

margins; the darker spot of the back very obscurely indicated. There were only two, in a large series of specimens, in which these marks were distinct, and in them they were paler than usual. The base very pale yellowish, rather darker between the teeth of the aperture.

5. *Cypræa staphylæa*. The larger number of the specimens of this species are bright orange-yellow, polished, and without any of the usual white tubercles. Some of them have an irregular white blotch on each side.

Some specimens have more or less distinct small white dots on the back, in place of the tubercles; one large specimen has these spots very slightly raised, thus approaching the normal state of the species.

With these shells were sent—

1. *Cypræa Madagascariensis*, in the usual state of the species.

2. *Cypræa staphylæa*. A small, very dark-coloured variety, of a uniform pale brown colour on the back, with numerous minute white dots; the base white, with yellow-edged teeth, and some dark brown lines on the upper edge of the margin of each end of the shell.

I have no materials to explain the cause of this absence and alteration in the usual colour of such a number of species of shells belonging to a single family. As far as I have observed, the peculiarities are restricted to the species of this group; the shells belonging to the other families that were sent with them being of their normal colour. The specimens, I may observe, are of the usual size and form, and are easily determined by comparison with specimens from other localities.

VII.—*A Notice of Nature-Printing of Sea-weeds on the Rocks in the vicinity of Stromness, Orkney.* By CHARLES WILLIAM PEACH*.

I BEG to lay before the Society a most interesting fact of true nature-printing of sea-weeds which I met with in August 1856, immediately below the ruins of the ancient episcopal palace of Stromness. I was examining on the sea-shore the charnel-house in which lie the skeletons of the ancient denizens of the waters of the Old Red Sandstone period; my attention was engrossed by their numbers and variety, and the beauty of the sculpture of the black shining wings and dermal covering of the *Pterichthys*, the "berry upon bone" cuirass of the *Cocosteus*, the fluted and polished spears and delicately fretted mail of the *Diplacanthus*,

* Communicated by the author; having been read at the last meeting of the Royal Physical Society of Edinburgh, on the 28th April 1858.

and the burnished and spotted portions of the *Dipterus*, *Diplopterus*, *Osteolepis*, &c. &c., and then the large nail-bone of the gigantic *Asterolepis*, — all unmistakeable “footprints of the Creator,” — these, with the scaly *Lepidodendron* and other land-plants, all causing me to look back on past ages. Willing as I might be to muse and ask myself questions, I was not long able to do so; for in my movements I came upon rocks of a different character and hue, on which were portrayed pictures of recent plants, well known to me. I might have drawn on my imagination, and fancied that some one, well skilled in drawing, and willing not to be idle, having found a stretch of flattened rocks prepared for the purpose, had traced, with no “prentice han’,” some of the Algæ of our shores, with a light yellowish colour on the dark ground, and had succeeded so well, that at once I was able to name the genera and species, quite as readily as if the plant itself had been displayed on paper and presented to me for examination by one of the lady-algologists who reside in Pomona, and who, by their persevering and laudable industry, have earned the best wishes of all naturalists, by adding so largely to their knowledge of the beautiful “sea-flowers” which had so long blushed unseen on these rich and interesting shores, — now, happily, many no longer unseen; of this I had ample evidence in the splendid collections so kindly shown to me by several of the lady collectors. I greatly regretted that my legitimate work, the looking after the fossil land-plants, would not permit me to examine them so carefully as I could have desired; for amongst them I saw many species which hitherto I had only seen on the southern shores of England.

I found that these pictures occupied large spaces; some of the slabs were covered with them, two or three feet in length by half as much or more in breadth; the best are from one-third to one-half between the tide-marks. *Desmarestia ligulata* is the predominant form, with *Desmarestia* (*Dichloria*) *viridis*, &c. I saw that *D. ligulata* was very plentiful; a great quantity of it was lying on the rocks, in various stages of decay, — no doubt making more pictures where it rested. The form on the slab herewith sent, compared with the specimen spread on paper, will show that there is no mistaking the die used for the medal. If the slab is examined at the paper point, *Dichloria viridis* will be found pretty well defined. After I had detached this slab and one or two smaller pieces, my time was up, and I could examine no farther.

The stone I send (such is the case with many of the printed slabs) is coated by *Ralfsia verrucosa*, a leather-like Alga common on our shores; this coating may be likened to the chemical preparation in photography, the *Ralfsia* being the sensitive part to

be eaten away by its overlying corrosive brother. The impress is thus made, and the stone, when washed by the next flowing tide, is cleared of all the vegetable matter, both of the decaying *Desmarestia* and dissolved *Ralfsia*; the picture is then beautifully shown (fixed) on the light-yellow coated slab. Not only does the *Desmarestia* destroy the *Ralfsia*, it also dissolves some of the rock; and thus, as well as the depression left by the washing-out of the Alga, it is engraved in the stone; and probably this depression is added to, time after time, by the carbonic acid in the sea-water, and thus the more indelible it becomes.

Even in rocks of a deep dark-grey colour, containing little or no lime, and on which no growing Alga is to be seen, the *Desmarestia* imprints its form, by extracting the colour; and, although not so distinct as the prepared one, it is often well defined. I saw such on the coast; and the lady of the Rev. Mr. Learmonth kindly showed me one, which a quarryman had brought, some years before, as a plant of the age of the Old Red Sandstone; it retained all the markings fresh. These rocks dip gently to the westward, and are exposed to the full sweep and terrific lash of the waves of the Atlantic.

The first, and I may say, only impress must be quickly done, for each returning tide would certainly remove the weed, and leave not a trace of the vegetable matter behind. When we take into consideration the well-known property possessed by the *Sporochneæ* of destroying other Algæ, we cease to wonder at the eating-away of the *Ralfsia*; the extraction of the colour and the dissolving the hard rock will, however, cause some surprise, and we naturally ask, what can this lithographic property be? This and many other questions must be passed, and the one uppermost attended to; for we are looking back upon the ancient periods in the history of our earth. I have seen, in most of our geological formations, plant-like forms "painted," or rather, "discharged," especially when cleaving the Devonian and Silurian rocks of Cornwall and the Old Red Sandstones of Scotland, and have been struck by their forms; for so much like plants have they appeared, that again and again have I found great difficulty in persuading myself that they were not so,—always pleading the absence of organic matter; and this was a sad stumbling-block, for not a vestige could be seen. Others have been equally perplexed. Our lamented friend Hugh Miller, after speaking of the now acknowledged land-plants of the Lower Old Red Sandstone of Caithness, at page 435 of the 'Testimony of the Rocks,' says, "I may here mention, that curious markings, which have been regarded as impressions made by vegetables that had themselves disappeared, have been detected during the last twelvemonth in a quarry of the Lower Old Red Sandstone near Huntley, by the

Rev. Mr. Mackay of Rhynie. They are very curious and very puzzling; but though some of the specimens present the appearance of a continuous midrib, that throws off, with a certain degree of regularity, apparent leaflets, I am inclined to regard them rather as lying within the province of the ichnologist than the fossil botanist." From never having seen any of my friend Mr. Mackay's "puzzling specimens," I am unable to give an opinion about them; but, from the tenor of the whole passage, of which I have only quoted a part, I should be inclined to give them to the botanist. The absence of organic matter, with the midrib and hard fernlike appearance, weigh greatly with me;—for, as with the fossil, so with the beautiful Stromness forms, no portion of the vegetable can now be seen. There is plenty of proof that the pictures now presented to your notice were made by plants. I tried, on my return home, the experiment of laying a piece of *Desmarestia* on a stone from the beach, and exposed it in the hot sun, keeping it moistened with sea-water; and although the plant was far gone in decay, and the stone not prepared, and also too pale and siliceous, I succeeded in getting a faint impress,—quite distinct enough to show that, with better materials, success would be certain. I have since ascertained that one of the lady algologists of Pomona, long ago aware of these markings, had succeeded fully, with the splendid materials there, in getting them delineated in the way I tried. One thing, however, we do know,—that land-plants, as well as sea-plants, existed in the Lower Old Red Sandstone period: as regards the former in Caithness and Orkney, it is only lately an acknowledged fact. Plants, principally of the sea, also existed in the Silurian period; and, as tides ebbed and flowed and the sun shone in both periods as now, why might not the Algæ be cast on their exposed and ripple-marked rocks, and their likenesses indelibly printed, and, on the next flowing tide, the type swept away, leaving no trace of organic matter behind? I wish most distinctly to be understood, that I do not insist on claiming *all dendritical markings* on and in rocks for the botanist, for I know that some of these doubtful markings are caused by infiltration, and very many by the sportive arborescent forms of minerals; add to these, those from the crawling of Crustacea, the wriggling of Annelides, and the tracks of the vegetable-feeding Mollusca, all playing their part in the puzzling drama. I must, however, after acknowledging all these, and striking the balance, still think there is a probability that the printing process has thrown off the greatest number.

I have delayed sending this to you, in the hope of finding some notice of such a process beyond the very short one which I forwarded, at the time of the discovery, to the British Associa-

tion for the Advancement of Science. I have never been able to find a word. I therefore venture now to trouble you, in the hope that it will become more widely known, and be the means of showing that it is going on in different parts of the globe.

I must request that the slab sent with this may be returned. I would gladly give it to a public museum. It is the only good one I have; and I see no hope of ever going again to the printing house at Orkney to get more.

Wick, April 12, 1858.

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The Wonders of Geology. By GIDEON ALGERNON MANTELL, LL.D. &c. Seventh Edition, revised and augmented by T. R. JONES, F.G.S. London: H. G. Bohn. 1857-58.

THIS work forms one of the re-issues of Mr. Bohn's scientific series, and from the favourable reception it has met with, as indicated by the number of editions it has passed through, may fairly be considered as a useful introduction to the study of geology. The groundwork of these volumes was derived from a series of lectures given more than twenty years since by Dr. Mantell, at Brighton, in an attempt at the time to establish a county museum and scientific institution in that town. The basis of the museum was to have been the original geological collection, containing upwards of twenty thousand specimens, from which the subjects for the illustration of the lectures were selected. This collection, the result of the untiring labour of many years, both in the field and in the cabinet, was not destined to remain in the county of Sussex, from whence the larger and more valuable portion was derived, and the physical structure and ancient natural history of which it was intended to illustrate. As is well known, the Mantellian museum, containing many unique specimens, was transferred to the British Museum, where they are fully displayed amongst the other treasures contained in the Palæontological department of the national collection. Dr. Mantell may be said to have lived through some of the phases of geological science, and was no mean contributor to its onward progress, whether we regard the nature of his scientific writings, or the character of his popular teachings. As a lecturer, Dr. Mantell was probably unequalled: abounding in information, clear and lucid in style, gifted with a poetic temperament, he never failed to interest and instruct the audiences he frequently addressed. To him intellectual exertion was a relaxation rather than a fatigue: during the latter years of his life, and when in an impaired state of health, we have occasionally returned with him, after lecturing to some large assembly, and fully felt how his intellectual energies and poetic imagination have sustained him amidst much bodily suffering and mental anxiety.



Peach, Charles William. 1858. "VII.—A notice of nature-printing of sea-weeds on the rocks in the vicinity of Stromness, Orkney." *The Annals and magazine of natural history; zoology, botany, and geology* 2, 50–54.

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