

A Paper on Corals.

From the *Illustrated Magazine*.

I saw the living pile ascend  
The mausoleum of its architects,  
Still dying upwards as their labors closed—  
Slime the material, but the slime was turned  
To adamant, by their petritic touch.  
Fragile 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 weaker brought forth the rock.  
Arm by atom, thus the barrier grew,  
Even like an infant in the womb, till Time  
Delivered Oceana of that monstrous birth—  
A Coral Island, stretching east and west.

THE observations made on corals, as seen in the beds where they grow, at the Sandwich islands, and recorded on the spot, as in previous correspondence, have induced me to compare the results thus obtained with what has been written on this subject by certain late authors.

To begin with Sir David Brewster. In a recent article, copied into the *Eclectic* from the *North British Review*, he says—“Our readers, no doubt, are aware that the coral rocks, which form islands and reefs hundreds of miles in extent, are built by small animals, called polypus, that secrete, from the lower portion of their body, a large quantity of carbonate of lime; which, when diffused around the body, and deposited between the folds of its abdominal coats, constitute a cell, or *polypidom*, or *polypary*, into the hollow of which the animal can retire. The solid thus formed is called a coral, which represents exactly the animal itself. These stony cells are sometimes single and cupped; sometimes ramifying, like a tree, and sometimes grouped, like a cauliflower, or imitating the human brain. \* \* \* The calcareous cells which they build, remain fixed to the rock in which they began their labors after the animals themselves are dead. A new set of workmen take their places, and add another story to the rising edifice. The same process goes on from generation to generation, until the wall reaches the surface of the ocean, where it necessarily terminates.

“These industrious laborers act as scavengers of the lowest class; perpetually employed in cleansing the waters of the sea from impurities, which escape even the smallest crustacea; in the same manner as the insect tribes, in their various stages, are destined to find their food by devouring impurities caused by dead animals and vegetable matter in the land.

“Were we to unite into one mass the immense coral reefs, three hundred miles long, and the numberless coral islands, some of which are forty and fifty miles in diameter; and if we add to all this all the coralline limestone, and the other formations, whether calcareous or silicious, that are the works of insect labor, we should have an accumulation of solid matter which would compose a planet or a satellite—at least one of the smaller planets, between Mars and Jupiter. And if such a planet could be so constructed, why we not conceive, that the solid materials of a whole system of worlds might have been formed by the tiny, but long-continued labors of beings that are invisible?” &c.

Now here is a mixture of fancy and fact, which a single personal inspection of a coral reef by the learned theorizer, would have very considerably modified. He would become satisfied, I think, that the great reef itself, as it appears at the Sandwich Islands, so far from being the work of insect labor alone, is the basis, which nature herself lays, (in the way before referred to, by the precipitation of carbonate of lime, through electrical agency, from sea-water,) for the coral insect to build upon, and garnish with his beautiful structures, and from time to time add to, it is true, by their decay, but never rear alone from the depths of the sea. To theorize in the study is one thing; carefully to examine and compare the processes of nature in the sea and on the land, is quite another; which, if more critically and oftener done, would preclude, or quite annihilate, and always modify, the learned labors of many a philosopher.

Coral was generally deemed a vegetable substance until the year 1720, when M. de Peyronnel, of Marsailles, commenced,

and continued for thirty years, a series of observations by which he ascertained the coral to be the production of a living animal of the polyp tribe. The general name of *zoophytes*, or plant-animals, has since been applied to these marine insects, though sometimes called lithophytes, or stone plants. They occur most frequently in the tropical seas, and decrease in number and variety as we approach the poles.

“The various species of these animals,” says Dr. Milner, *Gallery of Nature*, p. 381, “appear to be furnished with minute glands, secreting gluten, which, upon exudation, convert the carbonate of lime in the ocean, and other earthy matters, into a fixed and concrete substance, twisted and fashioned in every variety of shape. The formation of coral is one of those chemical processes in the great laboratory of nature, which the skill of man has not enabled him either to imitate or to comprehend; but the fact is clear, that large masses of solid rock are formed by those diminutive living agents, sea-workers, toiling and spinning to the music of the waves; whose constructions are capable of resisting the tremendous power of ocean, when most agitated by winds and tempests, and ultimately become a secure habitation for man himself. The coral substance appears to bear the same relation to the insect, as the shell of a snail or an oyster does to either of those animals, without which they cannot long exist; and it is upon the death of the animalcules that their separate structures become firmly knit together by some mysterious cement, and serve as the basis for the erections of fresh races, which, as they die off, increase the growth of the firm and solid fabric.”

Millions of millions thus, from age to age,  
With supplest skill, and toil unwearyable,  
No moment and no movement unimproved,  
Line laid on line, on terrace terrace spread,  
To swell the heightening, brightening, gradual mound,  
By marvellous structure climbing towards the day.  
Each wrought alone, yet all together wrought,  
Unconscious, not unworthy instruments,  
By which a hand invisible was raising  
A new creation in the secret deep.  
Omnipotence wrought in them, with them, by them;  
Hence, what Omnipotence alone could do,  
Worms did.

Captain Flanders, while surveying the coasts of New Holland, examined the coral formations in process there; and his remarks seem to me to give the true theory of coral reefs, if there be added the fact of the natural precipitation of carbonate of lime from the sea-water in which it is held in solution, and the formation of the cement by electrical agency and heat. “It seems to me,” he writes, “that when the animalcules, which form the coral at the bottom of the ocean, cease to live, their structures adhere to each other by virtue either of the glutinous remains within, or of some property in salt-water; and the interstices being gradually filled up with sand and broken pieces of coral washed by the sea, which also adhere, a mass of rock is at length formed. Future races of these animalcules erect their habitations upon the rising bank, and die in their wonderful labors. The care taken to work perpendicularly in the early stages, would mark a surprising instinct in these discriminative creatures. Their wall of coral, for the most part, in situations where the winds are constant, being arrived at the surface, affords a shelter, to leeward of which their infant colonies may be safely sent forth; and to this, their instinctive foresight, it seems to be owing that the windward side of a reef, exposed to the open sea, is generally, if not always, the highest part, and rises almost perpendicular, sometimes from the depth of two hundred, and perhaps many more fathoms.”—H. T. C.

KNOWLEDGE IS POWER.—This expression of Lord Bacon is usually supposed original with him. He found it, however, in the Bible, “a wise man is strong; yea, a man of knowledge increaseth strength.”—*Prov.*, xxiv., 5.

\* Commander Wilkes, of our Exploring Squadron, sounded only one hundred and fifty fathoms from the perpendicular coral cliff of Aurora Island, but found no bottom with a line of that length.