

creigns of the Tertiary oceans as to their ancestors,—they leave us without reply." Flower is bold enough to face this problem, and he does so in a fair and vigorous way, though limiting himself to the supposition of slow and gradual change. He gives up at once, as every anatomist must, the idea of an origin from fishes or reptiles. He thinks the ancestors of the whales must have been quadrupedal mammals. He is obliged for good reasons to reject the seals and the otters, and turns to the ungulates, though here also the difficulties are formidable. Finally, he has recourse to an imaginary ancestor, supposed to have haunted marshes and rivers of the Mesozoic age, and to have been intermediate between a hippopotamus and a dolphin, and omnivorous in diet. As this animal is altogether unknown to geology or zoology, and not much less difficult to account for than the whales themselves, he very properly adds: "Please to recollect, however, that this is a mere speculation." He trusts, however, that such speculations are "not without their use;" but this will depend upon whether or not they lead men's minds from the path of legitimate science into the quicksands of baseless conjecture.

Gaudry, in his recent work, "*Enchainements du Monde Animal*,"¹⁶ though a strong advocate of evolution, is obliged in his final résumé to say: "Il ne laisse point percer le mystère qui entoure le développement primitif des grandes classes du monde animal. Nul homme ne sait comment ont été formés les premiers individus de foraminifères, de polypes, d'étoiles de mer, de crinoides, etc. Les fossiles primaires ne nous ont pas encore fourni de preuves positives du passage des animaux d'une classe à ceux d'une autre classe."

Prof. Williamson, of Manchester, in an address delivered in February last before the Royal Institution of Great Britain, after showing that the conifers, ferns and lycopods of the Palaeozoic have no known ancestry, uses the significant words: "The time has not yet arrived for the appointment of a botanical king-at-arms and constructor of pedigrees."

Another caution which a palaeontologist has occasion to give with regard to theories of life, has reference to the tendency of biologists to infer that animals and plants were introduced under embryonic forms, and at first in few and imperfect species. Facts do not substantiate this. The first appearance of leading types

¹⁶Paris, 1883.

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