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REVIEW.

*Journal of Researches into the Natural History and Geology, of the Countries visited during the voyage of H.M.S. Beagle round the World, under the command of Capt. Fitz Roy R. N.* By Charles Darwin, M. A., F.R.S. London: John Murray. 1845. pp. 506.

The journal of Mr Jukes, naturalist on board of H.M.S. Fly, is in course of review by our Melbourne contemporary, the Observer; and as the volume from the pen of Mr Darwin, naturalist of the Beagle, is a sort of twin-publication, possessed of equal interest to the inhabitants of this hemisphere, we conceive that we shall, in conjunction with the labors of our contemporary, be advancing the ends of science, and encouraging a taste for the acquirement of knowledge, hitherto but little manifested among our fluctuating, wealth-seeking population.

The voyage of the Beagle extended over a period of four years, from the beginning of 1832 to the end of 1835, so that the author had leisure enough to observe much that was interesting, and to afford him opportunities of forming deliberate opinions upon matters which a mere wayfarer might pass over with a cursory notice. His theory of the formation of coral reefs and rocks, (quoted and adopted by Mr Jukes,) is a favorable instance of his having made a diligent and discriminating use of the advantages which he enjoyed.

It was at the special request of Capt. Fitz Roy that a naturalist was permitted to accompany him, and so anxious was he to have a scientific person on board, that he gave up part of his own apartments and privileges to Mr Darwin, in order to secure his company.

The principal object of the expedition was to survey the coasts of Patagonia, and of several islands in the Pacific, and to carry a chain of chronometrical measurements round the world but with these purposes, we, in reviewing Mr Darwin's book, have nothing to do.

Passing over the common-place details of departure, we find our author at St. Jago, in the Cape de Verd archipelago. Here he witnessed for the first time a sand-haze, an obscuration arising from the air being loaded with impalpable dust wafted by the trade winds from the coast of Africa. As we have ourselves witnessed the same phenomenon, we can vouch that Mr Darwin's remarks are by no means overcharged.

In the beginning of 1837 on our voyage out to this colony, the ship in which we were, passed through a sand-haze at the distance of 300 miles from the African coast. The haze lasted for four days, and was so dense that the sun was not once visible, although the quarter of the heavens in which it was, could never be mistaken. The haze was evidently of greater density near the surface of the sea, and was lighter overhead. As we were for four days sailing, with

a side-wind, through this great sandcloud, at the rate of 100 miles per day, and we may presume that it extended over the space between us and the African coast, this immense aerial sand-bank must have been at least 400 miles long by 300 broad; and if we estimate only a ton of sand to the square mile, the quantity of solid matter wafted across the ocean, in those four days, would have amounted to 120,000 tons. There could be no mistake as to the haze being caused by particles of sand, for the whole ship was covered with it, the sails especially were impregnated with the powder, and acquired a red color, which was visible even after arrival in Port Jackson. The sand also could easily have been collected in small quantities.

As our object, however, is the review of Mr Darwin's narrative, and not the relation of our own experience, we shall proceed to lay before our readers his account of the sand-haze as experienced at the island of St. Jago:

"Generally the atmosphere is hazy; and this is caused by the falling of impalpably fine dust, which was found to have slightly injured the astronomical instruments. The morning before we anchored at Porto Praya, I collected a little packet of this brown-colored fine dust, which appeared to have been filtered from the wind by the gauze of the vane at the mast-head. Mr Lyell has also given me four packets of dust which fell on a vessel a few hundred miles northward of these islands. Professor Ehrenberg finds that this dust consists in great part of infusoria with siliceous shields, and of the siliceous tissue of plants. In five little packets which I sent him, he has ascertained no less than sixty-seven different organic forms! The infusoria, with the exception of two marine species, are all inhabitants of fresh water. I have found no less than fifteen different accounts of dust having fallen on vessels when far out in the Atlantic.

From the direction of the wind whenever it has fallen, and from its having always fallen during those months when the harmattan is known to raise clouds of dust high into the atmosphere, we may feel sure it all comes from Africa. It is, however, a very singular fact, that, although Professor Ehrenberg knows many species of infusoria peculiar to Africa, he finds none of these in the dust which I sent him : on the other hand, he finds in two species which hitherto he knows as living only in South America. The dust falls in such quantities as to dirty everything on board, and to hurt people's eyes; vessels even have run on shore owing to the obscurity of the atmosphere.

It has often fallen on ships when several hundred, and even more than a thousand miles from the coast of Africa, and at points sixteen hundred miles distant in a north and south direction. In some dust which was collected on a vessel three hundred miles from the land, I was much surprised to find particles of stone above the thousandth of an inch square, mixed with finer matter. After this fact one need not be surprised at the diffusion of the far lighter and smaller sporules of cryptogamic plants."

Another interesting part of Mr Darwin's notes at this stage of his voyage, is his description of the habits of several marine animals, and especially of the cuttlefish. These singular

creatures exist in great numbers on the shores of Port Phillip, and in Bass's Straits, the shores of which are strewn with their pen. We have seen a live one at the Jetty in Corin Bay, but when disturbed it effected a very speedy retreat, leaving a cloud of ink at least a yard in extent round where it had been. Our author says:

"I was much interested, on several occasions, by watching the habits of an Octopus, or cuttlefish. Although common in the pools of water left by the retiring tide, these animals were not easily caught. By means of their long arms and suckers, they could drag their bodies into very narrow crevices; and when thus fixed, it required great force to remove them. At other times they darted tail first, with the rapidity of an arrow, from one side of the pool to the other, at the same instant discoloring the water with a dark chesnutbrown ink. These animals also escape detection by a very extraordinary, chameleon-like power of changing their color. They appear to vary their tints according to the nature of the ground over which they pass: when in deep water, their general shade was brownish purple, but when placed on the land, or in shallow water, this dark tint changed into one of yellowish green. The color, examined more carefully, was a French grey, with numerous minute spots of bright yellow : the former of these varied in intensity; the latter entirely disappeared and appeared again by turns. These changes were effected in such a manner, that clouds, varying in tint between a hyacinth red and a chesnut brown were continually passing over the body. Any part, being subjected to a slight shock of galvanism, became almost black: a similar effect, but in a less degree, was produced by scratching the skin with a needle. These clouds, or blushes as they may be called, are said to be produced by the alternate expansion and contraction of minute vesicles containing variously coloured fluids.

"This cuttlefish displayed its chameleon-like power both during the act of swimming and whilst remaining stationary at the bottom. I was much amused by the various arts to escape detection used by one individual, which seemed fully aware that I was watching it. Remaining for a time motionless, it would then stealthily advance an inch or two, like a cat after a mouse; sometimes changing its colour : it thus proceeded, till having gained a deeper part, it darted away, leaving a dusky train of ink to hide the hole into which it had crawled. While looking for marine animals, with my head about two feet above the rocky shore, I was more than once saluted by a jet of water, accompanied by a slight grating noise. At first I could not think what it was, but afterwards I found out that it was this cuttlefish, which, though concealed in a hole, thus often led me to its discovery. That it possesses the power of ejecting water there is no doubt, and it appeared to me that it could certainly take good aim by directing the tube or siphon on the underside of its body. From the difficulty which these animals have in carrying their heads, they cannot crawl with ease when placed on the ground. I observed that one which I kept in the cabin was slightly phosphorescent in the dark." We shall take pleasure in recurring occasion-ally to this very interesting work, and communicating to our readers such portions of it as may be of special interest.