and they were at once rendered powerless. The boat was washed heavily up against the wall, and nothing but her great strength and excellent qualities preserved her from being at once dashed to pieces. Ropes were thrown from the boat to the promenade, and she was drawn through the surf to a landing-place at the southern end of the wall. Here a fatal occurrence took place. Having touched the ground, the men jumped out before the water had receded, and, seeing the danger they were in, a rush down the incline was made to assist them. In the momentary confusion that ensued another run of the sea came, and nearly all the party were thrown from their feet, and were now scrambling to save their lives. Many succeeded in getting up, but another wave washed off those who were yet below. Two or three times they were carried out and back again. Among these were Lord Charles Beauclerk, two of the boat's crew, and five or six others. A large wave was seen to lift the lifeboat with fearful force against the wall; and as the boat sank down again, it was found that Brewster, one of the crew, had been literally crushed to death between it and the stone sea-wall. Lord Charles Beauclerk experienced the same horrible fate, but was not immediately killed; he was washed to the foot of the cliff, when two gentlemen rushed to his assistance. A rope had been previously thrown to him, but he was powerless to grasp it. The gentlemen just named succeeded in fastening a rope round him, and drew him up the incline, the life just ebbing out of him. He was conveyed to the Music Hall adjoining (sad irony of fate!), where a physician pronounced him dead. Two or three others were seen under the boat, when the waves threw her up almost in the air. One of them was the son of a Scarborough banker. All these men perished.

Attention was now given to the shipwrecked crew, who had been witnesses of all these horrors, and they were eventually all hauled off safely by the rocket apparatus. In the same gale fourteen poor fishermen of Scarborough lost their lives. Twenty were lost at Yarmouth, and there were wrecks strewed all over the east coast.

And now for a true story with a happier ending, very graphically told by a lady visitor to Scarborough.[63] It occurred in the mid-winter of 1872. "I can't write decently," wrote she; "my [pg 255] hands are still trembling from the excitement of the morning, such a tremendous storm we have had, and a vessel lost in front of our windows again. The sea was one heaving, surging mass of foam, and the wind blowing hard from the NE. right upon this coast. Our sailor-landlord came in from a look-out seaward with the report, 'There's a fine brig out to the north'ard, but there's an awful heavy sea on; I'm afraid there's no chance for her, the wind is driving her dead on shore, and I'm afraid she'll be on the rocks before long. She's a Spaniard, I think, by the looks on her. God help 'em!' and he took his glass and went out, the big tears standing in his eyes, great sturdy fellow as he is.

"Of course our hearts were in our mouths in a moment, and with straining eyes we watched and watched. On she came; how one longed for some unseen hand to drive her back from what seemed friendly houses, and people, and land, and yet was so fatal! The snow, and hail, and rain made the air thick every now and then, and when it cleared there was the vessel being driven headlong before the wind. Would she get round the Castle rocks? That was awful excitement; if she struck there, there was no hope for the crew. An hour nearly the suspense lasted; yes, she is past! a slight lull in the fierce storm, and in that lull a fishing-smack, for which there seemed no chance, had weathered it all, got round the lighthouse pier, and was entering the harbour, a thing that, by the side of the brig, seemed a mere child's toy on those big waves, and had been lost to sight again and again. The pier was one black mass of people, and on the sands thousands had collected, all eyes on the brig.

"Now off goes the lifeboat—there is still a chance for the brig. It's a beautiful new boat, that was recently launched, and already she has saved more lives (the sailors tell us) than the old one did all the time she was here. Her crew have confidence in her, and 'you know, miss, if her crew haven't confidence in her, it's all no go; they'd better by half go off in a coble, they'd liever too,' said an old sailor to me. I felt as if every one I loved in the world were in that vessel, thus tossing and struggling with the winds and waves, in uncertainty as to her fate. The lifeboat is off now, though, to the pier-head, and the rocket apparatus is fixed at a part where they think she's coming on shore. She hasn't enough sail on, the sailors say. Her master seems to find this out, for up go two topsails. She veers; now is her chance; if her master knows the harbour well, he may yet get her in. He doesn't, evidently; he has gone a little too far to the south'ard, and can't get back! One frightful gust, one awful sea, and her chance is over, and she is driving right on to the

worst rocks of all, where, if she strikes, the men must perish—no lifeboat and no rocket apparatus can reach her. The lifeboat is pulling tremendously towards her now, and the sea is fearful; again she veers slightly—the moments seem hours. How those men pull! they are close to her, when one awful sea catches them, and the lifeboat is swamped. It seemed as if I felt the waves dashing over me. I gave an awful scream, and hardly dared look again; and yet I couldn't keep my eyes away. She was all right, and eagerly I counted her men, we could see so plainly from our windows. They were all right, and now she is alongside the brig, though once or twice dashed away again. Then comes the taking of the men off. This was almost the worst moment of all, to see them one by one dropped into the lifeboat. One man is going nearly in; the lifeboat is dashed right away, and there he hangs. The sea dashes against him, injures his leg, but they get him back into the brig, and then into the lifeboat when she can get close again, and now all are in but the captain. He hesitates; almost it seems as if he would rather go down with his ship; but he
[pg 256] passes some papers, or paper like books, into the lifeboat, and then he follows, and the men pull back. The crew of the brig are faint and exhausted; they have had three awful days of it, but the lifeboat lands them all safely at length at the pier. I felt as if I had been up for nights, the excitement had been so great. If she hadn't been a new ship and a good one, she would have been all to pieces long ago, the sailors say; but she's lying almost on her beam ends and her deck to windward, with every sea dashing against her, now the tide is ebbing."

Whitby is the last point to be treated here in connection with the dangerous east coast. It is an ancient town, dating long before the eleventh century, at which latter period it had become a noted fishing-place. At the present time it possesses perhaps 500 vessels, large and small, exclusive of fishing boats. There are a great number of seamen belonging to the place who are engaged in ships on the coast, Baltic, and Indian trade, seldom returning home, but for a few weeks in winter. That the men must be generally provident is witnessed by the fact that there are 800 subscribers to the Mariners' National Mutual Pension and Widows' Fund, a benefit society under the auspices and management of the Shipwrecked Mariners' Society.

Standing on the cliff above Whitby, near the ruins of the old abbey, there is a most delightful view seawards. The town is below, mapped out in all its varieties of streets, squares, and quays; its terraces mounting one above another; its piers projecting into the sea; its lighthouses, docks, and shipyards alive with busy artisans; and a capacious harbour, divided by a bridge across the Esk, the outer part of which has accommodation for 300 sail of ships, while above there is also a large basin. "All this and much more the eye takes in from this elevated stand-point, which, in fine weather, and at high tide, is most imposing. The harbour, filled to the brim with the blue element, glitters like a polished mirror beneath the rays of the sun. The stately vessel, spreading her snowy canvas to the breeze, is seen passing from point to point along its winding shores. The maze-like coursing of the little yacht, with its slender masts and tiny sails, skimming the surface of the water like a swallow on the wing, lends animation to the scene. The cry of the sea-bird as it wheels in graceful curves, or checks its flight to pounce upon its prey in the bright flood beneath, arrests the ear; whilst the loud 'hurrah' with which the brawny shipwright greets the majestic vessel as she glides along the well-greased 'ways,' and cleaves a passage for herself into the flood which is to be her future home, re-echoes from the cliffs and shore."

Southward of Whitby lies the romantic Bay of Robin Hood, *alias* Robert Earl of Huntingdon, who lived in Richard I.'s reign. Robin, it is said, when about to select a site for a marine residence, resolved to take up his abode on the first spot where the next arrow from his bow should alight, and this being the place, his name has ever since been attached to it. The little town there is one of the most irregular and comical-looking places in the world, from the ravages of the sea in undermining the cliffs. Built on the ledges of these cliffs, at all heights where foothold could be obtained, and perched on dizzy crags that overhang the sea, or hid in nooks approached by perilous paths, or tottering on the brink of cliffs that vibrate as the breakers roll with smothered sobs into the caves that perforate their base, there stand isolated houses, terraces and streets, whole sides of which have erewhile slipped into the sea below. The town itself is in a hole which cannot be seen till close upon it, being so entirely locked in by peaks and promontories.

[pg 257]

CHAPTER XXIV.

The Art of Swimming—Feats in Natation—Life Savers.

Lord Byron and the Hellespont—The Art of Swimming a Necessary Accomplishment—The Numbers Lost from Drowning—A Lamentable Accident—Captain Webb's Advice to Beginners—Bold and Timid Lads—Best Places to Learn in—Necessity of Commencing Properly—The Secret of a Good Stroke—Useful and Ornamental Natation—Diving—Advice—Possibilities of Serious Injury—Inventions for Aiding Swimming and Floating—The Boyton Dress—Matthew Webb—Brave Attempt to Save a Comrade—The Great Channel Swim—Twenty-Two Hours in the Sea—Stung by a Jelly-Fish—Red Light on the Waters—Cape Grisnez at Hand—Exhaustion of the Swimmer—Fears of Collapse—Triumphant Landing on Calais Sands—Webb's Feelings—An Ingenious Sailor Saved by Wine-bottles—Life Savers—Thomas Fowell Buxton—Ellerthorpe—Lambert—The "Hero of the Clyde"—His Brave Deeds—Funny Instances—The Crowning Feat—Blinded and Neglected—Appreciation at Last.

"But since he[64] crossed the rapid tide,
According to the doubtful story,
To woo ...
And swam for love, as I for glory;

"'Twere hard to say who fared the best:
Sad mortals! thus the gods still plague you!
He lost his labour, I my jest:
For he was drowned, and I've the ague."

So sang Lord Byron after his memorable swim across the Hellespont with Lieutenant Ekenhead, of H.M.S. *Salsette*. The distance from Abydos to Sestos is about a mile, but the distance swum
[pg 258] was four; the current there runs so strongly that no boat can cross direct. "It may," says Byron, "in some measure be estimated from the circumstance of the whole distance being accomplished by one of the parties in an hour and five, and by the other in an hour and ten minutes. The water was extremely cold from the melting of the mountain snows. About three weeks before, in April, we had made an attempt; but having ridden all the way from the Troad the same morning, and the water being of an icy chillness, we found it necessary to postpone the completion till the frigate anchored below the castles, when we swam the straits as just stated, entering a considerable way above the European, and landing below the Asiatic fort. Chevalier says that a young Jew swam the same distance for his mistress, and Oliver mentions it having been done by a Neapolitan; but our consul, Tarragona, remembered neither of these circumstances, and tried to dissuade us from the attempt. A number of the *Salsette's* crew were known to have accomplished a greater distance, and the only thing that surprised me was that, as doubts had been entertained of the truth of Leander's story, no traveller had ever endeavoured to ascertain its practicability." Byron's allusion to the ague caught was simply put in for effect.[65]

In presenting this chapter[66] on swimming and feats of natation, the writer is earnest in the hope that it may lead to a more general knowledge and practice of the art. Were it merely the healthy, manly exercise it is, it would be worthy of all encouragement; but there is another and a more important side to the question. Annually thousands of valuable lives are lost which might be easily saved, not by others, but by their own knowledge. Every father of a family should make his children learn at the earliest opportunity, and, except in the case of very delicate children, they will inevitably take kindly to the exercise. Young men should count it as one of their most pleasant and useful recreations. Cricket, rowing, riding (if even on a bicycle) are to-day among the accomplishments of almost all respectable youths; let all of them add swimming to the list. The first three are health-giving and invigorating pursuits; the art of natation is all this, and very much more besides. Some one or more in every large family to-day travel or voyage frequently; usually one, two, or more are settled in the colonies or foreign countries, to reach or return from which the wide ocean must be crossed. And in spite of steam and all modern facilities, wrecks are not unknown to-day. The writer strongly advocates the establishment of Government schools of swimming.

Every year the papers record numerous cases of drowning, but the *un*-recorded cases are far more numerous. Not long since the National Lifeboat Institution published an instructive chart of the numbers lost in one year in *inland* waters, rivers, lakes, and ponds. It amounted to scarcely less than two thousand persons, a large proportion being young people, all of whom ought to have been able to swim. The full annual record of those lost at sea and on the coasts would be something appalling.

There is no doubt that swimming is much easier learned in youth than in middle age, and the younger a lad is the easier it is for him to learn. Of all places for this purpose none will be found better than a bath. It will always be found that where the water is warm it is much easier to
[pg 259] remain in a long period than where the water is cold. It is for this reason that all our fast swimmers come from inland towns. Boys at the sea have probably but a few weeks, or at the outside but a few months, in the course of the year in which they find it practicable to go into the water. Rough days, cold weather, too often deter lads from bathing, though cases are indeed occasionally found in which men will bathe in the sea all the year round, not only in midsummer, but in mid-winter as well.

In commencing to teach a person to swim, the first point is entering the water, and here *ce n'est que le premier pas qui coûte*. Where the learner is very young the greatest difficulty often is to induce him to enter the water at all. Still, most healthy boys are courageous enough in this regard.

"Having once persuaded a pupil to walk about within his depth, the next great point is to prove to him how great is the buoyancy of the water. I think it will be found that, in almost all works written on the subject of swimming, the same plan is recommended, viz., to place some object at the bottom of the bath (such as a large stone or piece of white chalk), and then to tell the pupil to pick it up with his hand. He will now experience the difficult, not of keeping himself up, but of getting down. The buoyancy of the water is so great that, supposing him to be about chest-deep, probably he will be unable to pick up the stone at all. He will now find from this how very little is necessary to keep a man afloat."

Another good plan is to let some person go into the water with the beginner, and float on his back, resting on the learner's hand. Then tell him to take his hand away for a second or two at a time, and, so to speak, balance the body on his hand. He will find the pressure of the body barely that of a few ounces. In fact, the human body is so nearly the same weight as an equal bulk of water that the movement of the arms and legs in swimming is not necessary so much to keep the body afloat as to keep it afloat in the right position. Many a drowning man has come repeatedly to the surface, but often, unfortunately, the mouth or nose, through which he could breathe, has not been the portion that reached the surface. Another method by which you can give a pupil confidence is to go into the water yourself, and prove to him by ocular demonstration how very slight a movement of the limbs is necessary to keep the body afloat and the mouth above water. All good swimmers know how very little movement of the hands or feet will be sufficient for this purpose.

In commencing to learn, all boys should first learn to swim well on their chests. Since the introduction of the side stroke it will be often found that lads who have barely learned to swim properly at all try to imitate the first-class professionals, and in so doing succeed simply in making themselves ridiculous.

"The great secret of a good stroke," says Webb, "is to kick out the legs wide; and here let me observe that it is a popular fallacy to imagine that the speed of the swimmer in any way depends upon the resistance of the water against the soles of the feet. I have often heard it observed —'Oh! that man would make a fine swimmer; he has got such large feet.' Now, in the movement of the legs the flat of the foot never directly meets the water, except in the case known as 'treading water.' The propelling power in swimming is caused by the legs being suddenly brought from a position in which they are placed wide apart into one in which they are close together, like the blades of a pair of scissors. In fact, the mechanical power here brought into play is that of the wedge. For instance, suppose a wedge of ice were suddenly pinched hard between the thumb and
[pg 260] finger, it is evident that it would shoot off in the direction opposite to that in which the sharp edge points. Now a wedge of water is forced backwards, and the resistance caused propels the body forward in an opposite direction." When this point is well considered, the importance of drawing the legs well up will at once become manifest.

Again, too, in dwelling on the stroke (and by "dwelling on the stroke" is meant resting for a few seconds in the water while the body moves forward), care should be taken that the toes are pointed in a direction contrary to that in which the swimmer is going. The movement of the arms is never one in which great difficulty will be found. The two hands should be kept perfectly flat, the palms resting on the water; and at the same time as the swimmer strikes out his legs each hand should be brought slowly round, one to the right and the other to the left, care being taken that the palm of the hand is horizontal. Were the hands to be placed sideways, it is at once evident that the water would offer but little resistance. By keeping the hands in the position named the resistance offered by the water in case of sinking would be very considerable. Should the beginner doubt this, let him enter the water and stoop down, and keeping his hand flat, bring it suddenly downwards in the water; the resistance the water will offer prevents him from doing this with any speed at all. On the other hand, should he strike downwards with his hands sideways, he will find that he can do it as fast almost as he could in the air. Now, in reaching forward with the hands the swimmer should always endeavour to reach as far forward as possible. Let him imagine some small object is placed in the water just out of reach, and let him struggle to reach it; the more he reaches forward the faster he will swim. This is a very important point.

Every boy should in learning to swim be very particular as to the kind of stroke he acquires with his legs. Bear in mind that if once you get into a bad style you will experience ten times the

difficulty in altering it into a correct one than you would by commencing to learn to swim afresh; for this reason every one learning to swim should go and watch carefully some first-class swimmer, and note how he moves his legs, and then imitate him as closely as possible.

Diving from a height requires, as Artemus Ward observed when he took the census, experience, like any other business; and just as that worthy gentleman got into difficulties with the two first old maids he met, and whose mouths he attempted to examine, not believing their answers to be correct with regard to age, so many a boy who has witnessed the apparently easy feat of taking a header has come to terrible grief by finding himself come down flat on the water, which he has shortly afterwards left with the appearance of having had a particularly strong mustard poultice on his chest. Now, in diving from a height of, say, six feet, the heels must be thrown well up, the legs should be kept straight and well together, and the two hands brought forward in front of the head, exactly similar to the position that a man takes in making his first attempt at swimming on his chest. The hands act simply as a breakwater, and they should be turned up the moment the water is reached, thus preventing the diver going deep, and also enabling him to dart forward along the surface the moment he reaches the water. A good diver can dive from a height of forty to fifty feet, and yet never go a yard below the surface.

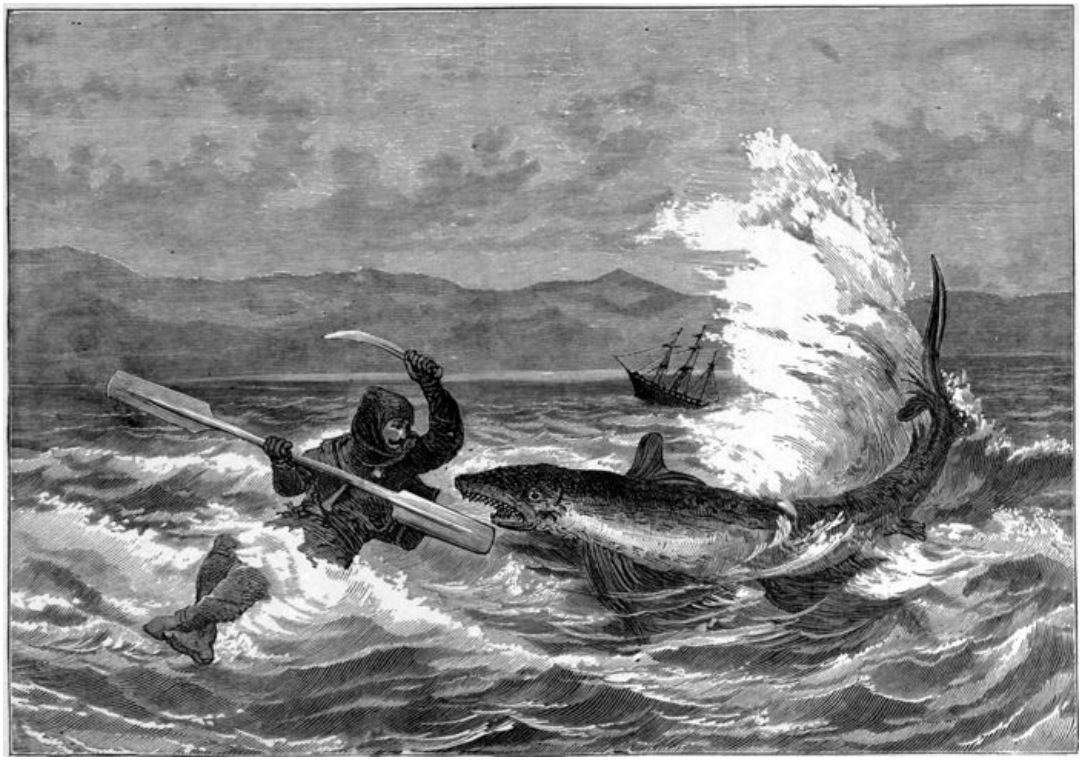
On one occasion, when only fourteen years of age, a boy dived from the top deck of Her Majesty's
[pg 261] ship *President*, stationed at the West India Docks. The height above water was forty-five feet, and those who witnessed him state that they did not think he went more than two feet below the surface. Neither man nor boy should attempt to dive from such a height. Were they to slip or to fall flat, the probability is that they would be killed on the spot. But should it at any time be necessary to take a dive from a high place, bear in mind that you must not give the same movement to your body as if you were going off from the height of a few feet, otherwise you will turn completely over in the air and come down on your back, which, should the distance be very great, would probably kill you; and if the distance be moderate, you would certainly have the appearance of having had a severe whipping. In diving, and in everything else, it is practice only that will make perfect. Webb dived off the yard-arm of a ship quite thirty feet above the water; but if by chance any one from such a height comes in the least degree flat, he will hurt himself considerably.

DIVING.

Many stories have been told in this work of native divers, but referring merely to their power of remaining under water, and not their diving from a height; and, so far as swimming goes, no black people approach a first-class English swimmer. Three feet of water are sufficient to dive in, but no man in his senses would ever make a dive from any height unless the water was at least five or six feet deep, as if by chance he should come down a little straighter than he intended, he would inevitably dash his brains out, in addition to breaking both his arms against the bottom of the bath or river. Great care, too, should be taken in diving into any open piece of water. Webb mentions a case in which a man was seen to receive a fearful laceration of his skull from diving on to a broken green glass bottle which had been thrown in.

Innumerable are the inventions for assisting the learner of swimming, or for aiding those who cannot swim to float. Foremost in the latter category must be placed what is known as the Boyton dress, an American invention. It is a complete india-rubber suit, and can be inflated at any point desired, the result being that the wearer can lie down, remain in a perpendicular or slanting direction in the water, his body being kept as warm, and if in exertion warmer, than it would be under ordinary circumstances. Captain Paul Boyton crossed the Channel in it without difficulty, floating, paddling, and even *sailing* (for a sail is part of the gear), meanwhile feeding from the

knapsack or receptacle which is a component part of the dress, smoking, and drinking cherry
[pg 262] brandy amid the boiling waves. This dress would no doubt enable a shipwrecked person to live for days, and even weeks, in the water. Its expense is not great, but too much for general adoption. It was while wearing this dress, in crossing the Straits of Messina on the 10th of March, 1877, that Captain Boyton met with the adventure illustrated in our plate. We translate from an Italian journal the following account of it:—



CAPTAIN BOYTON ATTACKED BY A DOG-FISH IN THE STRAITS OF MESSINA.

“Disregarding the counsels of those who warned him of the perils of such a rough sea, and one so infested with dog-fish, Boyton let himself into the water at eight in the morning, followed by a vessel, which more than once lost sight of him. He rowed in his apparatus with the aid of arms which appeared as though made of steel, when he suddenly felt himself strongly knocked against behind. It was a dog-fish! There was a flash; Boyton raised himself to the middle, drew the dagger which he always carried at his side, and repelled the assailant. Reassured, he then re-took the oar, drank for the third or fourth time some cognac, and about midday, with his eyes inflamed by the heavy strokes of the sea, arrived at the port of Messina, saluted with enthusiasm by the crowd of people, on shore and in boats and steamers, who were anxiously awaiting him.”

Apparently one of the simplest devices for those unable to swim is that known as the Nautilus Safety Bathing Dress, the invention of Captain Peacock. It is simply a short shirt, made of the purest Irish flax, which fits closely round the neck and waist, &c., by means of elastic bands. It has an inflating tube and mouthpiece. The principle on which it is founded is simply this: Irish flax, *when wet*, is nearly air and water proof; dipping, then, first the shirt in water, air is blown inside by the tube till there is sufficient inflation. Should there be any slight leakage, more air can at any moment be blown into it by the wearer. These shirts are, of course, comparatively inexpensive.

A seaman’s belt, invented by Captain Ward, R.N., and sanctioned by the National Life-Boat Institution, is highly commended by many authorities. A schoolmaster says that he has been accustomed for many years to take from thirty to forty boys, of all ages, during the bathing season, into deep water, and that not merely is it perfectly safe, and free from some objections urged against many swimming-belts, but that its use enables young people to swim more rapidly.

Captain Warren has invented a life-buoy which is highly commended. It consists of a bladder chemically prepared, to which is affixed a patent valve, by means of which the former can be easily inflated. A second invention of Captain Warren’s consists of 500 life-buoys, three feet long, made of cork or specially prepared wood, and strung on to a series of iron rods, which are connected with the turret or mast of the ship. These are all kept together by means of a band, which, when the vessel is sinking, would be cut, and the whole of the buoys could be instantly released. This apparatus would cost £250, but of course it could be made on a smaller scale if required.

A most ingenious “Life-Buoy Seat” has been invented by Mr. Richard Rose, an old traveller and colonist. It is composed of two semi-conical buckets of block tin, the smaller end of one screwing into the other, together forming a buoy resembling an hour-glass in shape. Placed upright it forms a capital deck camp-seat, the upper end being of cork, which of course increases its

buoyancy. In the event of fire on board the two portions can be rapidly unscrewed, and each buoy
[pg 263] thus representing two buckets, a ship with only two or three dozen would have an ample supply in such emergency. Practically tested in a swimming-bath, several bathers could not sink one placed there for the experiment, and it took a dead weight of nearly a hundredweight to do so. The buoy being water-tight could, of course, be utilised for carrying a supply of water, biscuit, or other food, valuable ship's papers, and so forth, and without materially impairing its buoyancy, while several lashed together would form a raft. Two ropes are attached to each seat. When one considers the confusion and panic that too often attend collisions, fires at sea, and shipwrecks generally, this invention would prove of incalculable value, as it could be utilised on the immediate spur of the moment.

The Royal Humane Society promulgates the following golden rules for bathers (and which apply also in part to swimmers), prepared by competent authorities:—1. Avoid bathing within two hours after a meal. 2. Avoid bathing when exhausted by fatigue. 3. Avoid bathing when the body is cooling after perspiration. But—4. Bathe when the body is warm, provided no time be lost in getting into the water. 5. Avoid chilling the body by sitting naked on the banks or in boats after having been in the water. 6. Avoid remaining too long in the water—leave the water immediately there is the slightest feeling of chillness. 7. Avoid bathing altogether in the open air, if, after having been a short time in the water, there is a sense of chilliness with numbness of the hands and feet. 8. The vigorous and strong may bathe early in the morning on an empty stomach. 9. The young and those that are weak had better bathe three hours after a meal—the best time for such is from two to three hours after breakfast. 10. Those who are subject to attacks of giddiness or faintness, and those who suffer from palpitation and other sense of discomfort at the heart, should not bathe without first consulting their medical adviser.

And now we must speak of the greatest swimmer of our day—one who has never been excelled. Captain Matthew Webb swam the Channel when he was but twenty-six years of age. The son of a country surgeon, he had early become fond of the sea, and obtained his first instruction on board the *Conway* training ship at Liverpool.

The event in Webb's life which first brought his name prominently before the public in connection with swimming took place on board the Cunard steamship *Russia*, then on the homeward voyage from America. One day a tremendous heavy sea caused the ship to roll in a manner which rendered it almost impossible for any one to keep their feet without a life-line (*i.e.*, a rope stretched along or across the deck from one point to another), and all of a sudden a cry arose, "A man overboard!" A poor young fellow, Michael Hynes by name, who had been ordered aloft in the main rigging to "clear the sheet," had missed his hold, and fell backwards into the water. Webb saw him fall, and within two or three seconds was after him in the sea, but, alas! could see nothing of him, save his cap floating on the waves. On this occasion he was thirty-seven minutes in the water before be was picked up by the *Russia's* lifeboat, the waves being "mountains high," and the ship going at fifteen knots. Webb was utterly unable to save the poor fellow, who was never seen to rise again, but for his noble attempt deservedly received the leading medal, the—"Stanhope gold medal"—of the Royal Humane Society of London, another from the Liverpool Humane Society, and £100 from the passengers on board the *Russia*.

[pg 264] The first time that Captain Webb took up the idea of swimming the Channel was after a "good try"—but failure—made by Johnson, to swim from Dover to Calais. Webb commenced by an excellent swim from Dover as far as the Varne Buoy, about mid-channel. On this occasion he remained four and a half hours in the water. His first public swim was from Blackwall Pier to Gravesend, a distance of twenty miles—mere child's play to him. After considerable practice he made a trial trip from Dover to Ramsgate, remaining in the water nearly nine hours. He now publicly announced his intention of attempting to swim to Calais, and he received a considerable amount of encouragement as well as well-meant advice to make the attempt. A number of extraordinary precautions were recommended to him—one, however, being sensible enough: that being to cover his body with a coating of some kind of grease. On the Ramsgate swim he used cod-liver oil, and, on the first Channel attempt, porpoise oil.

The second attempt of Captain Webb to swim across the Channel took place on August 24th, 1875, and was crowned with success, after a display of unequalled courage and physical endurance. At four minutes to one o'clock on that day he dived from the steps at the head of the Admiralty Pier, Dover, and at forty-one minutes past ten a.m. next day he touched the sands of Calais, having remained in the water, without even touching a boat on his way, no less than twenty-one and three-quarter hours.

During the early part of the journey Captain Webb was particularly favoured by the weather. The sea was as calm as a mill-pond, and there was not a breath of wind. The lugger which accompanied him across the Channel had to be propelled a considerable distance by oars. The swimmer was accompanied by two small rowing-boats in immediate attendance upon himself, one containing his cousin, Mr. Ward, who supplied him occasionally with refreshments, and one of the referees, who had been appointed at Webb's own request to see fair play; the other boat was used for the purpose of conveying messages to and from the lugger.

Everything went on favourably till nine p.m., when Captain Webb complained of being stung by a jelly-fish, and asked for a little brandy. He had previously been supplied with some cod-liver oil and hot coffee. The weather still continued perfect, and the intrepid swimmer proceeded at a good rate, taking a long, clean breast stroke, which drove him well through the water. Owing to

the phosphorescent state of the sea, he was sometimes almost surrounded with a glow of light. At 10.30 he was visited by a steam-tug, which had put off from Dover for the purpose, and which, strange to say, left the man who had ploughed through the waves for over nine hours without even the encouragement of a parting cheer. At 11.45, however, a Dover boat, on its way to Calais, gave cheer after cheer to greet him, and one of the small boats burnt a red light, which cast a ruddy glow over the scene, and illuminated the water all around, the face of Captain Webb being lighted up by it, so that he was distinctly seen by all on board the Continental mail boat.

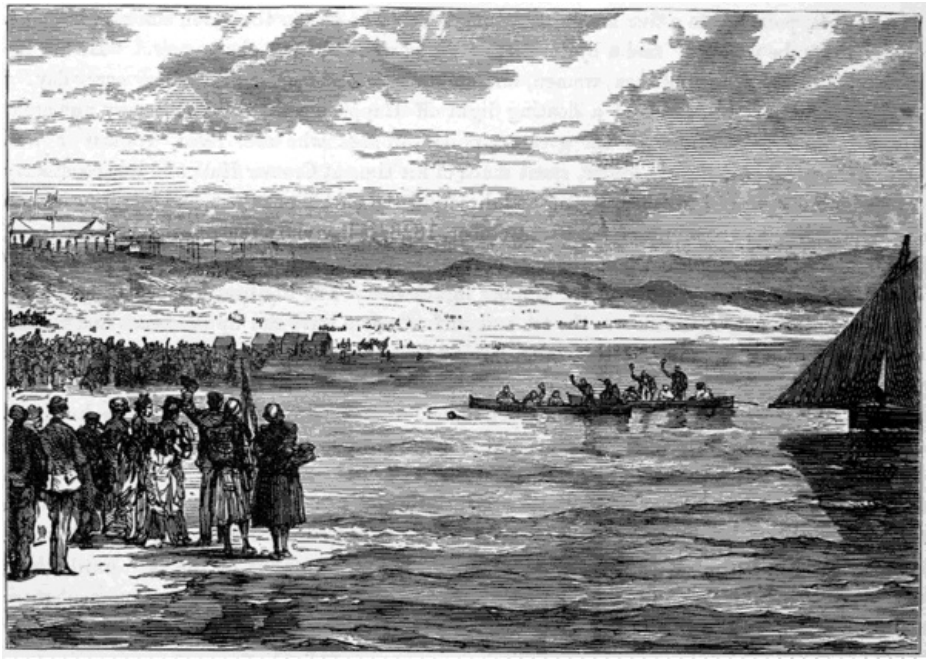
At two o'clock next morning Cape Grisnez light seemed close at hand, and Captain Webb was still bravely struggling on, although at this juncture the tide not merely impeded him, but was sweeping him farther and farther from the shore. He, however, showed signs of fatigue, and young Baker, a well-known diver, sat with a life-line round him by the side of the referee, in case of accident, as it was supposed by many that the long exposure to cold might cause Webb to
[pg 265] become suddenly numbed and insensible, and so sink without a moment's warning. But Webb is a man among ten thousand; the collapse from penetrating cold which the best swimmers usually experience after long exposure in the water seems unknown to him. By nine o'clock he was within a mile of the shore, a little to the westward of Calais, and at this juncture, young Baker, then only sixteen years of age, plunged in and kept the exhausted swimmer company, not, however, trying to aid him in any way except by encouragement.

CAPTAIN MATTHEW WEBB. (*From a Photograph by Albert Fradelle.*)

Unfortunately, however, two hours previously a strong breeze had risen, and the sea, which had hitherto been like a sheet of glass, was running high, with crested waves. Webb was evidently fearfully exhausted. The tide was running strongly away from the shore, and the swimmer was battling against double odds when he was least fit for it. Still, at 9.45 he had lessened the distance by one-half; he was only half a mile from the beach. Would he ever reach it?

[pg 266] Just as the now utterly exhausted swimmer was beginning bitterly to think that failure even at this point was possible, a steamboat put off from Calais, and her commander placed her in such a position that she acted as a kind of breakwater, for the sea was running so high that it nearly swamped the boats accompanying him. One last struggling exertion and he touched ground, so weak that he could not stand. A couple of men instantly went to his assistance, and he was able to walk slowly ashore. When the Calais boat left he was comfortably asleep, a medical man watching by his side.

"I can only say," says Captain Webb, "that the moment when I touched the Calais sands, and felt the French soil beneath my feet, is one which I shall never forget, were I to live for a hundred years. I was terribly exhausted at the time, and during the last two or three hours I began to think that, after all, I should fail. On the following day, after I had had a good night's rest, I did not feel very much the worse for what I had undergone. I had a peculiar sensation in my limbs, somewhat similar to that which is often felt after the first week of the cricket season; and it was a week before I could wear a shirt-collar, owing to a red raw rim at the back of my neck, caused by being obliged to keep my head back for so long a period; for, it must be remembered, I was in the water for very nearly twenty-two hours."[67]



CAPTAIN WEBB’S ARRIVAL AT CALAIS.

When Webb returned to London he met with an enthusiastic reception. In the City he was welcomed by the same uproarious heartiness that Tom Sayers less deservedly received after his fight with Heenan. The cheering and hand-shaking of Webb began at the “Baltic,” increased in warmth at “Lloyds,” and culminated at the Stock Exchange, where “bulls” and “bears” were eclipsed by the lion of the day, and whence he had to beat a retreat to save his right hand from being wrung off.

The following will show the value of ingenuity in the midst of great danger. It occurred at a terrible wreck, which took place on the coast, in the sight of hundreds of powerless spectators:—“In the midst of these horrifying moments a man was observed to jump from the wreck into the sea. It was concluded by the watchers that he had voluntarily destroyed himself to avoid dying by inches and hunger. After all, who could blame him? It was a question of only an hour or so, for hope there appeared none. But the crowd was agreeably disappointed, for the man held his head up in the midst of the hissing surges boldly, and although he disappeared every moment, yet by the aid of good glasses his head was seen to bob up again, a conspicuous black object in the surrounding foam. Expectation stood on tip-toe. Would he reach the shore? was asked by a hundred voices in an instant, and everybody was anxious to do something to assist a man who so nobly tried to assist himself. The minutes that followed were intensely exciting; every movement of the swimmer was eagerly noticed, and it was with difficulty that several generous spirits were prevented from dashing, at all risks, into the sea to his assistance. Slowly, but surely, the poor fellow approached the shore—his head well up yet. He is just within the outer tier of the breakers—poor fellow! he will stand no chance now. See, he is caught by a monstrous wave—he rides upon its crest, and is urged rapidly towards the beach; the horrid wave curls and breaks; he is
[pg 267] rolled head over heels; he is gone. No; he rights himself, and he is taken out to sea again by a retiring wave. Back he comes again—head over heels he goes once more; but this time fortune pitied misfortune, for he was flung by a wave within reach of a coast-guard, who, at the risk of his life, rushed into the sea and saved him. The secret of his buoyancy soon appeared. Under each arm he had lashed (as seamen only know how) an empty wine bottle, well corked, and he had stuffed several others under an elastic Guernsey shirt, and buttoned his trousers over all, and with these frail floats he came through a heavy belt of breakers in safety.”[68]

“That man has saved seventeen lives single-handed,” we heard a marine officer say one day at Lowestoft, pointing to a fine handsome young fellow who sat on the beach smoking his pipe. “He ought to be well off,” said a bystander. “He is well off,” was the answer. “He has the satisfaction of knowing that men, women, and children thank God for his bravery every day.”[69]

Before the establishment of a floating light off Happisburg, wrecks were very numerous on the Cromer coast. One of the greatest philanthropists who ever lived, Thomas Fowell Buxton, the great anti-slavery leader, spent much of his time at Cromer Hall, and was constantly on the shore during bad weather, urging and directing the efforts of others, and often “giving a hand” himself. In the storm of the 31st October, 1823, still vividly remembered on that coast, Mr. Buxton performed an act of heroic bravery. About noon, a collier, the *Duchess of Cumberland*, ran upon the rocks off the Cromer lighthouse. The life-boatmen could not be induced to venture out, so terrific was the sea and surf. Once a wave ran up the beach and floated the wreck. Buxton sprang into the water, hoping that others might be induced to follow, but in vain. Captain Manby’s gun

was fired several times, but the line fell short of the ill-fated brig, on which nine poor sailors were seen lashed to the shrouds. At length a huge sea completely broke her up, the water being blackened by the bursting coal. The helpless spectators looked on, horror-stricken. “Poor dear hearts! they’re all gone now,” exclaimed an old fisherman; but at that instant a body—was it alive or dead?—was seen on the crest of a wave. Without waiting for a rope, Mr. Buxton dashed into the surf, caught the exhausted sailor, flung himself upon him, and struggled against the strong reflux of the surf, until others could reach him. He, with his living burden, was dragged to land, both at that moment more dead than alive. Buxton said afterwards that he felt the waves play with him as he could play with an orange.[70]

The record of a man in humbler life, John Ellerthorpe, foreman of the Humber Dock gates, Hull, who deservedly earned for himself the title of “Hero of the Humber” is very interesting. During a period of forty years he saved *thirty-nine* individuals, most of whom were difficult cases, as they fell into the Humber through intoxication.

His services were honourably recognised. Medals and other acknowledgments from the Royal Humane Society and the Board of Trade were showered on him; he received a donation from the Royal Bounty, a purse of a hundred guineas from his townsmen, and other valuable testimonials. Turn we now to the case of another hero, who saved one life more than Ellerthorpe, and until very late in his career received no recognition whatever. A hero of the Clyde now appears on the scene.

[pg 268] It is to Mr. Charles Reade, the distinguished novelist, poet, and playwright, that we owe a “true and accurate account of the heroic feats and sad calamity of James Lambert, a living man.”[71] Mr. Reade had read in the *Glasgow Times* of October 2nd, 1856, how, when a little boy was drowning in the Clyde, an elderly blind man would have dived in but for his granddaughter, who with a girl’s affection and unreasoning fears, had clung to his knees and utterly spoiled his good intentions. The boy was drowned. The poor blind hero went home crying like a child, saying, “It was a laddie flung away; clean flung away.”

Mr. Reade, after long and weary searching, found Lambert in a wretched lodging in Calton, a suburb of Glasgow, and easily extracted from him a fund of anecdote, a part only of which can be presented here.

The “first case” Lambert had attended to was a twenty-stone “drooning” baker, who gripped him tight to his breast, and nearly succeeded in drowning him. Lambert was then a youth of about fourteen. Another was of a poor old washerwoman who had overbalanced herself in the water, and who when saved wanted to go and pawn her tub that she might reward him. Instead of which her rescuer “clappit a shellin’” in her hand, and promised to repeat the kindness each Saturday from his own meagre wages.

[pg 269] When Mr. Reade had provided the poor old man with a little refreshment, he told the following episode in his life.

“Aweel, sirr, ye’ve heerd o’ the callant they wadna let me save—Hech, sirr, yon was a wean wastit[72]—noo, I’ll make ye the joodge whether I could na hae saved that ane, and twarree mair. There’s a beck they ca’ ‘the Plumb’ rins doon fra’ the horsebrae into the Clyde near Stockwell Brigg. The bairns were aye for sporting in the beck, because it was shallow by ordinar, and ye’ll see them the color o’ vilets, and no’ hauf sae sweet, wi’ the dye that rins to the beck. Aweel, ae day there was a band o’ them there; and a high spate[73] had come doon and catched them, and the reesolt was I saw ane o’ th’ assembly in the Clyde. I had warned the neer-do-weels, ye ken, mony’s the time. By good luck I was na far away, and went in for him and took him by the ear. ‘C’way, ye little deevil,’ says I. I had na made three strokes when I am catched round the neck wi’ another callan.”

“Where on earth did he spring from?”

“I dinna ken. I was attending to number ane, when number twa poppit up, just to tak’ leave o’ Glasgee. I tell’t them to stick into me, and carried the pair ashore. Directly there’s a skirl on the bank, and up comes number three, far ahint me in the Clyde, and sinks before I can win[74] to him. Dives for this one, and has a wark to find him at the bottom. Brings him ashore in a kind o’ a dwam; but I had na fear for his life; he hadna been doon lang; my lord had a deal more mischief to do, ye ken. By the same token he came to vara sune, and d’ye ken the first word he said to me? he said: ‘Dinna tell my feyther. Lord’s sake, man, dinna tell my feyther!’ ”

“I never,” remarks Mr. Reade, “saw a man more tickled by a straw, than James Lambert was at this. By contemplating him I was enabled in the course of time to lose my own gravity, for his whole face was puckered with mirth, and every inch of it seemed to laugh.”

“But,” said he, “wad ye believe it, some officious pairson tell’t his feyther, in spite o’ us baith. He was just a labouring man. He called on me, and thank’t me vara hairtily, and gied me a refreshment. And I thoucht mair o’t than I hae thoucht o’ a hantle siller on the like occasions.”

After one or two other savings, that entitled him to a medal or two, Lambert admitted that, “By this time, sirr, I was aye prowling about day and night for vectims!” Mr. Reade suggested that he had the pride of an artist, and wanted them to fall in, that he might pull them out and show his

dexterity. Lambert answered that in those days swimming was not an accomplishment so common as now; and if such a thing as drowning was to be, he would like to be there and save them. “Ech,” said he, “the sweetness o’t! the sweetness o’t!”

He next told a funny story of rescuing a boy, and running up to the house to have him properly cared for. “Then,” said he, “I’m going oot, when a’ of a sooden I find I haena a steek on me, and twa hundred folk about the doore. Wad ye believe it, *wi’ the great excitement I never knew I wa’*
[pg 270] *nakit* till I saw the folk and bethought me.” At the foot of the stairs he found a bundle of linen, and he was not long in helping himself, coming back to the room in the wife’s apron and a sheet. “The sight o’ me made the lasses skairt and skirl;[75] for I was like a corp just poppit oot of the grave.” When he went for his clothes they had disappeared, but at last he discovered that a young lady had carefully kept them for him behind a hedge, fearing that some one might steal them.

“I come now,” says Mr. Reade, “to the crowning feat of this philanthropic and adventurous life, and I doubt my power to describe it. I halt before it like one that feels weak and a mountain to climb, for such a feat, I believe, was never done in the water by mortal man, nor never will again while earth shall last.

“James Lambert worked in Somerville’s Mill. Like most of the hands, he must cross the water to get home. For that purpose a small ferry-boat was provided: it lay at a little quay near the mill. One Andrew had charge of it ashore, and used to shove it off with a lever, and receive it on its return. He often let more people go into it than Lambert thought safe, and Lambert had remonstrated, and had even said, ‘Ye’ll hae an accident some day that ye’ll rue but ance, and that will be a’ your life.’ Andrew, in reply to him, told him to mind his own business.

“Well, one evening James Lambert wanted to get away in the first boat-load. This was somehow connected with his having bought a new hat: perhaps he wished to avoid the crowd of workpeople—here I am not very clear. However, he watched the great wheel, and the moment it began to waver, previous to stopping, he ran for his hat and darted down the stairs. But as he worked in an upper storey full a dozen got into the boat before him. He told Andrew to put off, but Andrew would not till the boat should be full; and soon it was crammed. James Lambert then said it was a shame of him to let so many on board. This angered the man, and when the boat was so crowded that her gunwale was not far above water, he shoved her violently off into the tideway, and said words which, if he had not prayed God to forgive them in this world, will perhaps hang heavy round his neck in the next.... ‘ye beggars!’ he cried.

“This rough launching made the overladen boat wobble. The women got frightened, and before the boat had gone twenty yards she upset in dark, icy water, ten feet deep. It was night.

“Before the boat coupit[76] athegither they a’ flew to me that could, for they a’ kenned me. I’ the water, them that hadna a hand o’ me, had a hand o’ them that had a hand o’ me, and they carried me doon like leed. * * *

“Sirr, when yeve twa feet i’ the grave, your mind warks hard. I didna struggle, for it was nae mair use than to wrastle wi’ a kirk. I just strauchtened myself oot like a corp, and let them tak’ me doon to the bottom of the Clyde, and there I stude upright and waited; for I kenned the puir souls would droon afore me, and I saw just ae wee-wee chance to save them yet. Ye shall understond, sirr, that when folk are drooning, they dinna settle doon till the water fills their lungs and drives the air oot. At first they waver up and doon at sairtain intervals. Aweel, sirr, I waited for that, on the grund. I was the only ane grunded, you’ll obsairve. A slight upward movement commenced. I
[pg 271] took advantage, and gieda vi’lent spang wi’ my feet against the bottom, and wi’ me, choosing my time, up we a’ came. My arms were grippit; but I could strike oot wi’ my feet and before ever we reached the surface, I lashed oot like a deevil, for the quay. Aweel, sirr, wi’ all I could do, we didna wend abune a yard, or may be a yard and a hauf and doone they carried me like leed. I strauchtened myself as we sank, and I grunded. The lave were a’ roond me like a fon.[77] I bides my time, and, when they are inclining upward I strikes fra the grund; an’ this time, maur slanting towards the quay. That helpit us, and in a dozen vi’lent strokes we maybe gained twa yards this time. Then doon like leed. Plays the same game again, up, and doon again. And noo, sirr, there was something that turned sair against us; but then there was something for us, to bollance it. It was against us that they had swallowed their pint o’ water by this time, and were nae sae buoyant; it was for us that the water was shallower noo, maybe not more than twa feet ower head. This wad droon us as weel as twanty; but wi’ nae mair nor twa feet water abune us I could spring up fra the grun by mere force; for the grun gies ye an awfu’ poower for a foot or twa. Sae noo I’m nae suner doon than up again, and still creeping for the quay, and the water aye a wee bit shallower. The next news is, I get sair spent, and that was bad; but to bollance that, some folk on the quay gat rapes and boat-hooks, and pickit off ane or twa that was the nearest; and now ilka time I cam’ up, they pickit ane off, and that lightened my burden; and bymby I drave a couple into shallow water mysel’, wi’ my feet. When I was in seven fut water mysel’, and fewer folk hauding me doon, I got to be maister, and shovit ane, and pu’d anither in, till we landed the whole saxteen or seventeen. But my wark was na’ done, for I kenned there were mair in the river. I saw the last o’ my ain band safe, and then oot into the Clyde, wherever I heerd cries, and sune I fund twa lasses skirling, takes ’em by their lang hair, and tows them to the quay in a minute. Just as I’m landing thir[78] twa, I hear a cry in the vara middle of the river, and in I splash. It was a strapping lass—they caed her Elizabeth Whitelaw. ‘C’way, ye lang daftie,’ says I, and begins to

tow her. Lo an' behold, I'm grippit wi' a man under the water. It was her sweetheairt. She was hauding him doon. The hizzy was a' reicht, but she was drooning the lad; pairts these[79] twa lovers —for their gude—and taks 'em ashore, one in each hand. Aweel, sirr, I saved just ane mair, and then I plunged in and sairched, but there was nae mair to be seen noo: three puir lasses were drooned, but I didna ken that at the time. And noo I'll tell ye a farce. I'm seized wi' a faintness, and maks for the shore. But I gat weaker, and dazed-like, and the lights o' Glasgee begins to flecker afore my een: and, thinks I, 'I'll no see *ye* again; I'm done this time.' It was all I could do for the bare life, to drift to the hinder part of the quay. I hadna the power to draw mysel' oot. I just grippit the quay and sobbit. The folk were a' busy wi' them I had saved; nane o' them noticed me, and I would ha' been drooned that nicht: but wha d'ye think saved me, that had saved sae many?—an auld decrepit man: haw! haw! haw! He had a hookit stick, and gied me the handle, and towed me along the quay into shallow water, and I gat oot, wi' his help, and swooned deed away. I'm tauld I lay there negleckit awhile; but they fand me at last, and then I had fifty nurses for ane."

[pg 272] The story of the cause of this hero's blindness is very sad. He had dived in the river to save another while perspiring freely. It was winter, and the water icy cold. Soon after a great dazzling seized him, followed by darkness. This occurred again and again, until at last the darkness settled on him, and the light fled for ever.

When Mr. Reade first saw him, the single public honour paid him was that he had the right, with one Bailie Harvey, to pass over a certain suspension bridge gratis till his death, while the rest of mankind paid a halfpenny! His only pension was one of three-and-sixpence a week from the Barony Parish, Glasgow. Mr. Reade's efforts gained him an annuity, which he unfortunately did not live long to enjoy.

CHAPTER XXV.

The Haven at Last—Home in the Thames.

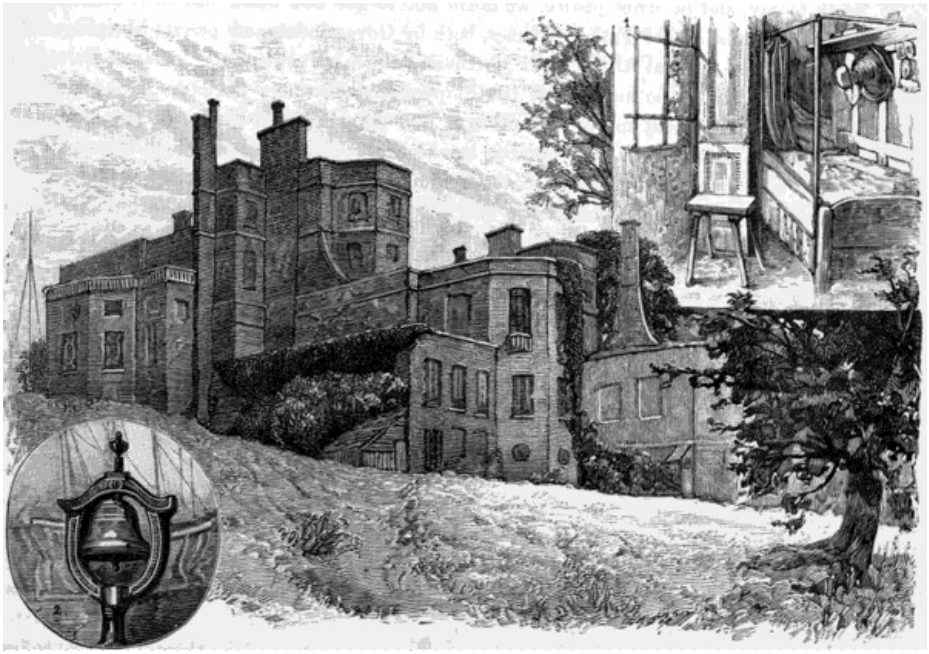
The "Mighty Thames"—Poor Jack Home Again—Provident Sailors—The Belvedere Home and its Inmates—A Ship Ashore—Rival Castaways—Greenwich Pensioners—The Present System Compared with the Old—Freedom Outside the Hospital—The Observatory—The Astronomer Royal—Modern Belief in Astrology—Site of Greenwich Park—The Telescopes and Observations —The Clock which Sets the Time for all England—Sad Reminiscences—The Loss of the *Princess Alice*—The Old *Dreadnought*—The Largest Floating Hospital in the World—The Trinity House: Its Constitution, Purposes, and Uses—Lighthouses and Light-vessels—Its Masters.

"Let the Rhine be blue and bright
In its path of liquid light,
Where the red grapes fling a beam
Of glory on the stream;
Let the gorgeous beauty there
Mingle all that's rich and fair;
Yet to me it ne'er could be
Like that river great and free,
The Thames! the mighty Thames!"

The poet's enthusiasm may be pardoned, for, although there are scores of rivers, considered only as such alone, that outvie the Thames, regarding it in its relation to the sea—aye, to the whole world—it stands pre-eminent and alone. To the sailor the Thames and the Mersey have an interest and importance which belong to the streams of no other country.

The reader has, in spirit, voyaged with poor Jack to the farthest corners of the earth; he has seen much of his life of peril and heroism; he has noted that the hardships he endures are often unrequited, and that, after a long career of usefulness and bravery, he may lie on the shore "a sheer hulk," valueless to himself, possibly to die and rot in poverty and distress. The charge of special improvidence cannot nowadays be hurled at the sailor, as it might have been in days of old. Even Jack's improvidence was more excusable than the same fault in any other class whatever. The fact is—as such valuable institutions as the Shipwrecked Mariners' Society have proved—that there was a great desire on the part of seamen to help themselves. The fortieth
[pg 273] annual report of the Society (1879) states that 48,000 mariners subscribe to the benefit fund organised under its auspices.[80] The history of this excellent association, which has now an income of nearly £29,000, is interesting. "A worthy, philanthropic medical man, Mr. John Rye, of Bath, had a servant who had formerly been a sailor, and was in the habit of reading the newspapers to his master. One morning their attention was arrested by an account of some fearful wrecks of fishing boats, with loss of life, on the north coast of Devon. The servant asked his master if there was any fund out of which help could be obtained to relieve the families of those men. The master

replied that he supposed there was, but he would make inquiries from Admiral Sir Jahleen Brenton, then Governor of Greenwich Hospital; and from him he found that there was none. They then together drew up a prospectus, and presented it to the late Admiral of the Fleet, Sir George Cockburn, who most heartily took the matter up, and after circulating the appeal widely, called a public meeting in February, 1839, at which Sir George was appointed President, and a number of noblemen and gentlemen formed themselves into a committee, of which the worthy Chairman, Captain the Hon. Francis Maude, R.N., is now the sole survivor. The following month Her Majesty the Queen graciously consented to be the Patron of the Society; and so prosperous was the infant
[pg 274] institution, that at the second anniversary, at which the late Sir Robert Peel consented to preside, the sum of £1,100 was collected. The Committee next set about to obtain the services of gentlemen to act as honorary agents, of whom there are now upwards of 1,000; and whose duties are to board, lodge, clothe, and forward to their homes all shipwrecked persons. The Committee meet every Friday in London to relieve the widows and orphans of the lost, not only at the time of their death, but by small annual payments. There were thus 9,601 persons relieved in 1879."[81]



THE HOME FOR AGED MERCHANT SEAMEN, BELVEDERE, KENT.

Sooth to say, and in strict justice, we must not forget how much has been done for the seaman on the banks of old Father Thames, both by Government and private liberality. An excellent home, the "Royal Alfred Aged Merchant Seamen's Institution" exists at Belvedere, in Kent, started under the auspices of the Shipwrecked Mariners' Society. This institution was inaugurated, with room for the reception of 400 persons of all grades of the mercantile marine, although nothing like that number has been as yet accommodated at any one time. The Society also grants out-pensions to those who have homes or friends.

The most singular and characteristic and yet appropriate features of the building are a number of little cabins comfortably fitted, and so much like the real thing, that it requires only a very slight stretch of the imagination for Jack ashore to indulge in the fond delusion that he is at sea again. The large rooms are divided into wards, one for masters and mates, containing ten cabins, each six feet by seven feet, and perfect ventilation is secured by the partitions being open at the top. Each man, by this excellent arrangement, has his little cabin to himself, and all the sweetness of retirement should he be that way inclined. What a contrast is this to the ungainly, unhomely, and barren shelters of our Unions!

It speaks well for the profession that most of the inmates have seen over forty or fifty years of service, which, judging from what we know of service in the maritime navy, might decidedly be called active. On being interrogated by a visitor, some of these veterans proved having most successfully braved the dangers of the deep.

"How often have you been wrecked?" inquired the interviewer of our "ancient mariner."

"Why, let me see, sir"—then, counting half audibly—"one, two, three, four, five times, I think, sir."

The second, on being questioned, answered, simply, "Once in 1825, sir—going to Hamburg that was; and once in 1828, on the coast of Norway; and again on the coast of Java in '42." This man had also done some memorable deeds on shore, which fully made up for his being short by "two" wrecks of the other.

Greenwich Hospital next demands our attention, as once the great home and asylum for the seamen of the navy, although now a hospital only. It was founded in the year 1694, in memory of

Queen Mary, who had long designed the foundation of such an institution. It was also built as a monument of the great victory of La Hogue. Sir Christopher Wren furnished the designs and plans for the edifice gratuitously—a noble gift from a professional architect, and valuable to boot.

[pg 275] The object of the foundation was "to encourage the seamen of this kingdom to continue the industry and skilfulness of their employments, by which they had for a long time distinguished themselves throughout the world;" "to encourage them to continue also their ancient reputation for the courage and constancy manifested in engagements for the defence and honour of their native country;" "to invite greater numbers of his Majesty's subjects to betake themselves to the sea;" and so forth. In sooth, the condition of the Greenwich pensioner was not, for a long period, particularly enviable. On admission he was required to relinquish any pension he might have gained in the service. Maimed men received only *tenpence* a day, and a shilling a week, intended for tobacco and the humbler comforts of life. The Commissioners at one time stated that "the wives are wholly ignored, and their circumstances are deplorable." From the Hospital they received only the broken meat of the hall and the rations of men on leave of absence. The wives were often reduced to the parish. No wonder the poor old veteran used to be so glad for a sixpence or even a "screw" of tobacco in return for his tough yarns!

The system has been entirely changed. At present all are out-pensioners, and when in good health can follow other employments. On the 26th September, 1865, the Greenwich exodus commenced. On that day nearly 200 out of the 900 pensioners of Greenwich Hospital who had accepted the Admiralty offer of pension allowance, in conformity with an Act passed in the previous session of Parliament, left that establishment for the various parts of the country they had selected for their future home. Since that time the whole have left; and the institution which, only a few years ago, had upwards of 2,000 inmates, now contains only a few hundred sick and disabled. Greenwich Hospital is a changed institution, and the system of rewarding those who have spent their lives in the service of their country is made more consistent with humanity, morality, and common sense. Instead of hundreds of elderly but still hale and athletic veterans wandering listlessly about the terraces and colonnades of Greenwich, and, if the truth must be told, sometimes overstepping the bounds of sobriety in the numerous public-houses of the neighbourhood, there are but a limited number of indoor-pensioners, and those are such as may be fittingly provided for in a place bearing the name of a hospital. They are disabled seamen in the strict sense of the term—poor worn-out old fellows who require to be taken care of, and who have, perhaps, no one but the nation to take care of them. The blind, the doting, the crippled, find comfortable board and lodging, and, without doubt, attentive nursing in the national hospital. But, as there are constantly new applications for admission, it is probable that there will always be a few hundreds in the establishment. On the first and third Thursday in each month a board sits at Somerset House to consider the claims of applicants for admission, and those who are passed are sent in an omnibus to the hospital. But for the large body of men who, though too old to reef top-sails and to work guns, are not too old to do something for their own living, and to wish for liberty and domestic life, there is the allowance before mentioned from the funds of the hospital, and the power of living where and how they please.

"What the average pension granted may be," said a writer in the *Cornhill Magazine*, "we have no means of knowing, but if some of the men have a larger sum than £36 10s., so also many of them will have much less, and will be unable to command in their homes the standard of living with which the Hospital supplied them. They elect to go, we take it, partly because they know the

[pg 276] government of the place is to be changed, that it is to become a hospital in the narrower sense of the word, and that there will be less freedom of ingress and egress for them henceforth; but this is only part of a more general feeling in favour of liberty among them, at which nobody who has inquired into their condition can wonder. The authorities at Greenwich Hospital have contrived to make a palace as dull as a prison. The men have had no amusements but a library inconveniently furnished. They have not been allowed to have flower-pots in their windows, nor to receive friends and visitors in private; and it is not many years ago since they were forbidden to walk on the terraces. Some of the punishments, too—such as being compelled to wear a yellow collar and do scavengers' work—have been harsh and injudicious. All these things have combined with the monastic character of the place to give a character of *ennui* and listlessness to the Greenwich pensioner's life, which must have struck every observing visitor. Dulness has been relieved within the walls chiefly by temptation without.

GREENWICH HOSPITAL.

“Since the age when Queen Mary pictured to herself Greenwich as a place of pious repose, where the sailor might end his days in the fear of God, it has become the favourite haunt of the pleasure-loving cockney—an emporium of shrimps, a reservoir of beer. Those quaint figures—the ‘geese’ and ‘blue-bottles’ of local slang—lounging about under the trees of the park, and loitering through the streets in the dress of another age, have been regarded by the holiday-maker from the metropolis as parts of the amusements of the place. They have been paid for yarns in drink and stray shillings, and have found the doctrine that sailors lived only for grog and tobacco accepted by their admirers as one of the glories of the British navy. It has been well remarked that, as a whole, the old fellows have been more decent in their lives than we had a right to
[pg 277] expect under the peculiar circumstances. But a chapter might be written on Greenwich morality and its effects on the parish rates, which nobody would care to bind up with the naval histories of Brenton or James, but which would help to reconcile the reader to the break-up of an institution which has had much in it to kindle the imagination and justify the pride of our countrymen.

GREENWICH PENSIONERS.

“The break-up is, after all, one in which people will acquiesce rather than one at which they will

rejoice. It was a noble as well as a pious idea to gather under the roofs of a grand edifice—at once a dwelling-place and a naval monument, and placed on the shores of a river itself one of the chief sources of our maritime strength—the survivors of each generation of warriors against the enemy or the storm. Here the traditions of one age blended gradually with the experience of the
[pg 278] next; stories of Shovel were passed on to those who fought under Hawke; the conqueror with Rodney lived to welcome the heroes of Trafalgar—not as bedridden or imbecile men, though they might be somewhat shattered—but still able to enjoy life, and to give the vividness of reality to the narratives of the past. All phases of naval service were represented. One of the 'saucy *Arethusa's*' smoked his pipe with an old *Agamemnon*, and men who had first smelt powder on the Canadian lakes listened reverently to the recollections of those who had seen *L'Orient* explode in thunder at the Nile. Greenwich Hospital will always be a great and useful institution—a mighty boon, whether to the sick nursed within or to the poor pensioned without its walls."

Before leaving Greenwich we must certainly pay a visit to the Observatory, a building which has such intimate relations with the sea. The account which follows is that of M. Esquiros,[82] who particularly studied all our institutions connected with maritime interests:—

"I entered," says he, "a well-lighted apartment, the walls of which were covered with charts, engravings, photographic portraits of the moon, and Donati's famous comet of 1858. Mr. [now Sir George] Airy, the Astronomer Royal, is a man who has grown grey in the study of the stars; his energetic features indicate the incessant activity of the strong intellect which for more than a quarter of a century has upheld the reputation of Greenwich Observatory. On his writing-table were heaped a quantity of papers covered with calculations, and a maze of letters as to a thousand matters of business. A large iron cupboard contains all the precious documents which will, no doubt, one day serve to trace out the scientific history of the nineteenth century. Here, for instance, are preserved the letters and authentic documents which are destined to modify certain received opinions as to the discovery of the planet Neptune. In this cupboard may also be found the records of bygone errors and chimerical ideas, which one wonders to find reappearing in this enlightened age.

"It is difficult to believe that many amongst the English still confound astronomy with judicial astrology; but Mr. Airy preserves a very curious collection—letters that he has received from all classes of persons, asking what his terms are for *drawing a horoscope*. Sometimes it is a young man wishing to know 'who will be his wife;' at others it is a lady, on the eve of embarking in the great business of life, who desires to consult the stars. Postage-stamps are occasionally sent with these missives, and he or she who consults the oracle promises to make known, if necessary, the true day and hour of their birth. The fact is, that a great many people can scarcely understand how the astronomers can contemplate the vault of heaven by day and night without endeavouring to trace out the secret of human destiny. Some years back a young lady dressed in good taste applied at the door of the Observatory; she felt interested in one of her near relations, a sailor in the Pacific Ocean, from whom no news had been received for several years. After she had had a few minutes' conversation with one of the assistants, she went away bathed in tears, because the stars were not able to tell her if the object of her affections were still alive."

On the ground that Greenwich Park now occupies there once stood an ancient tower, built about the year 1440, by Humphrey Duke of Gloucester, and uncle to King Henry VI. In the time of
[pg 279] Elizabeth it was called *Mirefleur*. In 1642 the name of Greenwich Castle was given to it. Sir James Moore and Sir Christopher Wren pointed out the site of this fortress to Charles II. as the best place for the construction of an observatory. The old feudal tower was therefore pulled down, and over its remains was raised an edifice dedicated to the contemplation of the stars.

"The building was scarcely finished ere Flamsteed was installed in it, with the title of Astronomer Royal, and an emolument of £100 a year. He presided over the new establishment for more than half a century, and spent more than £2,000 of his own money. His works will always be looked upon in England as the starting point of modern astronomy. He may be deemed the founder of Greenwich observatory. His successors were Halley, Bradley, Nathaniel Bliss, and Dr. Nevil Maskelyn, the author of four volumes, of which it is said by Delampre, 'that if, in consequence of some great revolution every record of science had been lost, with the exception of this collection, in it would be found materials quite sufficient for building up again the science of modern astronomy.' Maskelyn was followed by John Pond, who died in 1835; his place is now supplied by Mr. Airy.

"The Astronomer Royal is nominated by the First Lord of the Treasury, and performs his functions under the warrant of the great seal of state; his salary is fixed at £800 per annum. One of his principal duties is to preserve for Greenwich observatory that character which the founder himself wished to impress upon it. The Astronomer Royal is therefore bound by the express terms of his commission, 'to devote himself with the greatest care to correcting the tables of the celestial movements, and to determine the positions of the fixed stars, in order to furnish the long-desired means of discovering the longitude at sea, and of thus bringing to perfection the art of navigation.' It is also necessary that he should reside in the observatory, and devote all his time to the duties of his office, never absenting himself for any long period without having previously obtained the sanction of the Lords of the Admiralty.

"Consulted as he is by various branches of the Government, he is able to render assistance to the public service by his advice and information, well assured that he himself can never be affected by any of the changes in official power, or by any of the results of political conflict. His residence

has a garden attached to it, which is parted off from the grounds of the park, and well planted with fruit-trees. He has under his control eight assistants, and ordinarily six computers.

“It is curious to see these computers in their two offices, one situated on the ground floor near the study of the Astronomer Royal, and the other isolated in one of the quietest parts of the observatory, all sedately occupied in reckoning up, from morning to night, dull columns of figures.

“Before describing what Greenwich observatory *is*, it would be better perhaps to state first what it is *not*. It relinquishes to other inquirers the task of discovering spots in the sun and mountains in the moon. The observations of the assistants are not directed either to the figures of the planets or to the extraordinary movements of the double stars, revolving one round the other in the depths of the firmament, or the mysteries of the nebulæ. What a firmness of character, what a truly English strength of will have these observers shown, in voluntarily drawing a veil over some of the most splendid wonders of the heavens! At the time of John Pond, a telescope twenty
[pg 280] feet in length had been erected in the establishment at great expense, but as it was a strong attraction to visitors, he caused the instrument to be dismantled. About the year 1847 Mr. Lerebours offered to Greenwich observatory the largest refracting telescope which had ever been constructed. The temptation was certainly a great one; it would have been flattering to the self-esteem of the institution to have possessed a wonder of this sort, unique as it was in the world. Mr. Airy need only to have said the word, and the Lords of the Admiralty would assuredly have made the purchase. But the Astronomer, on the contrary, held the present aloof with a determined hand. What was it that he feared? The perfidious influence of such a siren, which, by concentrating attention on the beauties of the heavens, would perhaps have turned away the attention of the assistants from their daily task, and have compromised the success of the Observatory.

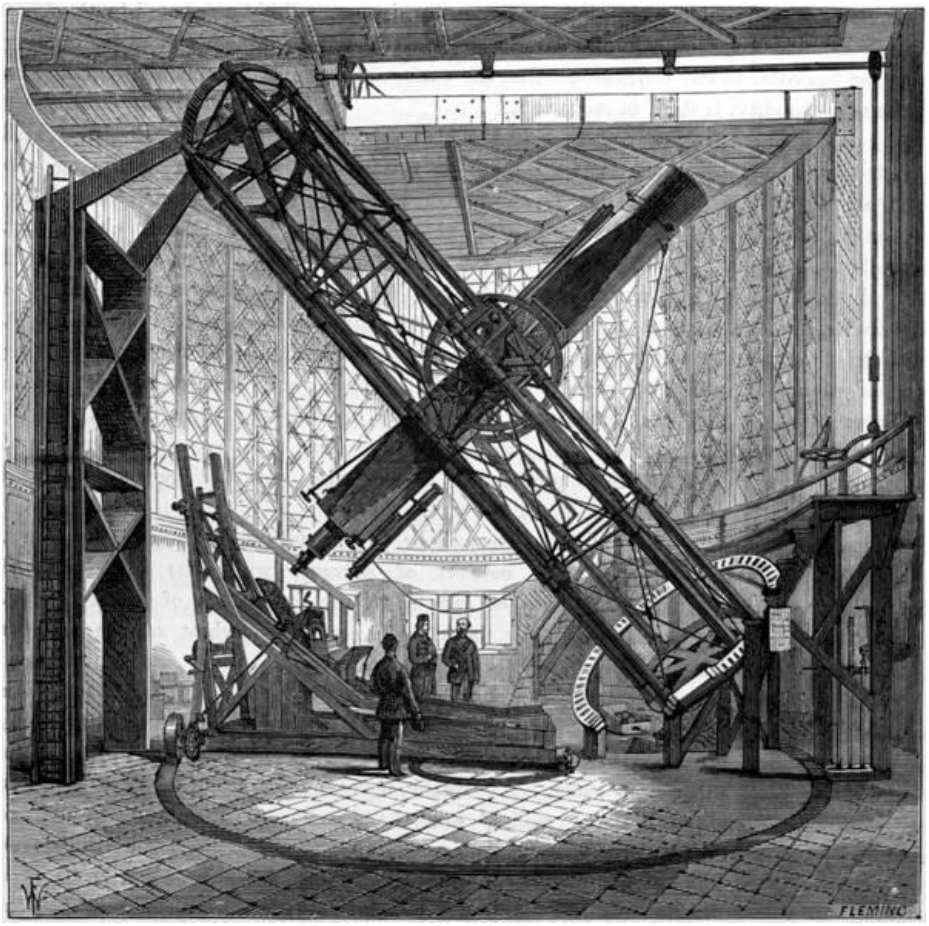
“An observation of the sun takes place at least once a week at mid-day, in the transit circle room, and a large portion of the staff of the establishment take a part in it; but it is at night that one can form the best idea of the mode in which the transit of the heavenly bodies over the meridian is duly verified.

“The first observations made with the new transit circle date from 1851, and, from that time to the present they have never been discontinued. The assistant who is appointed, aided by this instrument to watch the state of the heavens, is on guard for twenty-four hours, *i.e.*, from three in the morning until three a.m. the next day. Except under extraordinary circumstances, the same duties are never assigned to an assistant two days running. Having already worked some hours after sunset, he goes home to take his evening meal, and when he returns into the transit circle room it is quite night. The shutters, which, during the day shut in a part of the ceiling, are now unclosed, and by means of this aperture the whole sky seems thrown open to the room.

“Having consulted his list, and adjusted his telescope, he commences his steady gaze. His intentness can only be compared to that of a sportsman, or still better to that of a pointer dog, only, instead of a partridge or a woodcock, he is eagerly waiting to see a star get up. There it is at last! It comes into view quick and sudden as a meteor. Scarcely has it entered into the telegraphic field of sight than it appears to approach rapidly some objects which look like a series of transverse iron bars placed at equal distances from each other. These, however, in reality, are nothing but threads of the thickness of a spider’s web, stretched according to a system in the interior of the telescope, and wonderfully magnified by the power of the lenses.

“The assistants are all astronomers by profession, and their eyes have been well trained by continual practice. How, then, can it happen, that their observations do not always prove accordant one with another? There is a physiological mystery hidden in the fact which it would be interesting to penetrate. Each observer, although operating with the same instrument and guided by the same plan, perceives a celestial phenomenon—as, for instance, the transit of a star—either sooner or later than another does. This variation is attributed to the idiosyncrasy of the sense of sight in each individual, or to the more or less prompt manner in which the eye telegraphs its impression to the brain. It must, of course, be quite understood that no considerable inequalities of time are in question here; it is, at the most, some fraction of a second that I am alluding to; but the astronomical transit observations are of so delicate a nature, that the slightest errors would destroy their worth. Under these circumstances it has been found necessary to establish an
[pg 281] average or standard, and each observer gets to know precisely how far his visual faculties vary from the ideal. Hence arises a question, incomprehensible to the uninitiated, which, however, is commonly asked among astronomers themselves—‘What is the value of your personal equation?’ This inquiry is answered by a figure expressing the particular amount of deviation from the standard. The most singular thing is, that the value of the personal equation is different in the same individual as regards the various celestial bodies. Some can very quickly discern the phenomena of a fixed star who are much slower in perceiving those of the moon, and *vice versâ*. In order to obviate the inconvenience which might result from the variations in personal equations, they also have recourse to a very ingenious plan. An eye-piece with two tubes allows two assistants simultaneously to observe the passage of the same star over the same threads in
[pg 282] the instrument; they both listen to the ticking of the clock marking the seconds, and separately calculate the results of their observations, which are afterwards compared. To obtain a greater degree of certitude, they occasionally exchange places. In this way the slightest chances of error are eliminated. The aberrations of the instrument must also be taken into account. Notwithstanding its excellence and the solidity with which it is fixed to stone walls sunk into the

ground, it sometimes is affected by slight vibrations, which can only be attributed to the *terra firma* on which it is constructed. Mr. Airy has noticed this same phenomenon at Cambridge, whence he has come to the conclusion 'that the surface of the earth, commonly regarded as the base of all solidity, is itself in movement.'



THE GREAT EQUATORIAL TELESCOPE IN THE DOME, GREENWICH OBSERVATORY.

" 'I am going to show you the clock which sets the time for all England,' said the Astronomer Royal to me, as he conducted me into a little room occupying one of the oldest parts of the edifice. Covered with its simple mahogany case, this *Mother clock*, as it is called, is not unlike one of those venerable wooden-cased clocks that one meets with sometimes in the old English manor-houses. No one, however, could fail to discover that the mechanism in this time-keeper is new and uncommon. Its chief characteristic is that it possesses two distinct attributes. In the first place it marks the time most exactly; and, in the next, it communicates this power to other clocks as well. It has therefore been called the *Mother clock*, because it animates in the Observatory eight of its *daughters*. Its dial is divided into three circles, one of which marks the hours, another the minutes, and a third the seconds. One hand only moves round each of these dials, and thus points out the generally-accepted measures of time.

"The Observatory transmits signals every hour to the telegraph-office in Lothbury, in the City of London, whence, by a network of galvanic wires, the knowledge of the true time is spread along the lines of railway to the extremities of Great Britain. This vast Æolian harp covers thus with its chords nearly the whole surface of the British Isles, and vibrates in unison with one prime mover.

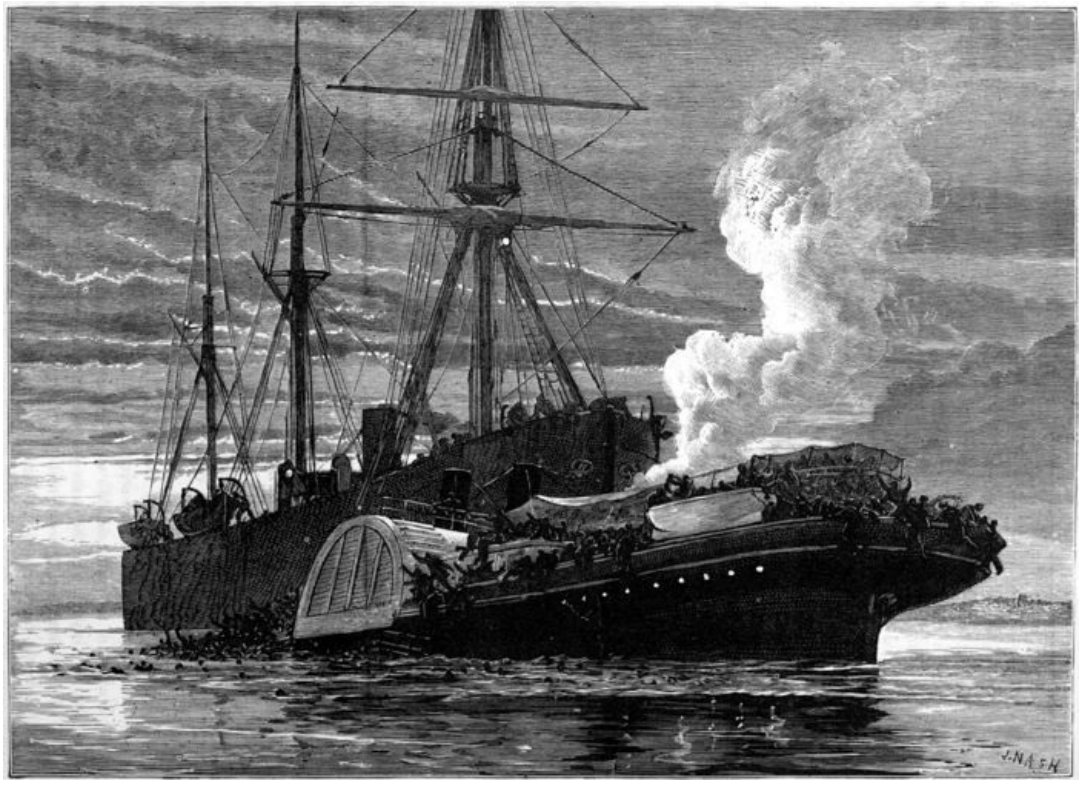
"As regards the true time, these telegraphic wires have a double mission. The current leaving Greenwich transmits the signal given by the clock at the Observatory, and what is called a return current then communicates the errors of the other clock on which the *Mother* has just acted. 'I would never undertake to regulate a clock from which I did not get regular replies,' said the Astronomer Royal; and just as we were passing in front of a galvanic apparatus, 'Stop!' he added, 'the great clock at Westminster is at this very moment giving me an account of itself; it goes well, and is only the twentieth part of a second slow. Twice a day in this way it keeps me informed of the state of its health.' "

Below Greenwich one of the saddest catastrophes of the century occurred in 1879, one which has its lessons for all who voyage. We refer to the loss of the *Princess Alice*. A pleasure steamer, one of the largest and best known of the London Steam-packet Company, with some 700 happy merrymakers, a large proportion of whom were children, left London Bridge on Tuesday morning, September 3rd, 1878, for Gravesend and Sheerness, and everything, even the temper of our

[pg 283] uncertain climate, combined to make the day one of real and innocent pleasure. How true is it that danger is never so near as when we deem it farthest off. It was eight o'clock in the evening when the *Princess Alice* hove in sight off Woolwich Arsenal, with her living freight of gladsome excursionists. The song that comes when toil ceases, the careless laugh and harmless jest were going round; eager eyes watched the dim lights of home glinting through the purple September twilight, and no whispered thought of peril dulled the harmony of the day, when a large steam collier, the *Bywell Castle*, loomed darkly in the gloom.

Those who feared the least and knew the most from experience were the first to see the danger—the danger that, in the time, no human skill or ingenuity could avert. The *Princess Alice*, steaming on at good speed, had attained an impetus, and, together with the adverse tide and confined space, defeated the ready efforts of the commanders of both vessels, and the collision came. There was no time to think—no time to act; there was a fearful cracking and tearing, during which it seemed that the *Bywell Castle* would walk right through the ill-fated pleasure-boat, and in that dread and awe-inspiring moment the startled eye saw its fate, and the happy heart was stilled in horror. Only five minutes from the time the vessels struck, and all that was then the *Princess Alice* lay cradled in the mud at the bottom of the Thames.

Save for the few who clambered on to the *Bywell Castle*, and the proportionately fewer who could swim ashore, the entire human freight was hurled into the black and fœtid river, or carried down in the cabins and saloon of the submerged sepulchre. How terribly was this proved when the wreck was raised! The unfortunate passengers were found packed together at the foot of the companion ladders with no time to move hand or foot, with no air to breathe, stifled where they stood.



COLLISION OF THE *BYWELL CASTLE* AND THE *PRINCESS ALICE*.

Collisions amongst iron ships have been so painfully frequent of late years that it is impossible to conjecture what may be the result of this wholesale loss of life in the future. It is doubtful, however, whether any previous accident ever equalled in its harrowing results the loss of the *Princess Alice*. Excepting the fatal accident to the *Grosser Kurfürst*, the running down of the *Northfleet* off Dungeness by the Spanish steamer *Murillo*, comes next in horror to the cutting in two of the *Princess Alice*. This terrible affair, and the heartless conduct of the commander of the Spanish steamer, will make the night of the 22nd of January, 1873, ever memorable in the dark annals of the sea; 293 persons went down with the ill-fated passenger ship. A sad case was that of the *Lady Elgin*, run into by a schooner on Lake Michigan on September 8th, 1860. The *Lady Elgin* was an excursion steamer with 400 souls on board; she sank within fifteen minutes of the collision and with the loss of 287 people. Then, again, in 1854, in this fatal month of September, on the 27th, the *Arctic*, a ship of the Collins line, came into collision with the screw steamer *Vesta* in a fog. This time the scene of the tragic disaster was the coast of Newfoundland; out of a list of 368 all told, 323 were lost, among whom were the Duc de Grammont and the Duc de Guynes. In the same year we have to record the loss of the *City of Glasgow* with 480 persons on board; and the *Lady Nugent*, a British transport, which carried reinforcements for the army at Rangoon; the total loss in this case was 400. Neither of these ships was ever heard of after
[pg 285] leaving port; a fate as terrible and mysterious as that which befell the *City of Boston* and the *Pacific*, the former of which left Liverpool on the 23rd of January, 1856, with 186; while the *City*

of Boston had 191 persons on board when she sailed from Halifax, N.S., on January 26, 1870. Who amongst the living does not remember that black-letter day when news arrived in England of the capsizing of the *Captain* off Cape Finisterre on September 7, 1870, with Captain Burgoyne and a complement of 500 all told, which remains the greatest calamity that has yet befallen the British Navy.

The army, however, suffered a loss nearly as appalling in the foundering of the *Birkenhead* off the Cape of Good Hope, where a contingent, made up from the 12th Lancers, 23rd and 92nd Foot, helped to make up the 438 lives destroyed on that occasion, February 26, 1852. Nor were the greatest horrors entirely occasioned by the unruly elements and the sometimes pitiless sea, for added to these ever-impending dangers was the incombatable enemy—fire. The most heart-rending on record of these marine conflagrations was that which destroyed the S.S. *Austria* on its way from Hamburg to New York, U.S., on September 23, 1858. By this fire, out of 528 passengers and crew, 461 were either burnt to death or drowned; how many met the more horrible death of burning can never be known, nor is it well for the mind to dwell upon the painful subject. Going back a little farther we find the record of the burning of the *Ocean Monarch* in Abergele Bay, August 24, 1848, with loss of 178 lives. Then we have the S.S. *London*, which went down in the Bay of Biscay on January 11, 1866, carrying down with her to a watery grave 239 out of a complement of 258. The wrecks of the *Atlantic* and the *Royal Charter* are conspicuous in the black list: the latter, an Australian clipper ship, was smashed to pieces on the coast of Anglesea on October 26, 1859, when, while some forty people or so managed to get on shore, 459 of men, women, and children, were added to the ocean sepulchre. The *Atlantic*, of the White Star Line, struck on a sunken rock off Nova Scotia, April 1, 1873, and 481 out of 931 were lost. The *Annie Jane*, of Liverpool, swells the death-roll by 393, by being driven on shore at Barra Island, one of the Hebrides, on September 29, 1853; while the *Pomona*, another emigrant ship, through carelessness in the reckoning, went ashore on the Wexford coast on April 28, 1859, losing 386 lives. And this sad list only represents the more prominent cases which occurred during thirty years.

Although the chief outward and visible sign of usefulness of the Seamen’s Hospital Society exists no longer on the Thames, many of our readers knew the old *Dreadnought* well. She was the largest floating hospital in the world, and no other ship housed so cosmopolitan a crew as could be found among her 200 patients. Dysentery, scurvy, hepatic diseases in most varieties, and typhoid, were among the medical specialities to be seen on board, and it is probable that Budd gained much of his experience of enteric fever from this ship, which received annually from sixty to seventy cases of the disease. The surgical practice was equally useful, and we believe that the first resection (that of the shoulder) in London was performed by Busk on the *Dreadnought*. A large number of men, now teaching in our schools, gleaned useful knowledge here, and (an important matter in surgery) learnt how to do little things well. Although in maintaining a necessary and constant communication with the shore, there were the usual perils of water, including a strong current, a crowded stream, ice, &c., no person engaged directly or indirectly
[pg 286] in the business of the ship was ever drowned during the half century that she and her predecessors were moored off Greenwich. The late Dr. Rooke, one of the ablest and kindest of the *Dreadnought’s* officers, nobly earned the Humane Society’s medal by saving a boy who fell off a barge close at hand; three patients jumped overboard at different times, in a state of delirium, but all were rescued and recovered. There were convivial gatherings now and again in the snug recess of the admiral’s cabin, used as a mess room by the medical staff. The *Dreadnought* suffered many blows from without, and was run into seriously on several occasions. But the old ship stood it all, and was missed by the bargemen, who made a cushion of her wherewith to cannon off to the opposite shore. There can be no doubt that the managing committee of the Seamen’s Hospital Society acted wisely in removing their clients to a home on shore, so that we need not say altogether regretfully, although truly, “Take her all in all, we shall not look upon her like again.”

Of all the hospitals there is none so interesting as a sailor’s, and that at Greenwich, which represents the old *Dreadnought* floating hospital, is particularly so. It is here Jack ashore is seen at his best, and his best is very good indeed as a general thing, especially when all the good qualities are developed as they are when he settles down to enjoy the autumn calm of his life, which generally begins in the hospital. Not only are there seamen from every clime, and every creed, too, here, but one ward is occupied by a few old naval pensioners. In this ward the first thing that attracts the eye, and is placed prominently over the fire-place, is Dibdin’s simple legend of the “Sweet little cherub that sits up aloft.” Every inmate of this ward could tell his interesting yarn of personal experiences of the Battle and the Breeze. One old fellow is both blind and deaf, and still happy and contented under the sympathetic care of an ancient cherub, who has sailed through three-quarters of a century of life’s uncertain tide. Why the blind tar should be called “the nightingale” has not been clearly stated, though the fact remains the same, and may possibly refer to great vocal powers. His messmate has been through enough battles to fill a volume; while another, an octogenarian marine, speaks with pride of the part he took in the *Chesapeake* affair, which was beaten and captured *thirteen minutes* after the first gun was fired by the weather-beaten *Shannon*.

“You see,” he is wont to say, as he straightens himself, “by my military cut that I’m not a regular

tar, though I've been in as many cutting-out parties as any a'most, and had the grape and canister pelting round me like hailstones, pretty nigh as often as I remembers feeling real hailstones. But I remembers best when the king—God bless him!—sent out thirty barrels of porter, that me and the rest of us might drink his majesty's health in; that was in the time of the war with Ameriky, and good times they was too," a little bit of individual opinion that no one would dream of controverting here. Next come we to another pensioner, who sits over the fire hugging his feeble knees, and who is just in the last year of his ninth decade. *He* tells you of the part he took in 1805, in the capture of two French frigates, and some of the latent fire returns as he speaks of it; for it was a fight that lasted three days and nights before victory was fairly ours.

Take the wards *en masse*, and we see peering out of the medley the delicate sallow skin and long black hair of the Greek, who is estimated by every British commander at seventy-five per cent. below the English tar in hauling power and endurance, while the South Sea Islander, the
[pg 287] Scandinavian, the dusky Turk, Danes, Swedes, and Norwegians, Spaniards, Americans, Chinamen, are here side by side with the hardy sons of our own isles. In one corridor there is even a Fantee, with the mark of his tribe upon his ebon-hued forehead, but minus feet, having lost them through their being frost-bitten in the Black Sea. Another and more painful case is that of a poor fellow wrecked off Cape Horn, who, drifting for fourteen days in an open boat, reached shore only to find that he must purchase life at the cost of both nether limbs. The surgical operator was an unskilled sailor, the instrument a rough ship's knife, with which he succeeded in performing successfully the dangerous operation, but with what torture to the sufferer can too vividly be imagined. He is cheerful enough now as he potters about on his stumps, full of dry humour and as cheerful as any able-bodied man could be. The light occupations of these disabled sons of the sea are varied and congenial to their different tastes, and their labour is chiefly confined to decorating the wards of the hospital. Amongst the many inscriptions are a beautiful white wreath with "Albert the Good" on it, and Nelson's famous last signal. One German sailor lad has entirely decorated one ward with a taste and elegance simply surprising. This boy is an original, seeing that he went all the way to Jerusalem to learn English! "In Hamburg, his native place, he heard other boys, and occasionally travellers, say that there was a good school there where English was taught. Thereupon, seizing his opportunity, he worked his passage from Hamburg to Alexandria, took ship to Jaffa, and induced the German Consul to forward him to the Holy City." Evidently he did not think there was anything remarkable in this singular method of acquiring our language![83]

The Thames Church Mission is a society established to minister to the spiritual necessities of the vast fluctuating population of the Thames, consisting of seamen, bargemen, steamboat-men, fishermen, &c. Services are held on board troop, emigrant, and passenger ships, screw colliers, and every description of vessels; also in the mission and reading-room which has been opened for seamen, &c., by the bank of the river at Bugsby, near East Greenwich. Bibles, Testaments, and Prayer-books are sold at reduced prices, and tracts distributed. A chaplain (licensed by the Bishop of London to visit ministerially and officiate on board all ships and vessels on the Thames), four missionaries, and five seamen colporteurs, constitute the missionary staff. The Mission undertakes the sale of Scriptures to English and foreign seamen, and gives Testaments to emigrants on behalf of the British and Foreign Bible Society; it places on board emigrant ships packets of tracts, and distributes the cards and circulars of the Sailor's Home among seamen arriving in the Thames. The field of operation extends from London Bridge to the anchorages below Gravesend. The chaplain also holds Sabbath services on board the training ships *Arethusa*, *Chichester*, and *Cornwall*, and has weekly classes with the boys; and the missionaries act as honorary agents for enrolling members of the Shipwrecked Mariners' Society. There are many other excellent institutions for the seamen's benefit, from London city to Gravesend town, but which cannot be described with the space at our command.

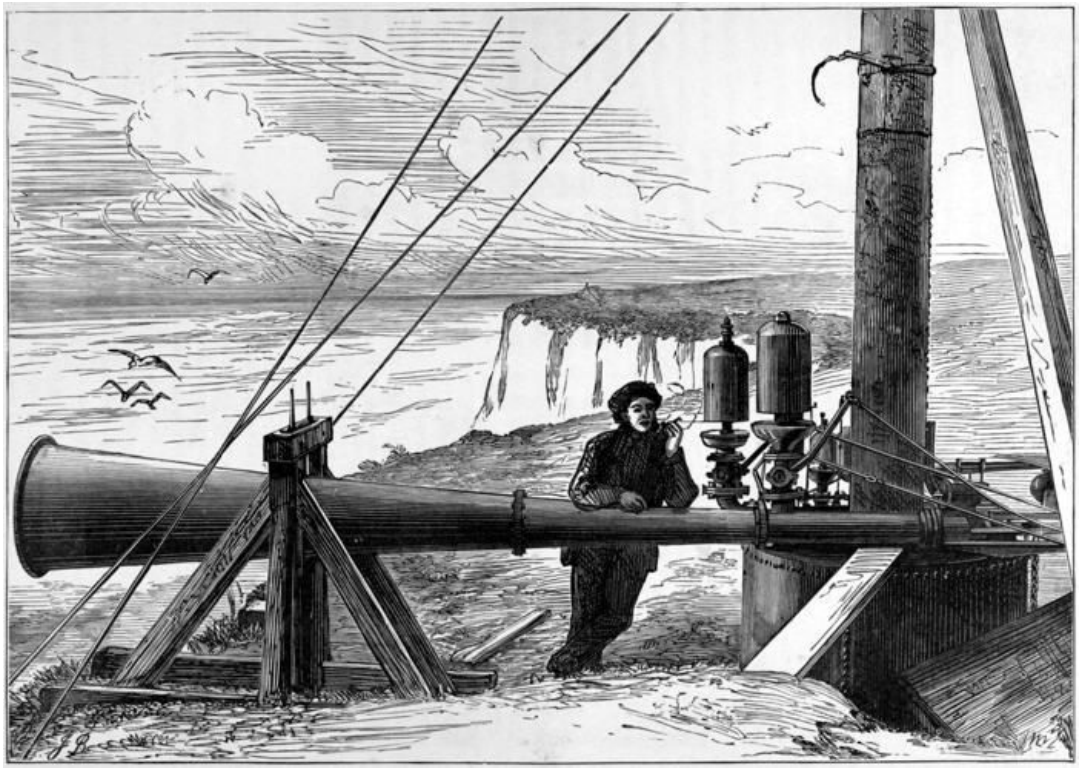
Every reader knows the Trinity House, but he may not be aware of its value to the seaman, the voyager, and the interests of commerce. The Trinity House, as it stands on Tower Hill, was built towards the end of the last century by Samuel Wyatt. It is of the Ionic order, and has some busts
[pg 288] of naval heroes, whose deeds, like themselves, are of the past. Amongst its many interesting pictures is a very large Gainsborough, representing the Trinity Board of that day. This picture, by the way, is upwards of twenty feet in length, and, if merit go by measurement, is necessarily a very great picture. The Board of Trinity House has control of the beaconage and pilotage of the United Kingdom. The Corporation existed fully one hundred years before its original charter, which was granted in 1514, and was at that early date known simply as the "Shipmen and Mariners of England"—a voluntary and influential association of some standing, and at that time protected maritime interests and gave substantial relief to the aged and indigent of the seafaring community.

TRINITY HOUSE, LONDON.

Henry VIII. was the first king who granted it a Royal Charter, in 1514, in recognition of its well-tried merit. In this charter it is described as the “Guild or Fraternity of the most glorious and undividable Trinity of St. Clement.” The Charter of James I. and all subsequent charters are granted to “The Master, Wardens, and Assistants of the Guild, Fraternity, or Brotherhood of the most glorious and undivided Trinity of St. Clement, in the parish of Deptford, in the county of Kent.” The motto of the Corporation is *Trinitas in unitate*. The Elder Brethren of Trinity House are not always exempt from undertaking stern and unpleasant duties afloat, as was instanced in that terrible time of trial—the mutiny of the Nore, in 1799, when they destroyed or removed
[pg 289] every beacon and buoy that could guide the mutinous fleet out to sea. Its culminating recognition was by an Act of Parliament in 1836. The honorary members of this Court are men of distinction, including some of the members of the Royal Family. H.R.H. the Duke of Edinburgh became its Master in 1866. The duties of the Corporation are described in their charter as follows:—

“To treat and conclude upon all and singular articles anywise concerning the science or art of marines; to maintain in perfect working order all the lighthouses, floating-lights, and fog-signal stations on the coast of England, and to lay down, maintain, renew, and modify all the buoys, beacons, and sea-signals; to regulate the supply of stores, the appointment of keepers, and constantly to inspect the stations; to examine and license pilots for a large portion of our coasts, and to investigate generally into all matters of pilotage; to act as nautical advisers with the judge of the High Court of Admiralty: to survey and inspect the channels of the Thames and the shoals of the North Sea, and other points of the coast at which shifting, scouring, growth, or waste of sand may affect the navigation, and require to be watched and notified; to supply shipping in the Thames with ballast. The Elder Brethren have also to perform the duty of accompanying the Sovereign on sea voyages.”

The light-vessels of the Corporation are nearly fifty in number, while there are more than eighty lighthouses. The buoys on our coasts must not be omitted. The number in position can scarcely be approximated, while in addition—in case of casualties—there must be kept in reserve fully one-half the number in position. There are also some sixty odd beacons of different kinds. The working staff of the Trinity House is composed of district superintendents, buoy-keepers, store-keepers, local agents, lighthouse-keepers, crews of floating-lights, watchmen, fog-signal attendants,[84] crews of steam and sailing vessels, altogether making a total of nearly a thousand men.



THE SIREN FOG-HORN, FOR WARNING SHIPS OFF THE COAST.

In 1837 the Duke of Wellington was Master of the Trinity House; in 1852 Prince Albert held that office, and Viscount Palmerston in 1862. Then came (1866), as already mentioned, the Duke of Edinburgh, while the Prince of Wales headed the list of a long roll of Brethren, to say nothing of the numerous dukes and earls who have gladly accepted the same honour. The Trinity House Corporation has successfully withstood several most searching Parliamentary investigations, only to come out with triumphantly flying colours, which added to the confidence generally reposed in it.

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CHAPTER XXVI.

What Poets have Sung of the Sea, the Sailor, and the Ship.

The Poet of the Sea still Wanting—Biblical Allusions—The Classical Writers—Want of True Sympathy with the Subject—Virgil's "Æneid"—His Stage Storms—The Immortal Bard—His Intimate Acquaintance with the Sea and the Sailor—The Golden Days of Maritime Enterprise—The *Tempest*—Miranda's Compassion—Pranks of the "Airy Spirit"—The *Merchant of Venice*—Piracy in Shakespeare's Days—A Birth at Sea—*Cymbeline*: the Queen's Description of our Isle—Byron's "Ocean"—Falconer's "Shipwreck"—His Technical Knowledge—The "True Ring"—The Dibdins—"Tom Bowling"—"The Boatmen of the Downs"—Three Touching Poems—Mrs. Hemans, Longfellow, and Kingsley—Browning's "Hervé Riel"—The True Breton Pilot—A New Departure—Hood's "Demon Ship"—Popular Songs of the Day—Conclusion.

"I love the sea; she is my fellow-creature,
My careful purveyor—she provides me store;
She walls me round, she makes my diet greater,
She wafts me treasures from a foreign shore."[85]

The sea, the sailor, and the ship, have been fertile subjects for the poets, although countries and lands, and those who dwell therein, have occupied by far the larger part of their attention. Sooth to say, however, there has not yet arisen a single *great* writer whose name could fairly be identified with the ocean as its own particular poet. There may be reasons for this. The poet is usually of delicate organisation, and is more likely to be found studying Nature on the quiet shore than on the turbulent ocean. Maybe he is practically a recluse, accessible to a few only; and if of social nature, and not averse to companionship amid the busy haunts of men, he yet shrinks from the roughness usual to, though not inseparable from, the men of the sea. The modern facilities of travel, enabling the student to con Nature with comparative ease, may some day aid in producing a representative poet of the sea. At present the position is vacant.

In days of old, however, the poet prophets, David the sweet singer of Israel, and one or two writers in the New Testament, gave glimpses of the ocean which indicated an acquaintance with the subject. Nothing can well be finer than the Psalmist's conception of the mariner's life and its dangers in the lines commencing:—

"They that go down to the sea in ships, that do business in great waters;

"These see the works of the Lord, and his wonders in the deep."

The prophet Jeremiah draws a beautiful though pathetic picture of the ocean's unrest when he says: "There is sorrow on the sea, it cannot be quiet;" and the serious poets have followed his outlines. Milton describes one—

"In a troubled sea of passion tossed."

Michelet defines its "many voices," its murmur and its menace, its thunder and its roar, its wail, its sigh, its "sublime duets with the rocks."

[pg 291] The classical writers of antiquity had little sympathy with the sea. We have seen Horace's opinion of that man's boldness who first trusted himself in a frail vessel on the merciless ocean; and, as Dryden shows us, there was good reason for a general dread of the sea, at least on the part of landsmen—

"Rude as their ships was navigation then,
No useful compass or meridian known;
Coasting, they kept the land within their ken,
And knew no north but when the pole-star shone."

Virgil's "Æneid" is essentially a sea-poem, yet a writer of critical acumen considers that "in literature the sea is all the worse for Virgil having dealt with it.... The poem, as nobody needs telling, begins its events with a tremendous sea-piece. In the very first sight we get of the hero and his companions they are dividing the foaming brine with their keels, and the initial incident is a shipwreck. The description assuredly has overwhelming vigour in it...; an impression of unusual turmoil is given, and that is what Virgil sought, but it is got by a jumble of violence of every kind. Winds, billows, lightning, thunder, reefs, shallows, eddies, are mixed together. The only detail of disaster left out is collision among the ships, which with a fleet so crowded is the one thing that would have occurred had this been a natural storm. Such a tempest now rages in a transpontine theatre, and in no other part of the world; it takes Neptune himself to still it in the 'Æneid.' "[86] And yet Virgil lived long by the glorious Bay of Naples; and the famous ode of Horace, praying that he might have fair weather, shows that he had made at least one voyage.

If a poet has a genuine feeling for his subject, the lightest epithets he applies may tell a story. What terms does Virgil employ? They are somewhat commonplace. Boundless, mighty, swelling, windy, faithless, deep, dark, blue, azure, vast, foaming, salt, and so forth, are well enough, but they do not compare with many of Shakespeare's, and later poets. Take three of Shakespeare's: the "yeasty" waves, the "multitudinous" sea, and the "wasteful" ocean. These epithets are in themselves admirable descriptions.

The works of our immortal bard are full of allusions to the sea, and show an intimate acquaintance therewith. Perhaps Shakespeare's knowledge is in this instance less surprising than in some other directions, for although we have no proof that he ever left the shores of old England, and are quite certain that he never ventured far, his was a golden day in the history of maritime enterprise. The reign of the Virgin Queen, during the larger part of which he flourished, saw the defeat of the Armada, and many another repulse in the Spanish colonies. It was the day of such naval heroes as Howard of Effingham, Drake and Hawkins, Raleigh and Frobisher. It witnessed the first English voyage round the world, the discovery of Virginia—to say nothing of Virginia's tobacco and potatoes—the establishment of the profitable whale fishery and the disgraceful slave-trade, the inauguration of that long-time monopoly the East India Company, and numerous lesser developments in commercial prosperity.

Appropriately, then, the play of Shakespeare which more particularly than any other deals with
[pg 292] the sea is that which is generally placed at the commencement of the series in the published editions. The *Tempest* opens with a storm "on a ship at sea." The fury of the gale increases, and the vessel is nearly on the rocks. "We split! we split! we split!" sings out the honest old Neapolitan councillor, Gonzalo, adding—

"Now would I give a thousand furlongs of sea for an acre of barren ground,
Long heath, brown furze, anything. The wills above be done! but I
Would fain die a dry death."

THE STORM.

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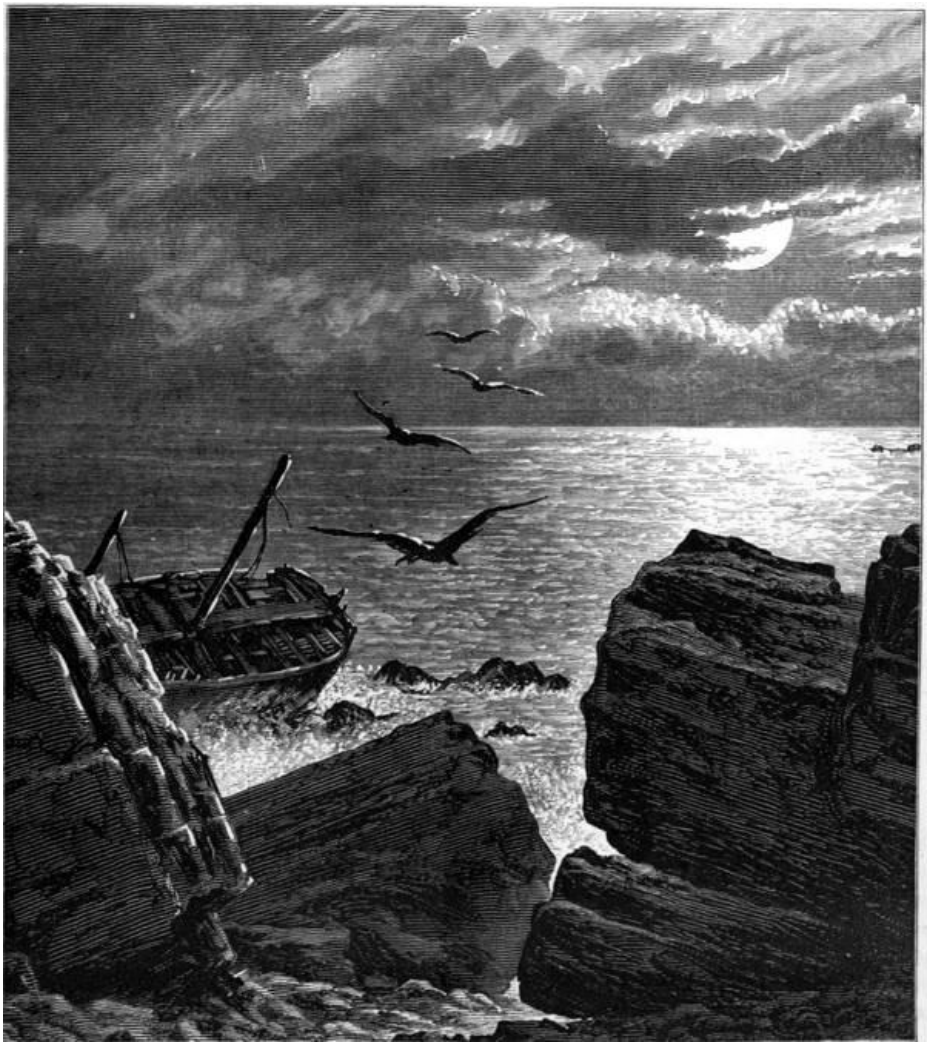

But neither he nor his master the king suffers death by shipwreck, for amiable and tender-hearted Miranda intercedes with her father. Prospero reassures her, though Ariel, it will be remembered, had been playing many a prank on the unsuspecting mariners, and with lightning and thunder-claps and "sulphurous roaring," had fairly frightened them out of their wits. All but the mariners had "plunged in the foaming brine and quitted the vessel":—

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"The king's son have I landed by himself,
Whom I left cooling of the air with sighs,
In an odd angle of the isle,"

Sings the "airy spirit," adding, however—

"Safely in harbour
Is the king's ship in the deep nook; where once
Thou call'st me up at midnight, to fetch dew
From the still vexed Bermoothes,[87] there she's hid:
The mariners all under hatches stowed."

And so with the kindly spirit and the rightful Duke we may leave the tempest-tossed mariners.

In the *Merchant of Venice* we have admirable illustrations of the troubles and anxieties of a merchant shipowner of the day. Antonio is sad. "Your mind," says Salarino, "is tossing on the ocean." Antonio's friends continue:—

"*Salanio.* Believe me, sir, had I such ventures forth,
The better part of my affections would
Be with my hopes abroad * * *

Salarino. My wind, cooling my breath,
Would blow me to an ague, when I thought
What harm a wind too great might do at sea.
I should not see the sandy hour-glass run,
But I should think of shallows and of flats;
And see my wealthy Andrew dock'd in sand,
Vailing her high-top lower than her ribs,
To kiss her burial. Should I go to church,
And see the holy edifice of stone,
And not bethink me straight of dangerous rocks,
Which, touching but my gentle vessel's side,
Would scatter all the spices on the stream;
Enrobe the roaring waters with my silks;
And, in a word, but even now worth this,
And now worth nothing?"

So Shylock, though ready to advance the three thousand ducats to Bassanio on Antonio's bond, doubts whether the ships bound to Tripolis, the Indies, Mexico, and England, may not come to grief. For "ships are but boards, sailors but men; there be land-rats and water-rats, land-thieves and water-thieves—I mean pirates; and then, there is the peril of waters, winds, and rocks." Soon after it was spread on the Rialto that Antonio had "a ship of rich lading wrecked on the narrow seas; the Goodwins, I think," says his friend, "they call the place; a very dangerous flat, and fatal, where the carcases of many a tall ship lie buried;" and this was followed by the news that not one of his vessels had escaped

"The dreadful touch
Of merchant-marring rocks."

All, however, ends happily, and the argosies, richly laden, arrive in safety.

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Piracy on the high seas in Shakespeare's days may be said to have been of two kinds: that which was practically legalised, for purposes of reprisal on foreign foes, and that which was for private and individual plunder. How prevalent it was may be gathered from the passages indicated below.[88]

In *Measure for Measure* we find the freebooter's calling satirised in the comparison: "like the sanctimonious pirate that went to sea with the Ten Commandments, but scraped one out of the table"—that one, of course, being, "Thou shalt not steal." Their reckless life is literally described by Richard Plantagenet in the Second Part of *King Henry VI.*, where he says—

"Pirates may make cheap pennyworths of their pillage,
And purchase friends, and give to courtezans,
Still revelling, like lords, till all be gone"—

while Suffolk dies by pirates later on. In the same historical play King Henry again describes his condition, harassed by the rebel Jack Cade and the troublesome Duke of York, as

"Like to a ship, that having 'scaped a tempest,
Is straightway calmed and boarded with a pirate."

Queen Margaret in *Richard III.* addresses three noble lords as

"Ye wrangling pirates, that fall out
In sharing that which you have pill'd[89] from me."

In *Pericles* Shakespeare introduces the not uncommon episode of a birth at sea, which occurs in a terrible gale, the mother apparently dying immediately afterwards, to be later cast into the sea in a chest, and revive when thrown upon the shore.

And for our last Shakespearian quotation, in *Cymbeline* we have a fine description of our own little island and its impregnability. "Remember," says the Queen—

"The natural bravery of your isle, which stands
As Neptune's park, ribbed and paled in
With rocks unscaleable and roaring waters;
With sands that will not bear your enemies' boats,
But suck them up to the topmast. A kind of conquest
Cæsar made here; but made not here his brag
Of *came*, and *saw*, and *overcame*: with shame
(The first that ever touched him), he was carried
From off our coast twice beaten; and his shipping
(Poor ignorant baubles!) on our terrible seas,
Like egg-shells moved upon their surges, cracked
As easily 'gainst our rocks; for joy whereof,
The famed Cassibelan, who was once at point
(O giglot[90] fortune!) to master Cæsar's sword,
Made Lud's town with rejoicing fires bright,
And Britons strut with courage."

[pg 296] Next to Shakespeare in intimate knowledge and power to portray, Byron must be placed. What can be grander than his well-known apostrophe to the Ocean?—

"Roll on, thou deep and dark blue ocean—roll!
Ten thousand fleets sweep over thee in vain;
Man marks the earth with ruin—his control
Stops with the shore;—upon the watery plain,
The wrecks are all thy deed, nor doth remain
A shadow of man's ravage, save his own,
When, for a moment, like a drop of rain,
[pg 297] He sinks into thy depths with bubbling groan,
Without a grave, unknelled, uncoffined, and unknown.
* * * * *
"Thy shores are empires, changed in all save thee—
Assyria, Greece, Rome, Carthage, what are they?
Thy waters washed them power while they were free,
And many a tyrant since; their shores obey
The stranger, slave, or savage; their decay
Has dried up realms to deserts:—not so thou;—
Unchangeable save to thy wild waves' play—
Time writes no wrinkle on thine azure brow—
Such as creation's dawn beheld, thou rollest now."

“HE SINKS INTO THY DEPTHS WITH BUBBLING GROAN,
WITHOUT A GRAVE, UNKNELLED, UNCOFFINED, AND UNKNOWN.”

The poet *par excellence* of the sea, partly on account of the literary merits of his production, but more by reason of his technical correctness, was William Falconer, the author of “The Shipwreck,” on the title pages of all the older editions of which he is described simply as “a sailor.” His poem, which is in three cantos, was founded on actual incidents in a shipwreck from which himself and but two or three of the crew were saved. Again, in 1769 he embarked on board the *Aurora* frigate on a venture to the East Indies, but from the time the ship left the Cape of Good Hope no information was ever received of her, and she is believed to have foundered with all hands, including the poet. Falconer, although a disciple of the Muse, wrote a political satire, entitled, “The Demagogue;” while his Marine Dictionary is, in its revised form, a recognised authority to-day. The poem on which his fame rests is remarkable for the absolute correctness of its details. Take, for example, the following passage, which could not have been written by a landsman-poet:—

[pg 298]

“A squall, deep lowering, blots the southern sky,
Before whose boisterous breath the waters fly.
Its weight the topsails can no more sustain—
Reef topsails, reef! the boatswain calls again!
The haliards and top-bow-lines soon are gone;
To clue-lines and reef-tackles next they run:
The shivering sails descend; and now they square
The yards, while ready sailors mount in air.
* * * * *
“Deep on her side the reeling vessel lies—
‘Brail up the mizzen, quick!’ the master cries,
’Man the clue-garnets! let the main-sheet fly!’
The boisterous squall still presses from on high,
And swift and fatal as the lightning’s course
Thro’ the torn main-sail bursts with thundering force.”

And so forth. The fact is, that most readers of Falconer’s poem require his “Dictionary of the Marine” at hand, or some old “salt” to explain the constantly recurring nautical terms.

“DEEP ON HER SIDE THE REELING VESSEL LIES.”

It is not wonderful that so many of our poets have written more or less concerning the sea, few passing over the grand subject entirely, when we consider England’s paramount position on and interests in it. A number of them have produced works in which we seem to sniff the briny ocean as we read them, while only a minority have written artificially and without a true feeling for their subject. Much that the Dibdins[91] indited for the concert-room, the theatre, and to an extent for the sailor himself, is of a trivial nature, dealing largely—too largely—with grog and sweethearts, and more than occasionally verging on the coarse and indelicate. But among their productions are songs with the true ring, ballads that will never die while our language lasts or Britain “rules the waves.” Among these may fairly be counted Charles Dibdin’s “Poor Jack,” “The Greenwich Pensioner” (“’Twas in the good ship *Rover*”), “The Sailor’s Journal” (“’Twas post-meridian, half-past four”), and, above all, that noble picture of a true sailor, “Tom Bowling”—

“Tom never from his word departed,
His virtues were so rare;
His friends were many and true-hearted,
His Poll was kind and fair:
And then he’d sing so blithe and jolly,
Ah! many’s the time and oft;
But mirth is turned to melancholy,
For Tom is gone aloft.

[pg 299]

“Yet shall poor Tom find pleasant weather
When He who all commands
Shall give, to call life’s crew together,
The word to pipe all hands.
Thus death, who kings and tars despatches,
In vain Tom’s life has doffed;
For though his body’s under hatches
His soul is gone aloft.”

Eliza Cook[92] has followed the same vein in her “Gallant English Tar,” and has also paid a worthy tribute to those hardy sons of Neptune, “The Boatmen of the Downs.”

“There’s fury in the tempest, and there’s madness in the waves,
The lightning snake coils round the foam, the headlong thunder raves;
Yet a boat is on the waters filled with Britain’s daring sons,
Who pull like lions out to sea, and count the minute guns.
’Tis mercy calls them to the work—a ship is in distress!
Away they speed with timely help that many a heart shall bless;
And braver deeds than ever turned the fate of kings and crowns
Are done for England’s glory by her boatmen of the Downs!”

Perhaps no modern verses are more popular with all lovers of true poetry than the “Casabianca” of Mrs. Hemans, Longfellow’s “Wreck of the *Hesperus*,” and Kingsley’s “Three Fishers;” and no wonder, for they touch a chord in every heart, while vividly portraying the perils of a seafaring life. In the story of the “burning deck” we have the record of a true sailor boy, who would not desert his “lone post of death.” And—

“The noblest thing that perished there
Was that young faithful heart!”

In the second-named poem the skipper has taken his little daughter to “bear him company.” A hurricane rises, and it is the poor frightened child who alone hears the “fog-bell on a rock-bound coast.” She runs to her father:—

“But the father answered never a word,
A frozen corpse was he.”

The ship drifts into the breakers and on the cruel rocks.

“At daybreak, on the bleak sea beach,
A fisherman stood aghast,
To see the form of a maiden fair
Lashed close to a drifting mast.

“The salt sea was frozen on her breast,
The salt tears in her eyes;
And he saw her hair, like the brown sea-weed,
On the billows fall and rise.

“Such was the wreck of the *Hesperus*,
In the midnight and the snow;
Christ save us all from a death like this,
On the reef of Norman’s Woe!”

[pg 300]

“AT DAYBREAK, ON THE BLEAK SEA BEACH,
A FISHERMAN STOOD AGHAST.”

In Kingsley’s poem, “three fishermen sailed away to the West,” thinking of their much-loved home; “three wives sat weeping in the lighthouse tower.”

“Three corses lay out on the shining sands
In the morning gleam as the tide went down,
And the women are weeping and wringing their hands
For those who will never come home to the town;
For men must work and women must weep,
And the sooner it’s over the sooner to sleep;
And good-bye to the bar and its moaning.”

“THREE FISHERMEN SAILED AWAY TO THE WEST.”

No more splendid tribute has ever been paid to a neglected hero than that which appeared in the pages of a popular monthly[93] some years since, over the honoured signature of Robert Browning.

[pg 301] The year 1692 was specially disastrous to France, and a fleet of twenty-two vessels were hotly and closely pursued by the English. The squadron came helter-skelter, “like a crowd of frightened porpoises” with the sharks after them, to St. Malo on the Rance. The pilots who were on board laughed at the bare idea of their great ships entering the rocky passage; and Damfreville, the admiral of the fleet, was seriously thinking of blowing up or burning all his ships, when out stepped in front of all the assembled officers a poor coasting-pilot.

“Are you mad, you Malouins? are you cowards, fools, or rogues?” said he, as he hurriedly and impetuously assured the admiral that he knew every rock and shoal, and could lead the fleet in safely.

“‘Sirs, they know I speak the truth! Sirs, believe me there’s a way!
And if one ship misbehave—
Keel so much as grate the ground,
Why, I’ve nothing but my life—here’s my head!’ cries Hervé Riel.

[pg 302] “Not a minute more to wait,
‘Steer us in, then, small and great!
Take the helm, lead the line, save the squadron!’ cried its chief.
‘Captains, give the sailor place!
He is admiral, in brief.’
Still the north wind, by God’s grace.
See the noble fellow’s face
As the big ship, with a bound,
Clears the entry like a hound,
Keeps the passage as its inch of way were the wide seas profound!
See, safe through shoal and rock,
How they follow in a flock.
Not a ship that misbehaves, not a keel that grates the ground,
Not a spar that comes to grief!
The peril, see, is past,
All are harboured to the last,
And just as Hervé Riel hollas ‘Anchor!’—sure as fate,
Up the English come, too late.”

So all are saved, and the crews see longingly the green heights above Grève, all bursting out, with one accord—

“‘Let France, let France’s King

Thank the man that did the thing!’
What a shout, and all one word,
‘Hervé Riel,’
As he stepped in front once more,
Not a symptom of surprise
In the frank blue Breton eyes,
Just the same man as before.

“Then said Damfreville, ‘My friend,
I must speak out at the end,
Though I find the speaking hard:
Praise is deeper than the lips:
You have saved the King his ships,
You must name your own reward.
’Faith, our sun was near eclipse!
Demand whate’er you will,
France remains your debtor still.
Ask to heart’s content and have! or my name’s not Damfreville.’

“Then a beam of fun outbroke
On the bearded mouth that spoke,
As the honest heart laughed through
Those frank eyes of Breton blue:
‘Since I needs must say my say,
Since on board the duty’s done—
And from Malo Roads to Croisie Point what is it but a run?

“‘Since ’tis ask and have, I may—
Since the others go ashore—
Come! a good whole holiday!
Leave to go and see my wife, whom I call the Belle Aurore!’
That he asked and that he got—nothing more.”

[pg 303] Turn we now to a “new departure” in sea poetry, one partially inaugurated by the Dibdins, carried on by Tom Hood the elder, and having of late years William Schwenck Gilbert for its principal exponent. It is often as full of nature as the serious productions of other poets, yet itself favours the ludicrous and satirical side. Hood’s “Demon Ship” is a fair example—

“Down went my helm—close-reefed—the tack held freely in my hand—
With ballast snug—I put about, and scudded for the land.
Loud hissed the sea beneath her lee; my little boat flew fast,
But faster still the rushing storm came borne upon the blast.
Lord! what a roaring hurricane beset the straining sail!
What furious sleet, with level drift, and fierce assaults of hail!
What darksome caverns yawned before! what jagged steeps behind!
Like battle steeds with foamy manes wild tossing in the wind.
Each after each sank down astern, exhausted in the chase,
But where it sank another rose, and galloped in its place;
As black as night—they turned to white, and cast against the cloud
A snowy sheet, as if each surge upturned a sailor’s shroud:
Still flew my boat; alas! alas! her course was nearly run.
Behold yon fatal billow rise—ten billows heaped in one.
With fearful speed the dreary mass came rolling, rolling fast,
As if the scooping sea contained one only wave at last.
Still on it came, with horrid roar, a swift pursuing grave;
It seemed as though some cloud had turned its hugeness to a wave.
Its briny sleet began to beat beforehand in my face—
I felt the rearward keel begin to climb its swelling base!
I saw its alpine hoary head impending over mine.
Another pulse—and down it rushed, an avalanche of brine!
Brief pause had I on God to cry, or think of wife and home;
The waters closed, and when I shrieked, I shrieked below the foam!”

After battling with the water, and half insensible, he finds himself at last safely on board a strange vessel; a terrible face haunts him—black, grimly black, all black, except the grinning teeth. The sooty crew were like their master. “Where am I? in what dreadful ship?” cried he, in terrified agony. The answer was a laugh that rang from stem to stern from the gloomy shapes that flitted round. They guffawed and grinned and choked to the top of their bent—

“And then the chief made answer for the whole:—
‘Our skins,’ said he ‘are black, because we carry coal.
You’ll find your mother, sure enough, and see your native fields,
For this here ship has picked you up—the *Mary Anne* of Shields.’”

The transition from the really powerful and dramatic description of the billows and surf to the ridiculous *dénouement* is irresistibly and artistically comic. Hood’s purely amusing pieces are

more generally known than the above. Take as an example “Faithless Sally Brown;” the girl who so soon forgot her first Ben is modelled on Dibdinian lines, but the touches of humour are infinitely more delicate.

[pg 304] The popularity of a class of sea-songs which can now be heard from the streets to the drawing-room, and from the fo’castle to the ward-room, is creditable to our age. Some of these productions, in which noble sentiments, expressed in simple and feeling words, are wedded to effective and artistic music, help to keep alive humanity, love, and honour in the rising generation. “The poor old slave is free” directly he climbs the British ship; “the sailor’s wife the sailor’s star should be,” and usually is; while the story of the poor little wounded “midshipmite” is as touching in its way as the boy who would not leave the burning deck.

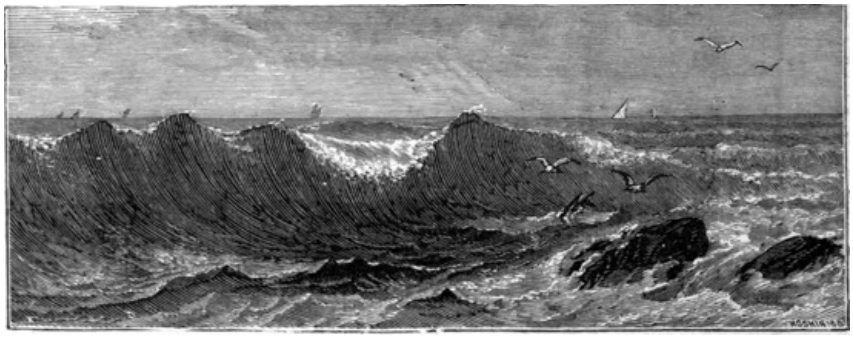
Our voyages are ended; and we may now peacefully peruse, by the cosy fireside, the record of the heroic deeds and the startling perils of the sailor’s career while he is engaged in bringing to our shores the necessaries and comforts of our daily life. While we stay at home in ease, let us not forget this noble army of “conscripts, fighting our battles for us;” and when the tempests howl and the lightnings flash, let us breathe our heartfelt earnest prayers “for those at sea.”

“Eternal Father, strong to save,
Whose arm hath bound the restless wave,
Who bids’t the mighty ocean deep,
Its own appointed limits keep;
Oh, hear us when we cry to Thee,
For those in peril on the sea.”

[pg 305]

GENERAL INDEX.

The names of the Ships in the British Navy are printed in Italics. Those of the Mercantile Marine and foreign vessels are printed with inverted commas [“ ”].



Footnotes

1. Mrs. Brassey: “A Voyage in the *Sunbeam*.” Her trip occupied eleven months.
2. From a rare work in the author’s possession, entitled, “Songs of the Ship; or the British Seaman’s Jovial and *Everlasting* Songster.”
3. Margharita Weppner, Author of “The North Star and the Southern Cross.”
4. “American Notes for General Circulation.”
5. The late Mr. W. S. Lindsay, in his “History of Merchant Shipping,” stated that Mr. and Mrs. Inman, “greatly to their credit, made a voyage in one of their earliest emigrant steamers, expressly for the purpose of ameliorating the discomforts and evils hitherto but too common in emigrant ships.”
6. Margharita Weppner.
7. “Westward by Rail.”
8. *Vide* page 18.
9. Pronounced *Kanyon*. The word is of Spanish origin, and signifies a deep rocky defile.
10. All in the territory, and there are now a large number of miners, who are not believers in the Mormon faith, are considered outsiders and “Gentiles.”
11. The highest newspaper offices in the United States, and, it is hardly to be doubted, in the world, are in Colorado. Georgetown, 8,452 feet elevation, has one; Central City, has two dailies, published at 8,300 feet above the sea level.
12. Although the railway had remained intact, avalanches had occurred that winter in the mountain districts of Nevada and Utah, accompanied by serious loss of life.
13. “A Ramble Round the World.” Translated by Lady Herbert.
14. A. D. Carlisle, B.A., in “Round the World in 1870.”
15. A. W. Guillemard: “Over Land and Sea. A Log of Travel Round the World in 1873-4.”
16. E. K. Laird: “The Rambles of a Globe Trotter in Australia, Japan, China, Java, India, and Cashmere.”
17. This fine vessel while lying at anchor in the roadstead of Yokohama, on the 24th of August, 1872, was destroyed by fire. In seven minutes after the first flames were discovered the ship from stem to stern was one sheet of flame. At the last moment the captain, terribly burnt, threw himself in the water and was rescued. Three Europeans and sixty Chinamen were either burnt to death or drowned. The Chinese, determined not to lose their savings, dawdled a little, and then threw themselves all together on a ladder, which broke with their weight. The gold found on their corpses proved that not one had returned poor from California. It is needless to say that Hübner’s description of the size of the *America* is incorrect.
18. “A Voyage in the *Sunbeam*.”
19. Hübner.
20. *Vide* “Over Land and Sea.”
21. E. K. Laird: “The Rambles of a Globe Trotter.”
22. In “Australia and New Zealand.”
23. In 1872 there were 41,000,000 sheep and 4,340,000 horned cattle in Australia. The

tinned meat and extract works employ a large number of hands at good wages.

24. Let the reader compare the following verses of Genesis:—"In the six hundredth year of Noah's life, in the second month, the seventeenth day of the month, the same day were all the fountains of the great deep broken up, and the windows of heaven were opened."—Chap. vii., verse 11.
"And it came to pass in the six hundredth and first year, in the first month, the first day of the month, the waters were dried up from off the earth: and Noah removed the covering of the ark, and looked, and, behold, the face of the ground was dry.
"And in the second month, on the seven and twentieth day of the month, was the earth dried."—Chap. viii., verses 13 and 14.

25. Vol. III., First Series, page 509.

26. This chapter is based on the works of Tennant, Darwin, Gosse, Figuier, and other authorities.

27. About £48,000.

28. In "The Origin of Species."

29. The bulk of this chapter is derived from the following works:—"The Conquest of the Sea," Siebe; "English Seamen and Divers," M. Esquiros; an Article in "The Shipwrecked Mariner," Vol. XXII.; &c.

30. "Tales of Mystery and Imagination."

31. This account is mainly derived from the "History of the Atlantic Telegraph," by Dr. Henry M. Field; "The Story of Cyrus Field;" and Dr. Russell's letters in the *Times*.

32. Leblond: "Voyage aux Antilles."

33. "A Year by the Sea-side."

34. "La Mer."

35. The popular idea regarding the necessity for the letter *r* in the open months for oyster-eating is tolerably correct in Europe, but will not apply to all parts of the world.

36. The varied information concerning the oyster contained in this chapter is mainly derived from Bertram's "Harvest of the Sea"; Figuier's "Ocean World"; and from an interesting little *brochure* entitled "The Oyster, Where, How, and When to Find;" &c.

37. The ancients masticated their oysters, and did not bolt or gulp them down. Many distinguished modern authorities agree with them. Dr. Kitchiner says it must be eaten alive. "The true lover of an oyster," says he, "will have some regard for the feelings of his little favourite, and contrive to detach the fish from the shell so dexterously that the oyster is hardly conscious he has been ejected from his lodging till he *feels the teeth* of the piscivorous gourmet tickling him to death."

38. "The Harvest of the Sea."

39. *Vide* "The Natural History and Fishery of the Sperm Whale."

40. In "The World of the Sea." M. Tandon is commenting on the account published by M. Sabin Barthelot, then French Consul at the Canary Islands.

41. This account of the crustaceans is derived from the works of Milne-Edwards, Pennant and Bell, Gosse, Couch, Broderip, Rymer Jones and Major Lord, Figuier and Tandon.

42. Louis Cecil.

43. The contents of this chapter are derived from Dr. Bertram's "Harvest of the Sea," Figuier's "Ocean World," Hartwig's "Sea and its Living Wonders," Murphy's "Rambles in North-Western America," &c.

44. The reader interested in further details will do well to peruse J. Mortimer Murphy's "Rambles in North-Western America."

45. A very stout man, placed where no food is obtainable, will (health and age being identical) live longer than a lean one. There is a recorded case of a fat man living nearly sixty days without food.

46. In his "Rambles beyond Railways."

47. This watcher also receives a percentage on the "take" of fish.

48. The contents of this chapter are derived mainly from the works of Owen, Beale, Maury, Scammon, Gosse, and Timbs.

49. Formerly, when spermaceti was only used in medicine, many tons of it were annually thrown into the Thames as useless, the supply being so much in excess of the demand.

50. From an article entitled "Shipmates I have Known," in *The Shipwrecked Mariner*: Journal of the Shipwrecked Mariners' Society.

51. The bulk of this chapter is derived from Philip Henry Gosse's "Naturalist's Rambles on the Devonshire Coast;" "Tenby: a Seaside Holiday;" "A Year at the Shore;" the Rev. J. G. Wood's "Common Objects of the Sea-shore;" and Madame de Gasparin's charming idyl,

“By the Sea-shore.”

52. “By the Sea-shore.”

53. The reader may have found in his own experience that a garment which has been well drenched in salt water will always attract damp, however much dried by the fire. The only remedy is to thoroughly wash it in fresh water, and then dry it.

54. This account is mainly derived from Wilkie Collins’s “Rambles beyond Railways,” and the Rev. C. A. Johns’s “Week at the Lizard.”

55. “A Week at the Lizard.”

56. The writer acknowledges his indebtedness to a series of papers entitled “Visits to the Sea Coasts,” published in the *Journal of the Shipwrecked Mariners’ Society*. That noble institution relieved in 1878-9 no less than 3,452 shipwrecked persons, by clothing them, and forwarding them to their homes, and in the case of fishermen, helping them to repair damage done in gales, &c., to their boats and fishing-gear. Seven thousand four hundred and ninety widows of mariners were relieved during that period, while 2,400 receive small *annual* allowances. A Seamen’s Provident Fund is also managed by the Society, to which 50,000 mariners contributed. During the period mentioned above ten gold and silver medals, a handsome sextant, and £25 in money, were awarded for saving fifty-one lives on the high seas or abroad. The society also organised the “Royal Alfred Aged Merchant Seamen’s Institution,” the home of which, at Belvedere, Kent, shelters about 100 poor mariners, and relieves by an out-pension a still larger number. Readers of this work who have been moved by the many tales of peril and heroism undergone and displayed by seamen and fishermen, will do well to remember, and remember practically, this worthy and most economically-managed society.

57. *United Service Gazette.*

58. *United Service Gazette.*

59. This account of the loss of the *Grosser Kurfürst* is condensed from an article in the *United Service Gazette*.

60. R. M. Ballantyne; “The Floating Light on the Goodwin Sands.”

61. “Visits to the Sea Coasts,” in *The Shipwrecked Mariner*.

62. Sarah Doudney.

63. In a letter to *The Shipwrecked Mariner*, January, 1873.

64. Leander.

> “Who was nightly wont
> (What maid will not the tale remember?)
> To cross thy stream, broad Hellespont!”

65. The feat of swimming across the Dardanelles was also successfully accomplished by Lieut. Moore and Gunner Mahoney, of H.M.S. *Shearwater*, on the 25th November, 1872.

66. We are indebted to Captain Webb’s “Art of Swimming,” edited by A. G. Payne; “The Channel Feats,” &c., by “Dolphin”; the Journals of the National Life-Boat Institution and the Shipwrecked Mariners’ Society.

67. It will be remembered that Captain Webb has since remained respectively *sixty* and *seventy-two* consecutive hours in the water, with, of course, little attempt at natatory exertion.

68. *United Service Magazine.*

69. Edwin Hodder; “Heroes of Britain in Peace and War.”

70. “Memoirs of Sir Thomas Fowell Buxton, Bart.,” edited by his son.

71. The *brochure* which Mr. Reade wrote with the view of raising a fund for poor Lambert is entitled, “A Hero and a Martyr.” It was printed mainly for private circulation.

72. *A wean wastit*—a child thrown away.

73. Flood.

74. Tense of the old verb “wend”—to go.

75. Run and squeal.

76. Upset.

77. Fan.

78. These.

79. Those.

80. The scale of relief to members, their widows, orphans, or parents (when dependent) is as liberal as one could expect. A fisherman or mariner receives compensation for loss of boat or clothes; a widow with two children may obtain as much as £19 2s. 6d.; and with four children, £25 10s.

81. Extract from address of H.R.H. the Duke of Edinburgh at annual meeting.

82. “English Seamen and Divers.”

83. Condensed from an article by W. Senior in the *Shipwrecked Mariner*.

84. The most powerful fog-horns introduced into this country are those known as the Siren signals, which are illustrated in our plate. This name is given to them on account of the sound being “produced by means of a disc, with twelve radial slits, being made to rotate in front of a fixed disc exactly similar. The moving disc revolves 2,800 times a minute, and in each revolution there are, of course, twelve coincidences between the two discs; through the openings thus made steam or air at high pressure is allowed to pass, so that there are actually twelve times 2,800 (or 33,600) puffs of steam or compressed air every minute. This causes a sound of very great power, which the cast-iron trumpet, twenty feet in length, compresses to a certain extent, and the blast goes out as a sort of sound-beam in the direction required.” The Siren, which was originally designed in New York, and was first adopted by the American Lighthouse Board, can be heard in all kinds of weather at from two-and-a-half to three miles, and on favourable occasions at as many as sixteen miles out at sea.

85. Francis Quarles.

86. “Virgil’s Sea Descriptions,” *Cornhill Magazine*, October, 1874.

87. Bermudas.

88. Let Shakespearian students note the allusions to piracy contained in the following references:—*Twelfth Night*, Act V. scene 1; *Measure for Measure*, I. 2, and IV. 3; *Merchant of Venice*, I. 3; Second Part of *Henry VI.*, IV. 1, 9; *Richard III.*, I. 3; *Antony and Cleopatra*, I. 4, II. 6; *Pericles*, IV. 2, 3–V. 1; *Hamlet*, IV. 6.

89. Pillaged.

90. Wanton.

91. The father, Charles Dibdin, and his two sons, one of the latter of whom was the author of the popular “All’s Well.” Many popular sea-songs, written by others during the epoch of the Dibdins and later, are, however, very commonly but erroneously placed to their credit. Among those often ascribed to them are the following, really written by the subjoined authors:—“The Death of Nelson” (S. J. Arnold), “The Bay of Biscay” (Andrew Cherry), “Rule, Britannia” (J. Thompson), “The Saucy Arethusa” (Prince Hoare), “The Storm” (“Cease, rude Boreas”: G. A. Stevens), “The Sailor’s Consolation” (“One night came on a hurricane”: W. Pitt), “Ye Mariners of England” (Thomas Campbell), “Ye Gentlemen of England” (Martin Parker). The well-known song “William and Susan,” in the nautical drama “Black-eyed Susan,” is in like manner sometimes attributed to Douglas Jerrold, the real author of the ever-verdant play, but the ballad itself was written by Thomas Gay.

92. The reader not familiar with the poetical works of this authoress is recommended to peruse “’Tis a Wild Night at Sea” and “The Rover’s Death.”

93. The *Cornhill Magazine*, March, 1871.

Transcriber’s Note

The illustrations have been moved so that they do not break up paragraphs and are near the text they illustrate, thus the page number of the illustration might not match the page number in the List of Illustrations.

Pages which contain only an illustration have been left out in the pagination on the margin.

An illustration which was missing from the List of Illustrations has been added to it.

The following changes have been made to the text:

page iii, dash added after “Soaped Rails”
page iv, dash added after “The First Idea of the Atlantic Cable” and after “The

Employment of the *Great Eastern*”
page vi, dash added after “Bold and Timid Lads” and after “The ‘True Ring’ ”
page 11, quote mark added after “petulantly.”
page 38, double “the” removed before “captain”
page 66, quote mark added before “I saw”
page 74, quote mark removed after “breadth.”
page 90, “suphuretted” changed to “sulphuretted”
page 91, period added after “hour”
page 133, dash removed after “that” and added before it
page 134, second quote mark added before “That”, “The oysters” and “True,”
page 153, comma removed after “lucky”
page 165, quote mark added after “stage.”
page 256, quote mark removed before “If”
page 299, quote mark removed before “Rover’s”
page 303, quote mark added before “new departure”
page 304, quote mark added after “sea.”

page 308, “vovage” changed to “voyage”
page 310, “Fiskernœs” changed to “Fiskernæs”

Additionally, the punctuation in the General Index has been regularized in several places.

Differences between the table of contents and the chapter summaries have not been corrected. Neither have variations in hyphenation been normalized.

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