

of an accumulation of minute foraminiferous shells. Even in the nummulitic limestone, the matrix in which the Nummulites are imbedded is itself composed of minute Foraminifera, and of the comminuted fragments of larger ones. The remarkable discovery has been recently made by Prof. Ehrenberg, that the green and ferruginous sands which present themselves in various stratified deposits, from the Silurian to the Tertiary epoch, but which are especially abundant in the Cretaceous period, are chiefly composed of *casts* of the interior of minute shells of Foraminifera and Mollusca, the shells themselves having entirely disappeared. The material of these casts, which is chiefly siliceous, coloured by silicate of iron, has not merely filled the chambers and their communicating passages, but has also penetrated, even to its minutest ramifications, that system of interseptal canals, whose existence, first discovered by Dr. Carpenter in Nummulites, has been detected also in many recent Foraminifera allied to these in general plan of structure. And it is a very interesting pendant to this discovery, that a like process has been shown by Prof. Bailey to be at present going on over various parts of the sea-bottom of the Gulf of Mexico and the Gulf Stream; casts of Foraminifera in green sand being brought up in soundings with living specimens of the same types.

MISCELLANEOUS.

OBITUARY NOTICE.—ROBERT BROWN, ESQ.

DIED at his residence, 17 Dean Street, Soho Square, formerly the library of Sir Joseph Banks, on the 10th of June, Robert Brown, Esq., D.C.L., F.R.S., Keeper of the Botanical Collections in the British Museum, and formerly President of the Linnæan Society. We translate from the 'Archives de Botanique' for April 1833, the following notice of this great botanist, from the pen of M. Adrien de Jussieu:—

"The Academy of Sciences of the Institute of France reckons among its members eight foreign associates. Whenever death effaces one of these eight names, the name which appears most illustrious in the world of science out of France is designated to replace it. To read over the list of the foreign associates of the Academy from its foundation, is consequently to pass in review all those men whose memory is connected with the history of the great advances of the human mind,—Newton, Leibnitz, Euler, Linnæus, Haller, Volta, &c. The science which we cultivate may therefore be proud of the fact that, at this moment, of the eight elected from among the luminaries of science, two are botanists, M. DeCandolle and Mr. Brown.

"It was in the sitting of the 4th of March that Mr. Brown was elected by the Academy. Of 47 votes he obtained 29; the remainder were shared among his competitors, none of whom had more than 7 votes. They were Bessel, Von Buch, Faraday, Herschel, Jacobi, Meckel, Mitscherlich, CErsted, and Plana. That among so

many brilliant works due to these illustrious authors, those of Mr. Brown should have particularly fixed the attention and commanded the majority of the Academy, will not astonish our readers, accustomed as they are for the most part to the study of his works. It will be sufficient for us to recall them briefly, insisting upon results without paying attention to titles; for Mr. Brown's memoirs generally perform a great deal more than they promise, and it is almost always a specialty that he takes as a starting-point to ascend from it to the most comprehensive generalizations, by an artifice perhaps analogous to that which is recommended by the precepts of the poetic art.

"Mr. Brown early abandoned the practice of medicine for botany, towards which he was attracted by a peculiar taste and aptitude. He accompanied Capt. Flinders to Australia, and on his return to Europe occupied himself with the publication of the Flora of New Holland. The first volume of the 'Prodromus' of this Flora, unhappily the only one that has appeared, revealed to the scientific world a great botanist, whom France was the most prompt in recognizing. It is true that the author was the first, out of our own country, to step out of the narrow circle in which the followers of the Linnæan system had shut themselves up, and to employ the more capacious method which had its origin in France. But his merit was not confined to recognizing its superiority; he treated it like a master; and the creator of the Natural Method had the satisfaction of knowing that he was thoroughly comprehended, by the modifications which his system underwent in its adoption.

"Unquestionably, for a skilful botanist, no study could be better fitted to exercise and to demonstrate his sagacity than that of the plants of New Holland,—plants so different in external form from those of the other great continents, although the greater number of them are allied by the more important characters of their organization,—plants which appear to us, to use the expression of an ingenious botanist, as it were under a mask. In a series of important memoirs treating of these vegetables, and of those of Africa, of various natural groups, Mr. Brown has continued to furnish us with a multitude of new ideas on families, their limits, their relation to each other, and their composition. And while he throws light on a multitude of special points, he treats incidentally, or even in a note, on general questions of the highest order, as, for example, on the inflorescence (Memoir on *Compositæ*), on the identity of vegetable organs (Memoir on *Rafflesia*), on the questions which interest botanical geography (various Memoirs); or he takes pleasure in showing the value of characters previously neglected, such as those of præfloration (Prodr. Fl. Nov. Holl.), or of the stomata (Proteaceæ Nov. Holl.).

"Of late years, the question of the generation of plants appears to have fixed Mr. Brown's attention, and there have resulted several memoirs, short, indeed, but full of observation (*Kingia—Orchid.* and *Asclepiad.*), in which he makes known the double element of the problem, the organization of the ovule on the one hand, and of the

pollen on the other; and we may hope soon to see the mystery of this function cleared up by the valuable labours of authors of other nations, and particularly of our own, developing and extending those which he has published.

“To recall the principal claims of Mr. Brown to the admiration of botanists as a classifier, a describer, an anatomist, and a physiologist, is to enumerate those qualifications which obtained for him the suffrage of the Academy. Let us congratulate ourselves on having found this fortunate opportunity of placing his *éloge* before our readers; that of other botanists is commonly only the expression of our regret, and we occupy ourselves with their lives only when they have ceased to exist. Since we have now the good fortune to speak of a life still full of faculties and of activity, let us close by expressing a hope that it may continue to bear fruits and to multiply them, and by reminding Mr. Brown himself that several of his labours still wait for their completion, which ought not to be left to other hands than his own.”

On the Anatomy of Terebratula australis. By P. GRATIOLET.

M. Gratiolet's memoir, although published two months after that of Mr. Hancock on the organization of the Brachiopoda, was prepared long before the publication of the latter. Without entering into a detailed analysis of M. Gratiolet's work, we may remark, that the sketch of the circulation of the blood given by him does not at all agree with that furnished by Mr. Hancock. M. Gratiolet considers as the centres of the circulation the two organs which, since the investigations of Cuvier upon *Lingula anatina*, have by common consent been denominated *hearts*. According to Mr. Hancock, on the contrary, these organs have nothing to do with the circulation, but serve probably for the emission of the eggs, the true heart being a single organ. It is clear that so fundamental a difference cannot be reconciled in any way; but it is as well to remark, that M. Gratiolet has only had *Terebratulæ* preserved in spirit at his disposal.

Mr. Hancock denies the existence of the anus in the Brachiopoda, in opposition to Prof. Owen, who admits the presence of an anal orifice. It is consequently interesting to find that M. Gratiolet has been unable to discover the anus of *Terebratula australis*. However, he is more cautious than Mr. Hancock, and does not deny its existence because he has not seen it; far from this, he regards its existence as probable, but asserts that it must be very small.

M. Gratiolet has also closely investigated the mechanism of the muscles of the shell and peduncle of *Terebratula australis*. In common with Woodward, Davidson and Hancock, he has recognized the system of muscles which serve to open the shell; these he denominates *diductor muscles*; they are the *cardinal muscles* of the two former writers, and the *divaricators* of Hancock.—*Journal de Conchyliologie*, Oct. 1857, and *Bibl. Univ.* June 20, 1858, p. 176.



1858. "Obituary notice.— Robert Brown, Esq." *The Annals and magazine of natural history; zoology, botany, and geology* 2, 80–82.

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