

One thing more I must mention, namely, that we got a glimpse of the crown jewels. Our guide, whose sympathies all ran on the side of Russia, asked me if the *koh-i-noor* of our good queen was any larger, and seemed mortified and incredulous when I said it was. These jewels are, however, wonderful both in beauty and number; but of their value I could form no estimate. Nobody knows anything in Russia. The man who showed them knew nothing, and no one else knew any more. So I was constrained to be ignorant, and to feast my eyes for a short time on crowns, sceptres, tiaras, buckles, clasps, necklaces, pendants, ear-rings, rings, brooches, and dazzling gems innumerable. It was a grand sight in its way, and in its way also a very sad one, for there was not a glittering speck in the mighty collection which did not, to my eyes, seem associated with conquest and military rule.

By this time two hours and a half had been spent; and as we had done little more than walk through the palace, never sitting down, we now felt thoroughly wearied. So we returned with our obliging guide to the spot where we started. I had seen all that others see, and more, indeed, than many do, and I had remembered as much as most. Nor did I grudge the labour, having learnt this lesson, if no other, that "riches and splendid honours joined" cannot make a man happy; and being more than ever impressed with thankfulness that my lot had been cast in a station removed alike from the splendour and the cares that attend a crown.

A NATURALIST AT THE SEA-SIDE.

SUCH of our readers as have paid a visit to the marine *aquarium* at the Gardens of the Zoological Society, in Regent's Park, must have looked with intense interest upon the variegated and beautiful contents of the glassy prisons erected there for the safe custody of the sea anemones and other members of the tribe of British zoophytes. It is with great pleasure, therefore, that we introduce to their notice a volume which largely enters into the private history, if we may so speak, of this curious department of creation, and which, to the attractions of an engaging style and healthy piety, adds the accompaniment of several elaborately coloured drawings of the animals themselves.*

Mr. Gosse, who for some years has been honourably distinguished by his varied attainments as a naturalist, having when an invalid had occasion to spend a portion of his time upon the beautiful coast of Devonshire, near Torquay and Ilfracombe, devoted his leisure to examining the rocks and pools of the neighbourhood for contributions to his private vivarium. Rich and varied, accordingly, were the stores which he gathered. With our reader's permission, we shall suppose ourselves accompanying him, net in hand, on one of his morning excursions, until at last, after wandering through some of Devonshire's green lanes, we find ourselves upon the sea-shore, with a noble expanse of ocean before us. The first spot at

which we pause is one of those little pools left by the efflux of the tide, and which the careless observer would pass over as containing nothing remarkable. Not so, however, does Mr. Gosse; he pauses, and thus describes the beauties of this miniature ocean.

"There is something exceedingly charming in such a natural vivarium as this. When I go down on my knees upon the rocky margin, and bring my face nearly close to the water, the whole interior is distinctly visible. The various forms and beautiful tints of the sea-weeds, especially the purple flush of the *chondrus*, are well worthy of admiration; and I can see the little shrimps and other *crustacea* busily swimming from weed to weed, or pursuing their instinctive occupations among the fronds and branches—an ample forest to them. Tiny fishes of the blenny genus are also hiding under the shadow of the tufts, and occasionally darting out with quivering tail; and one or two brittlestars are deliberately crawling about, by means of their five long and flexible arms, in a manner that seems a ludicrous caricature of a man climbing up by his hands and feet—only you must suppose an additional arm growing from the top of his head. The variety of their colours, and the singular but always elegant patterns in which they are arranged, render these little star-fishes attractive.

"Such a calm, clear, little well as this, among the rugged rocks, stored with animal and vegetable life, is an object well calculated to attract a poet's fancy. The following description must have been drawn from just such a rock-pool, and most true to nature it is:—

"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, crusted shells,
Rich mosses, tree-like sea-weed, sparkling pebbles,
Enchant the eye, and tempt the eager hand
To violate the fairy paradise."

It is not, however, only the rocky cistern which thus teems with life; Mr. Gosse finds subjects for his microscope in much smaller objects than even a tidal pool. We have all heard, and often by the sea-beach read, "sermons in stones;" but most interesting is the description Mr. Gosse has given of what may be seen on a piece of rock not larger than a penny-piece. It is, unhappily for our purpose, too long for extract, but the following general remarks which he has given illustrate the same truth.

"The economy with which God works in nature has been often noticed, and especially that phase of it which consists in the profusion and variety of existence that can be crowded and sustained in a given space. A plant is growing in the earth; it occupies a certain amount of room, and appears, to speak loosely, to fill it. But on examination we may find other plants growing on it; its back, the angles of its branches, its buds, its leaves, the interior of its blossoms, its seed-vessels, are occupied by many species of spiders and insects, which find ample room for the carrying on of their respective functions and the enjoyment of their lives; not to speak of the birds, and butterflies, and bees, and flies, that are but temporary visitants—mere comers and goers. Many of these minute animals have other creatures living on them

* "A Naturalist's Rambles on the Devonshire Coast." By P. H. Gosse, A.L.S. London: John Van Voorst, 1853.

as parasites; the earwig that is snugly enconced in the tube of that flower is tenanted by a long intestinal worm; yonder caterpillar, so calmly gnawing out sinuous cavities in the edge of a leaf, supports within a colony of infant ichneumons; the little wild bee that has just alighted on this blossom would be found to carry about sundry maggots whose black heads peep out from beneath the rings of his abdomen. Even the very juices that circulate in the vessels of the plant probably bear along in their course the germs of invisible animalcules; for if we take the leaves, or the flowers, or the stems, and make an infusion of them, carefully covering the vessel to prevent intrusion from without, we shall find in a day or two that the water is swarming with living creatures of various kinds, known to microscopic observers as infusory animalcules."

Amidst a field of animal life so varied and minute, it will easily be believed that Mr. Gosse found occupation enough. The richness of his volume renders it indeed difficult to make selection, where all is so good. We take, however, almost at random the following description of one of the minutest of the tenants of the deep.

"I have been for the last two or three hours engaged in watching two of the most important vital functions, respiration and circulation, under circumstances of unusual facility for the study. In looking over one of my *vivaria*, a pan containing marine plants and animals that have been undisturbed for several weeks, I found, attached to a sea-weed, a tiny globule of jelly, not bigger than one of those little spherules wherewith homœopathy supplants the jalaps and rhubarbs that our grandmothers believed in, and swallowed. It is an ascidian mollusk, one of that tribe of humble animals that form the link by which the oyster is connected with the zoophyte; and it appears to belong to that genus which the learned Savigny has named *clavellina*. Transparent as the purest crystal, it needed only to be transferred in a drop of its native sea-water to the stage of the microscope, and the whole of its complex interior organism was revealed. The old sage's wish that man had a window in his breast, that we might see into him, was more than realized in this case: the whole surface of the little animal was one entire window; its body was a crystal palace in miniature."

After describing the curious internal apparatus of this zoophyte, Mr. Gosse describes the animal's minute body as studded apparently with rings of a singular character in ceaseless motion. "In truth," continues Mr. Gosse, "it is a beautiful sight to see forty or more of these oblong rings, all set round their interior with what look like the cogs on a watch-wheel, dark and distinct, running round and round with an even, moderately rapid, ceaseless motion. These black running figures, so like cogs and so well defined as they are, are merely an optical delusion; they do not represent the *cilia*, but merely the *waves* which the *cilia* make; the *cilia* themselves are exceedingly slender and close-set hairs, as may be seen at the ends of the ovals, where a slight alteration of position prevents the waves from taking the tooth-like appearance. Sometimes one here and there of the ovals ceases to play, while the

rest continue; and now and then, the whole are suddenly arrested simultaneously as if by magic, and presently all start together again, which has a most charming effect. But what struck me as singular was, that while in general the ciliary wave ran in the same direction in the different ovals, there would be one here and there, in which the course was reversed; and I think that the animal has the power of choosing the direction of the waves, of setting them going and of stopping them, individually as well as collectively.

"I am afraid my attempt to describe these phenomena is but partially successful: I am sure it cannot convey to you any adequate idea of the spectacle itself. Have you ever gazed with interest on a complicated piece of machinery in motion, such as is common in our large manufacturing houses? If so, I dare say you have felt a sort of pleased bewilderment at the multitude of wheels and bands, rolling and circling in incessant play, yet with the most perfect steadiness and regularity. Something of that sort of impression was made on my mind by the sight of the respiratory organ of this tiny ascidia."

It is by the rotation of these *cilia* and the vortex which they create, that this little animal gets its prey. The mode in which this is accomplished is well described by Mr. Gosse when delineating the habits of another species of zoophyte. The action he has well compared to a living whirlpool. Indeed, a vessel once within the suction of the maelstrom has as much chance of getting out, as the prey on which these little creatures feed, when once it is entangled within their complex machinery.

"In order," says Mr. Gosse, "to make this action intelligible, it is necessary to premise that a stationary polype, being unable to seek its food, must be provided with means to bring it within reach; the *cilia* accomplish this; they create an impetuous current in a certain definite direction, and form a vortex in the surrounding water, whose effects are felt to an incredible distance. Any minute floating animalcule near is drawn into this whirlpool, the centre of which is the bottom of the polype's bell; once within the circle, it is whirled round and round, descending at each gyration till at length it is within the fatal circle; the glassy tentacles encompass it with a wall on every side, and it still whirls round with ever increasing velocity in the giddy dance, and at length is sucked into the yawning abyss at the bottom—the gaping throat, which expands with a treacherous embrace as the helpless atom enters, and then closes over it with a strong muscular contraction, forcing it down into the stomach, no more to emerge alive. But if, in performing the gyration within the bell, the floating atom should be driven too near the margin, it might possibly escape through the interstices of the tentacles, for they do not stand in actual contact. To prevent the contingency, the *cilia* of the tentacles are endowed with an exquisite sensibility; and if an object but touch the tip of one of these most minute hairs, the irritability of the tentacle is excited, and it immediately moves inward with that sudden jerk, which throws the poor animalcule right back into the very whirl of the vortex."

In different parts of his work, Mr. Gosse

describes the mode in which another species, the madrepoire, so well known in its fossil form to the frequenters of Torquay, takes its prey. The passage is full of interest; although we may remind our young readers, that experiments with insect life, though excusable when undertaken in scientific pursuits, become culpable when practised for the mere indulgence of a wanton curiosity.

"The feeding of the madrepoires affords much amusement; they are very greedy, and the presence of food stimulates them to more active efforts and the display of greater intelligence, than we should give them credit for.

"I put a minute spider, as large as a pin's head, into the water, pushing it down with a bit of grass to a coral, which was lying with partially exposed tentacles. The instant the insect touched the tip of a tentacle it adhered, and was drawn in with the surrounding tentacles between the plates, near their inward margin. Watching the animal now with a lens, I saw the small mouth slowly open, and move over to that side, the lips gaping unsymmetrically; while at the same time, by a movement as imperceptible as that of the hour-hand of a watch, the tiny prey was carried along between the plates towards the corner of the mouth. The latter, however, moved most, and at length reached the edges of the plates, and gradually took in and closed upon the insect, after which it slowly returned to its usual place in the centre of the disk.

"After some quarter of an hour, observing that the tentacles were more fully expanded than before, and inferring that so tiny a morsel had only whetted the coral's appetite, I caught a house-fly in the window pane, and taking hold of its wings with a pair of pliers, plunged it under water. The tentacles held it at the first contact as before, and drew it down upon the mouth, which instantly began to gape in expectation. But the struggles of the fly's legs perhaps tickled the coral's tentacles in an unwonted manner, for they shrank away, and presently released the intended victim, which rose to the surface like a cork; only however to become the breakfast of an expectant *actinia bellis*, which was much too wise to reject or to let slip so dainty a prey. The poor coral evidently regretted the untoward necessity of letting it go, for his mouth—I will not say *watered*, for being under water the expression might be open to criticism, but—*gaped* for some time after the escape."

There is, at first sight, something painful to the sensitive mind, in the contemplation of the spectacle presented in the preceding extract, of the extent to which death is interwoven with the entire system of animal life; but it must be remembered that the present economy of nature has been constructed in anticipation of a state of things which has been affected to an extent of which we are not acquainted, by the blighting presence of moral evil.

The compensations which these zoophytes have received in the way of protection against the animals that attack them are also very curious. One species, *anguinaria spatulata*, has at the extremity of its person a sort of door opening and shutting with a kind of spring—a beautiful piece of mechanism contrived for the protection of the little

delicate inhabitant, permitting him to inhale the surrounding fluid without exposing himself, and enabling him in a moment to shut and bar his gate on the approach of danger. The madrepoire, again, is armed in a different way. On examining its tentacles carefully, Mr. Gosse found them like a quiver full of arrows, being loaded with a species of bristles, which he conjectures to be so many darts destined to be injected into the bodies of the minute animals which form its prey. As he pressed the tentacles or quivers containing these darts, a surprising number issued. "To see," he says, amazed at the spectacle, "these thousands of little vesicles discharging their missiles in rapid succession, like the flight of arrows in ancient battles, was an astonishing sight."

Some curious observations are made in another part of the work on those animalcules which impart luminosity to the deep; and we cannot better close our notice of this charming volume, which we strongly recommend to our readers, than by giving the following specimen of Mr. Gosse's descriptive powers, in the narrative of an excursion, when the luminous qualities of these insects were brought prominently under his notice.

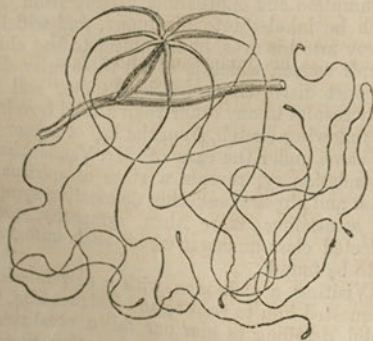
"I was coming down lately by the steamer from Bristol to Ilfracombe in lovely summer weather. Night fell on us when approaching Lynmouth; and from thence to Ilfracombe, the sea, unruffled by a breeze, presented a phenomenon, of no rare occurrence, indeed, to those who are much on the water, but of unusual splendour and beauty. It was the phosphorescence of the luminous animalcules; and though I have seen the same appearance in greater profusion and magnificence in other seas, I think I never saw it with more delight or admiration than here. Sparkles of brilliance were seen thickly studding the smooth surface, when intently looked at, though a careless observer would have overlooked them; and as the vessel's bow ploughed up the water, and threw off the liquid furrow on each side, brighter specks were left adhering to the dark planks, as the water fell off, and shone brilliantly until the next plunge washed them away. The foaming wash of the furrow itself was turbid with milky light, in which glowed spangles of intense brightness. But the most beautiful effect of the whole, by far, and what was novel to me, was produced by the projecting paddle-boxes. Each of these drove up from before its broad front, a little wave continually prolonging itself, which presently curled over outwardly with a glassy edge, and broke. It was from this curling and breaking edge, here and there, not in every part, that there gleamed up a bluish light of the most vivid lustre, so intense that I could almost read the small print of a book that I held up over the gangway. The luminous animals evidently ran in shoals, unequally distributed; for sometimes many rods would be passed, in which none or scarcely any light was evolved, then it would appear and continue for perhaps an equal space. The waves formed by the summits of the swells behind the ship continued to break, and were visible for a long way behind, as a succession of luminous spots; and occasionally one would appear in the distant darkness, after the intermediate one had ceased, bearing no small resemblance, as some one on board observed, to a ship

showing a light by way of signal. The scene recalled the graphic lines of sir Walter Scott :—

“ Awaked before the rushing prow,
The mimic fires of ocean glow,
Those lightnings of the wave;
Wild sparkles crest the broken tides,
And flashing round, the vessel's sides
With elfish lustre lave;
While far behind, their livid light
To the dark billows of the night
A blooming splendour gave.”

“While on this subject I will mention the charming spectacle presented by some of the sertularian zoophytes, in the dark. Other naturalists, as professor Forbes, Mr. Hassal, and Mr. Landsborough, have observed it before me, and it was the admiration expressed by them at the sight that set me upon witnessing it for myself. I had a frond of *laminaria digitata*, on whose smooth surface a populous colony of that delicate zoophyte *laomedea geniculata* had established itself. I had put the frond into a vessel of water as it came out of the sea, and the polypes were now in the highest health and vigour in a large vase in my study. After nightfall I went into the room in the dark, and taking a slender stick, struck the frond and waved it to and fro. Instantly one and another of the polypes lighted up, lamp after lamp rapidly seemed to catch the flame, until in a second or two every stalk bore several tiny but brilliant stars, while from the regular manner in which the stalks were disposed along the lines of the creeping stem, the spectacle bore a resemblance sufficiently striking to the illumination of a city; or rather to the gas jets of some figure of a crown or V. R., adorning the house of a loyal citizen on a gala-night; the more because of the momentary extinction and relighting of the flames here and there, and the manner in which the successive ignition appeared to run rapidly from part to part.”

The volume contains, we may add, many very pleasing descriptions of rural scenery, and some interesting anecdotes on general subjects, very happily told.



THE HYDRA.

MARKS OF TRUE RELIGION.—Sin is a burden.—The Saviour is precious.—The word of God is sweet.—Prayer is delightful.—Christians are beloved.—The world is felt to be a broken idol.—Heaven and Christ's presence are longed for.

SWEE-E-E-E-E-E-E-E-E-E-E!

THE morning is frosty and foggy, and the stars, that are shining clearly enough above the dense mantle of mist which lies like a moist blanket upon sleeping London, are shut out from view, as, roused by some unusual sound, we start from our sleep and turn a drowsy eye towards the sky. There is yet no sign of dawn—nothing but a dim yellow haze that gleams up from the street. What was it that dissipated our slumbers and banished that poetic dream which held us entranced by witching music in some golden valley? There it is again! “Swee-e-eep,”—and there goes the area bell, “ting—ting—ting,” which, for aught we know, were the identical sounds which constituted the harmony of our slumbering perceptions. Now Betty is astir, and, but half awake, is lumbering down-stairs to let the poor fellow in; a few low accents and stealthy noises follow, and all is quiet again. Congratulating ourselves that we are not compelled to get up at five o'clock on a winter's morning to earn a shilling by cleansing the alimentary canals of gentlemen's kitchens, we turn instinctively beneath the counterpane and compose ourselves again to sleep. But it is not to be. The kitchen flue happens to run past the head of our bed in its passage to the roof, and before we have caught a glimpse of slumber, there is that nondescript machine, with a head like a mop in the act of wringing, and as many tails as a political agitator, scratching, routing, and tearing away with noise enough to banish sleep for the next twelve hours at least; so we give it up, and lie awake for an hour, musing upon the sable subject which the ailments of a sooty chimney have evoked for our morning's entertainment.

In years long since vanished we, too, were in the habit of rising before dawn in the wintry months, in order to be present by break of day at the scene of our daily labours. On these occasions we had opportunities of observing something of the habits of the members of this peculiar profession, whom society has, for reasons more obvious perhaps than justifiable, in a manner shut out from its recognised circles. We came to a conclusion with regard to the practical portion of the profession—a conclusion which we have since seen no reason to revise—that, as a class, they are more characterised by resignation than by enterprise. This may well be, seeing that they are almost invariably pressed into the sooty ranks when young, and without the liberty of exercising a choice; and that, when they are aroused at last to a full sense of the social degradation of their condition, it is too late to escape from it, and resignation is their only resource. At the time we refer to, chimneys were universally swept by climbing-boys; and owing to the prevailing narrowness of the flues, the smaller the boy who could be taught to climb, the greater his value to his master. We recollect one little fellow, whose master must have had a “good connexion,” who swept the chimneys of a long street through which we passed daily, and whose apparition, as he stood shaking his cold toes or rattling the area railings with his broom to rouse the maid, became as familiar to us as any inanimate object in the course of our route. One morning, when the Thames was covered with masses