

mentioned in my last communication, of specimens showing little or no appearance of a tubular structure on their exterior.

In conclusion, if the surface-observations which I have hitherto brought under the notice of palæontologists have not been deemed sufficient to show that the valves of *Rhynchopora Geinitziana* are tubulated through and through, like those of species belonging to nearly every family of the *Palliobranchiata*, it is to be hoped that the clear evidence adduced in the present paper will be accepted as entirely removing all doubts on the matter.

Belmont, near Galway.

Feb. 14, 1866.

BIBLIOGRAPHICAL NOTICE.

Catalogue of the Coleopterous Insects of the Canaries in the Collection of the British Museum. By T. VERNON WOLLASTON, M.A., F.L.S. Printed by order of the Trustees. London, 1864. 8vo, pp. xiii & 648.

Coleoptera Atlantidum, being an enumeration of the Coleopterous Insects of the Madeiras, Salvages, and Canaries. By T. VERNON WOLLASTON, M.A., F.L.S. London: Van Voorst, 1865. pp. xlvii, 526, & 140.

WHETHER we are to regard the ancient traditions of an Atlantis as pure fables, or as springing from some germ of truth, there can be no doubt that its scattered islands, as the last relics of a great submerged continent, must ever be looked upon with interest by the naturalist. We cannot tell whether their summits were gazed upon by men when this country was under an icy sea and the reindeer wandered over Southern France, which would probably carry back the time

“When first Madeira trembled to a kiss”

to a period considerably earlier than that ascribed to this remarkable phenomenon by the Rev. Mr. Bowles; but we may justly regard the animal inhabitants of these islands as representatives, perhaps somewhat changed, of the great fauna of the lands now forming the sea-bottom of the Atlantic, crowded together upon the highest points to which they had access, and looking out, Deucalion-like, over the flood that has destroyed the home of their progenitors.

Looked at in this light, a sort of dramatic interest seems to surround these dwellers in the islands of the sea—an interest, however, which cannot but heighten our curiosity to know as much as possible about them; whilst at the same time the data to be obtained from their study, in connexion with the great question of the origin of species, are of such importance that their careful investigation must be considered one of the greatest services that can be rendered to philosophical zoology.

Already some of these islands had received a portion of the atten-

tion which they deserve, although the 'Histoire Naturelle des îles Canaries' of Webb and Berthelot cannot be looked upon as a very satisfactory performance, and it has been reserved for an English naturalist to appreciate the whole interest attaching to a thorough examination of the fauna of the Atlantic islands, and to devote himself with almost unexampled zeal to the task of investigating at least the most considerable portion of their terrestrial inhabitants, the Insects. For more than eighteen years (for his first visit to Madeira dates back to 1847) Mr. Wollaston has been engaged in a most careful study of the islands of the Madeiran and Canarian groups, resulting in an enormous addition to the number of known species of Insects; and his published works on the Coleoptera of these islands, the titles of the two latest of which stand at the head of this notice, must be regarded as among the most valuable additions to entomological literature ever made in this country.

The history of these publications is as follows:—In 1854, after three prolonged visits to Madeira, Mr. Wollaston published his 'Insecta Maderensia,' a magnificent quarto volume containing descriptions of all the Coleoptera known to inhabit Madeira, and illustrated by a series of beautiful plates. This was supplemented, in 1857, by a 'Catalogue of Madeiran Coleoptera,' published by the Trustees of the British Museum, and containing such additions as had been made to the list of Madeiran Beetles during the previous three years. The desirability of an examination of the Canary Islands then suggested itself to Mr. Wollaston, who subsequently spent two periods of more than six months each in those islands, and, collecting with his accustomed assiduity and success, brought home a mass of materials which showed the complete absurdity of the meagre list of Canarian Coleoptera given by Brullé in the great work of Webb and Berthelot. The elaboration of this material was the origin of the 'Catalogue of Canarian Coleoptera,' published in 1864 by the authorities of the British Museum, Mr. Wollaston's collections having been deposited in that establishment. But while this was in preparation, several entomologists, including two of our best British Coleopterists, the Messrs. Crotch, were engaged in collecting in the Canaries; and among the immense number of specimens obtained by them, a good many species were found which had not previously been detected. These were handed over to Mr. Wollaston for examination; and their elaboration has led to the publication of the second work indicated at the head of this article, the 'Coleoptera Atlantidum,' which contains a complete synonymic catalogue, with observations upon known, and descriptions of new species, of the members of the order Coleoptera hitherto discovered in the three northern groups of Atlantic islands—the Madeiras, Salvages, and Canaries.

When we come to examine the results of all this indefatigable work, both in the field and in the closet, we find that they are fully commensurate with the labour that their attainment has cost. M. Brullé, in the great French work above-mentioned, gives a list of only 179 species of beetles from the Canaries; and even some of these are considered by Mr. Wollaston, on apparently good grounds, not

to belong to these islands at all. In his 'Catalogue of Canarian Coleoptera,' Mr. Wollaston raises this number to 930, which is enlarged in the 'Coleoptera Atlantidum' to 1007, by the addition of 77 newly detected forms. The Madeiran Islands and the Salvages may be regarded as having been virgin ground up to the time of our author's first researches in Madeira; by his own investigations, and those of others induced by his success, he has brought the number of described species from the former to 661; whilst the Salvages, consisting of bare storm-beaten rocks, have furnished 24 species, 13 of which are peculiar to them.

The total number of species of Coleoptera recorded by Mr. Wollaston as occurring in all the groups is 1449, of which 1234 have been captured by himself, whilst 935 were first described by him. The species belong to 423 genera, 82 of which were first characterized by the author. Out of this whole number a good many are of course common to the islands and various parts of Europe and Northern Africa; and when these are deducted we find that about 700, or nearly half the species, may be regarded as being what Mr. Wollaston terms "ultra indigenous," the positive autochthones of the soil. Singularly enough, when we consider the general faunal resemblance running through the Coleoptera of the whole archipelago, the entire number of species common to the Madeiras and Canaries is only 238; and of these 38 may be deducted as having been in all probability introduced by commerce, thus leaving only 200 presumably indigenous species common to the two groups. The generally European character of the forms met with is also remarkable; for, except in the two easternmost of the Canaries (Lanzarote and Fuerteventura), nothing of a truly African element is to be detected, the species and types not peculiar to the islands being either European or "Mediterranean" forms.

Mr. Wollaston dwells particularly, in the comparison of the Coleopterous fauna of the Atlantides and the nearest mainland, upon the circumstance that several of the Atlantic forms differ from their nearest continental allies by very minute characters, the permanence of which constitutes their claim to specific distinction, whilst their small importance seems almost to lead to the surmise that the so-called species may be only what Mr. Wollaston calls "local phases" of European species. Similarly several forms are indicated as differing in the same degree in the Canaries and Madeira, or even in different islands of the former group, as will be easily seen by reference to Mr. Wollaston's "Index Topographicus," where the supposed possible original species are pointed out by an arrow. Mr. Wollaston, in fact, seems to regard these forms as of the same nature as those denominated "phytophagic races" and "phytophagic species" by Walsh, although he is far from adopting the evolutionary doctrines supported by that author, and maintains strongly the essential existence and *limited* variability of species. The author's remarks upon this interesting subject (Coleoptera Atlantidum, Introduction, pp. xxxviii-xlvi) are of much importance, and will well

repay perusal. Nevertheless it does appear to us that we have here an example of gradually increasing segregation, probably extending over a very long period of time, with change of external conditions, resulting, at all events in some cases (if Mr. Wollaston's notion of these derivative species be correct), in the production of forms differing by slight characters from the original type. The Darwinist will say that the other forms, the specific rank of which, according to Mr. Wollaston, is not doubtful, have probably required and undergone a greater amount of modification to fit them for their altered conditions of existence. Under any circumstances, it seems to us that the insect fauna of the Atlantic islands furnishes naturally almost an experimental realization of the conditions necessary for the origin of species by evolution from preexisting types; and a good naturalist, without theoretical bias (if such a being can be found), might certainly do much towards the settlement of this *quæstio vexata* by a careful investigation of the 'Coleoptera Atlantidum,' under Mr. Wollaston's guidance. In connexion with this, the curious facts presented by the study of the dominant forms of Beetles in these islands (adverted to by the author in Col. Atlant. xxii-xxv) will be of particular importance.

This notice has already extended to such a length, that several points to which we might otherwise have referred must be passed in silence. We may, however, state in general terms that the whole introduction to the 'Coleoptera Atlantidum,' extending to 47 pages, is replete with interesting observations and remarks, and gives an increased significance to the systematic portion of the work. Both the 'Catalogue of Canarian Coleoptera' and the 'Coleoptera Atlantidum' contain descriptions of a great number of species: in the former work these are introduced in their places in the Catalogue; in the latter they are given in an Appendix, and only referred to in the body of the work. Both contain excellent topographical indexes,—that in the 'Catalogue' showing the species inhabiting the various islands of the Canarian group, whilst that appended to the 'Coleoptera Atlantidum' exhibits only the faunal relations of the three groups of islands. The latter work is illustrated with an outline map.

Thus in the two volumes now before us, and in his 'Insecta Madeirensia,' Mr. Wollaston has fulfilled one of the highest tasks of the zoologist: he has worked out, in an almost exhaustive manner, the members of an extensive group of animals inhabiting a well-defined area; and having aimed at perfection in his work, it must be confessed that he has perhaps attained it as nearly as is possible to man. We can only hope that his present visit to the more southern islands of the Atlantic may lead to equally valuable results—a hope in which all entomologists will certainly agree with us.