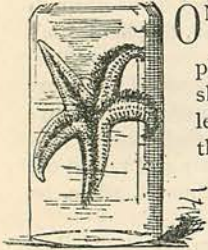
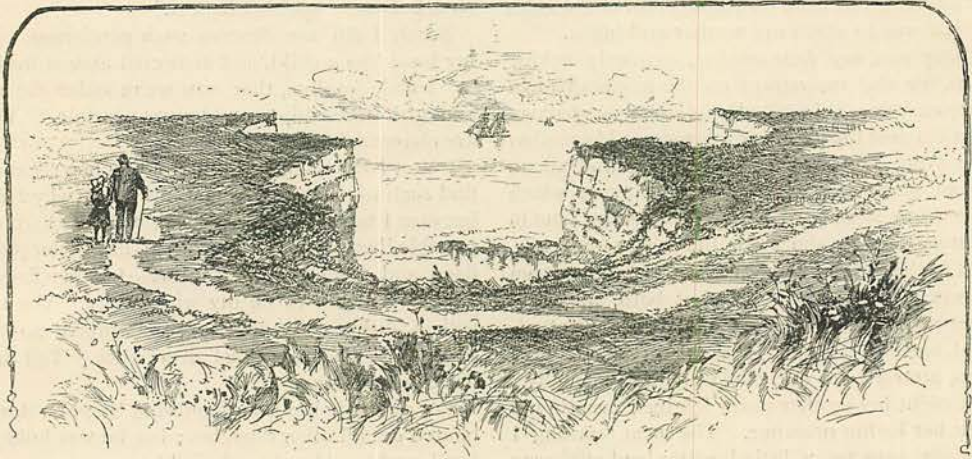


WHAT I FOUND IN A ROCK POOL.



STAR-FISH IN JAR.

ON the southern coast, about half an hour's walk from a quiet watering place, is a "gap" leading to the shore. At low tide, from the firm level sand there stretches down to the water's edge and out into the sea a ledge of rocks, overgrown with bladderwrack and hollowed by the action of the waves into numberless holes, which the tide long ago converted into pools, filled with a population strange to us who dwell inland. And many, even of those who live hard by, have notions about minute marine life as crude as those entertained about land animals by the famous railway guard who classed Frank Buckland's monkey as a "dog," and his tortoises as "hinsects."

There are marvellous things to be found in rock pools. The merest tiro who will watch by one for an hour or two, will find a new world opening to him; and, if he wishes to secure some of these unfamiliar forms of life, a few wide-mouthed bottles will serve his purpose, and a pocket lens, costing some three or four shillings, will show him details enough to enable him to identify them.

With an equipment scarcely more elaborate than this—the only additional implements being a pair of small forceps and a bone letter opener—the following forms, among others, were recently found in, and some of them taken from, a pool about half-way between tide-marks on the ledge in question.

The pool was about three feet long by a foot wide; the sides sloped gently inwards, and the floor was covered by nearly a foot of water. To get a full view it was necessary to turn back the coarse bladderwrack which grew abundantly all round. The edges of the pool were fringed with the bright glossy green fronds of the sea lettuce, intermixed with the long slender tubes of grass-like alga, some of the larger kinds of which

have been compared to sausage skins inflated and coloured green. In the mimic coves and bays into which the tidal water had cut the sides, grew some of the commoner red and green seaweeds. But the only plants calling for special mention are the peacock's tail and the common coralline. The first is rare on our southern coasts, but common enough in tropical seas. At first, one does not perceive the reason for the popular name, but as the light falls on the filaments that fringe the fronds and the concentric lines with which they are marked, and is broken up into prismatic colours, one is bound to admit that the name is well chosen, for each frond glows with brilliant metallic hues that the outspread train of the peacock may rival, but cannot excel. The coralline is noteworthy as having been till within the last fifty years classed as an animal. It springs from a broad chalky base, of a purplish colour, which is that also of the living plant, which turns white in death. The frond—popularly called the stem—is jointed, and if examined with a hand lens after the encrusting lime has been removed, its vegetable nature will be apparent. This was demonstrated by Johnston, about 1842: he kept it for eight weeks in a jar of sea water, which did not become putrescent. Had it been an animal it would soon have exhausted all the oxygen in the water, and its own death must have followed.

Rising from the base of the coralline is a small elevation of nearly the same colour. Closer inspection shows that this is an animal—its name is Chiton; it is of very ancient family, dating back to Silurian times, and had direct ancestors in the swampy pools in the forests of ferns and lycopods and conifers long since converted into coal. It is a strange creature, less than an inch long, somewhat like a limpet without shell, covered with eight bands of closely-fitting mail, and creeping slug-like by a muscular foot. It will not live for any time in an aquarium; so we will leave it to crawl over the rocks in peace.

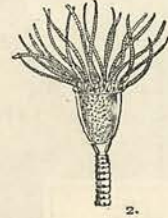
There are several of the common sea anemones waiting with outstretched tentacles for any worm, or crab, or tinier crustacean that fortune may throw in their way, for all is fish that comes to their net. They will even put up with vegetable diet for a while, and though in times of plenty they are greedy feeders, when needs must they can fast as well as a boa-constrictor.

Right in the corner, shaded by a miniature forest of weed, is the thick-horned anemone, who has just captured a dog-crab. This fellow is worth taking to London, so we will try to dislodge him. Now the bone letter opener comes into play. Anemones, as is well known, adhere by their base, and if this is injured, death generally follows pretty quickly. Some people try to remove them by force; but a letter opener, or some such implement, slipped under the base, will raise the animal sufficiently to allow the fingers to be passed between it and the rock, and thus it may be generally pulled off uninjured. It seemed as if this fellow was all right when he was dropped into a jar and covered with wet weed; but he died—perhaps from over-feeding, perhaps from the effects of the journey—before he could be sent to the tanks in the fish house at the Zoological Gardens.

On the bottom of the pool lies the shell of a periwinkle, with the top broken off. Not a very remarkable object, but it moves about in such strange fashion, that we will examine it more closely. Picking it up carefully, and laying it on the side of the pool, we discover the cause of the erratic motion. The rightful owner no longer occupies his home, which is now tenanted by a hermit crab, common enough round our coasts, and chiefly remarkable as forming a connecting link between the true crabs and the lobsters. Often enough he carries an anemone on his shell. Ours, however, bears no such burden; he is companionless.

There are many other shells in the pool. Here is a young whelk, which has been washed up by the tide, and is crawling about contentedly, as if dredgers and shell-fish gatherers had no existence. Here, too, are

the dog whelk, with its strange foot, carrying two diverging horns in front and two little tails behind; and the limpet, with his conical shell covered with acorn barnacles, casting out their slender arms, like sweep-nets, with untiring industry in search of prey. The holes in the sides of the pool are made by the piddock, and these cylindrical cells are hollowed out

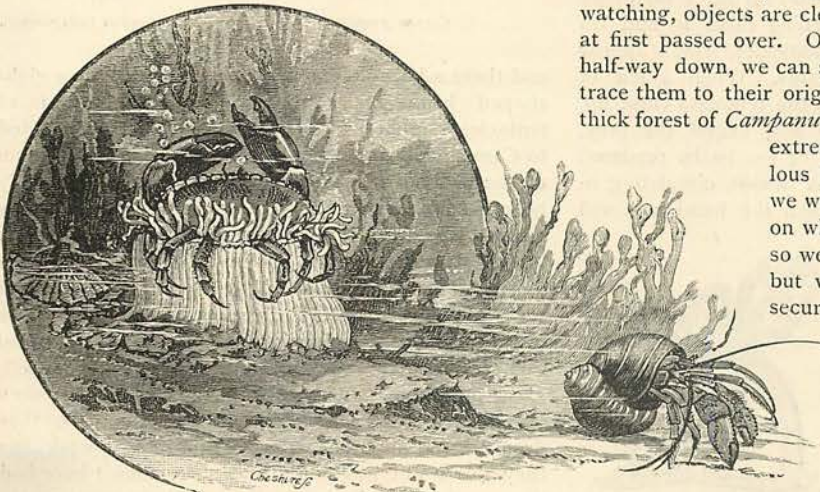


1. *Campanularia flexuosa*.
2. HEAD OF *Campanularia*, ENLARGED.

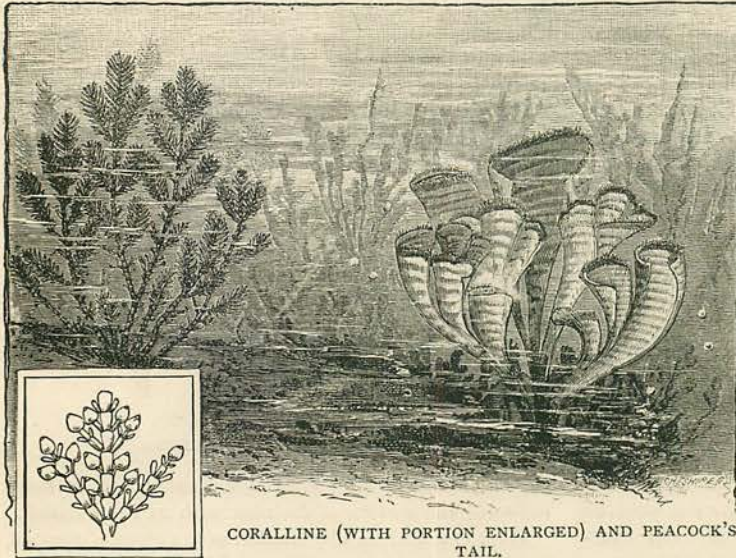
by the animal turning from side to side, and so rasping away the surface of the rock with its ridged shell.

Here is a find—a live starfish of a common species, locally known as five fingers. We will put it into a jar of sea water, and we shall see the marvellous apparatus by which it will climb up the sides. As it lies reversed on what is properly its upper surface, with the extremities of the arms slightly bent, it protrudes from the surfaces of these organs a number of tiny tubes, each armed at the end with a sucker. These are the "feet"; they are also used as feelers. Extending one of the arms till it touches the opposite side of the glass, it fixes itself by means of the protruded feet and draws itself slightly upwards. Then more feet are put forth, and a firmer grip is taken of the side of the jar. The arm next on each side is extended in like fashion, and their feet also take hold of the glass, and so the animal raises itself upwards by degrees, till it has recovered from its uncomfortable position, and the whole of the lower side is affixed to the side.

The longer one looks into a rock pool the more one is able to see. One's eyes become accustomed to the novel conditions; and, after intense and patient watching, objects are clearly distinguished which were at first passed over. On a crag-like projection, about half-way down, we can see some shadows, and, as we trace them to their origin, we find they are cast by a thick forest of *Campanularia flexuosa*, a tiny zoophyte, extremely common, but of marvellous beauty. With a stout knife we will hack off a piece of the rock on which the forest grows. In doing so we shall render the water turbid, but when it clears again we will secure the fragment with our forceps, and drop it gently into a tube full of sea water. As we examine our prize with the hand lens, we can understand why the old naturalists called these creatures zoophytes, and treated them as connecting



CRAB CAPTURED BY ANEMONE.



CORALLINE (WITH PORTION ENLARGED) AND PEACOCK'S TAIL.

links between animals and plants. The bit of rock is covered with tiny stems, connected at their bases by a kind of creeping root-stock. Each stem is slightly bent in a series of gentle curves, and sends off branches, quite in tree-like fashion, and these, as they wave to and fro with the motion of the water, add to the illusion. All the branches are tipped with delicate crystal cups, called the calyces, in each of which resides one of the individuals which make up the colony, and which are technically called *polypites*. Their structure is very simple—a soft, contractile body, containing the digestive sac, and furnished with a proboscis having at the top an opening that serves as a mouth and fringed with a row of tentacles admirably adapted for taking food. The sole office of the polypites is to bring nourishment to the tiny commonwealth.

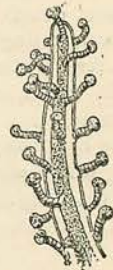
If we hold the bottle steadily up to the light for a few minutes, we shall see some of the polypites extend their tentacles cautiously above the rim of the bell-like cups, and then, as if satisfied that all is safe, they will expand them fully, sweeping them to and fro in the water in search of animalcules, which appear to us like minute bright points. When a few of these are brought within reach the tentacles close up, the lips of the proboscis rise and engulf the prey, which is taken into the digestive sac to be rendered fit to join the nutrient current always circulating in the common canal. This much the hand lens will show us: for details we need the microscope. The colony is likely to live for some time in an aquarium, so we will carefully put away the tube and continue our search.

The sides of the pool, after careful search, will apparently yield us nothing more, but at the bottom lies a darkish piece of weed that may repay examination. We

*Pedicellina cernua* (MUCH ENLARGED).

a flexible stalk, the stalks being bound together as in *Campanularia*, which it resembles somewhat in its method of feeding, though the tentacles scarcely rise above the rim of the cup, and each individual appropriates the prey it captures, there being no common nutrient canal. The scientific name of these animals is *Pedicellina cernua*; but we may translate the second or specific name, and call them "Mountebanks."

Creeping along another spray, and sending up here

*Coryne pusilla*.HEAD OF *Coryne* (ENLARGED).

and there a horn-coloured tube surmounted by a club-shaped head—really the polypite—with whorls of tentacles knobbed at the tip, is *Coryne pusilla*, allied to *Campanularia*, but belonging to a different division of the order. This lowly little creature is extremely beautiful, the dark flesh colour of the central mass contrasting strongly with the dead white of the outer layer. *Coryne* does well in the aquarium, and, as a matter of fact, this identical colony is, at the time of writing, living in one of my tanks. For a week after it was gathered it was kept in a ten-ounce bottle, and then brought to London, and transferred to a bell-glass aquarium. There were then about a dozen polypites in the colony; and as food was scarce they drooped, and apparently died. But about a week after they threw out new buds, and since then I have had the satisfaction of seeing them feed on tiny crustaceans.

HENRY SCHERREN.