

concerning certain beds of this stage, that 'between Brunn and Olmutz (in Moravia) there exists a large number of these outliers in the form of isolated buttes, of which the upper plateau, formed of limestone with Lithothamnium, attains very uniformly the altitude of from 350 to 355 meters. Nevertheless at Ruditz, not far from Brunn, this formation occurs as high up as 435 meters, and at an elevation of 429 meters at Abtsdorf, towards the bottom of the great gulf of Bohemia. If we assume, as Suess does, that broad sheets of flat strata cannot have been elevated to their position, they must have been deposited at that or a higher level. Hence, the adjacent lower lying deposits of the same stage, together with the sea-level, have been depressed.

Two chapters are devoted to the great desert plateau of the Sahara and to the fragments of the Indian continent, or Gondwana-land. The lands of these areas are held to be the oldest in the eastern hemisphere. The geological knowledge concerning this district is fairly well summarized, the faults and evidences of change of level by displacement being particularly set forth. In the sequel of this work Suess promises to consider whether the sinking of continents so vast as the lost areas of Gondwana-land has been able to produce a general lowering of the shore-lines and so determine the emergence of plateaus like that of Sahara and Arabia.

Two long chapters are devoted to a description of the mountain chains of India and Central Asia, presenting a good summary of the geology of these regions. North and South America then come in for discussion and comparison with typical Alpine areas. Concerning the earthquakes of the South American coast, Suess holds them to be 'the index of some great tectonic phenomenon of the present epoch, the nature of which is unknown.'

Closing the first volume is a chapter on The Continents. Our author, admitting the difficulty which arises in deciding upon characters which should be accepted in defining the age of a continent, thinks it best to fix its birth 'from the time when the sea has definitely abandoned the large depressions in its area.' In this light North America is held to be no older than the Laramie. In this same point of view, Gondwana-land is much older than America.

Many interesting questions, which the above outline of Suess's views will raise in the mind of the physical geologist, will best be deferred for discussion in connection with the promised second volume of the work, in which it is understood they are to be treated by the author himself.

The first volume is accompanied by a list of contents and is well printed. The pages bristle with footnotes and bibliographic references, the larger part of which are due to the comprehensive grasp of the current literature of geology which M. De Margerie has more than once displayed. As a key to the geology of a large part of the globe the book is invaluable on this account alone. The illustrations are few in number, but good. Many points in the distribution of geological formations on which the argument so often depends might be made clearer to a large class of students by the addition of a few more maps. An atlas as detailed as Stieler's Hand-Atlas is really necessary for following some of the descriptions in an intelligent way. While one closes the book without being convinced that the author's point of view and his interpretation of certain fields are necessarily the only or the right ones, he does so with a feeling of renewed interest in the geology of large areas and in the great physical problems of the earth. Every advanced geological student should read the book for information, for suggestion, for a broadening of his view and to see how a master in the art of writing marshals facts from one of the widest and most varied fields of natural science.

J. B. WOODWORTH.

*A Classified Catalogue, with Localities, of the Land Shells of America, North of Mexico.* By H. A. PILSBRY. Philadelphia, April, 1898. Pp. 35.

The appearance of a new catalogue of North American land mollusca is a matter of interest, not merely to malacologists, but to all students of geographical distribution. Mainly through the efforts of Mr. Pilsbry, our snails have been newly classified in recent years, more nearly in accordance with their relationships than heretofore. At the same time, the genera have been divided into subgenera and sections, while

numerous new species and subspecies have been described, so that in all respects the new list is very different from its predecessors.

Looking through the list, from the standpoint of the student of geographical distribution, we notice the following points as worthy of comment:

1. Notwithstanding our proximity to the Greater Antilles, of which we have an especially lively realization at the present time, we get scarcely more than a tinge of their wonderful snail fauna, even in Florida. Thus the list includes but two Cyclostomatidæ, both West Indian species, and these confined to the hot part of Florida. This seems really remarkable, when we remember the innumerable species of this family in Cuba, and remember, further, that they are operculate and might, therefore, be supposed to resist the sea water and readily travel on floating trees.

2. The northward distribution of Mexican types is interesting. *Bulimulus* has kept to the lower levels, as is its wont, but has got as far (*B. dealbatus*) as North Carolina, Kentucky and Alabama. *Holospira*, on the other hand, occupies mainly the tableland, and even the tops of the mountains in southern New Mexico, but not north of the middle of that Territory. It is a Southern type, extending into the upper Sonoran zone, like the bee-genera *Centris*, *Exomalopsis*, etc.

3. The distribution of our typically American snails, *Polygyra* (sens. lat.), is especially interesting. They are, of course, in great force in the eastern United States, from north to south, and well into Canada. A section of them inhabits the Pacific coast region, and goes inland, like certain slugs of the same region, to northern Idaho. In Wyoming and Colorado the genus is totally lacking, but coming down to New Mexico we find a southern section of it appearing, but only at high elevations. This last-mentioned section extends down to the tableland of Mexico, and even to the lowest levels on the eastern side. It seems possible that *Polygyra* once inhabited the whole Rocky Mountain region, but that during glacial times was exterminated as far south as the ice went, which must have been about to its present northern limit. It could not well live on the

low, dry plains, but survived on the moister, forest-clad mountains southward, where it can be found to this day. It may be, therefore, that *Polygyra* will yet be found fossil in Colorado and Wyoming.

4. In the Limacidæ (the ordinary slugs) six species are listed; but it is not stated, as it should be, that three have been introduced by man. The remaining three are all very close, indeed, to European forms; indeed, it has been held on very good authority that *Agriolimax campestris* is not a species distinct from the European *A. lævis*; while I have more than once examined the Pacific coast *Amalia hewstoni* both internally and externally, and cannot see that it is anything but *A. gagates*. Yet there is no doubt that *Ag. campestris* and *Am. hewstoni* are native with us; the former is common almost all over the country. It is a very striking thing that we should have so few Limacidæ, and these so little peculiar, when Europe is so rich in large and beautiful types of this family.

5. The Arionidæ, another family of slugs, is well represented in Europe; but, apart from an introduced species, totally wanting in this country except in the Pacific coast region, extending to northern Idaho, as above mentioned. Here, however, it extends from British Columbia to southern California, and has at least fourteen species, belonging to seven distinct genera, all endemic!

Many other interesting facts can be gleaned from a perusal of the list, but it would take too much space to enumerate them. Of adverse criticisms we have few to make, and these relate to minor points of no general interest. The subfamily Arioninæ should not be credited to Pilsbry, as it was indicated and named by W. G. Binney in 1864, and is only now restricted by Pilsbry. The proper citation would be Arioninæ (W. G. Binn.) Pilsbry. *Veronicella* should unquestionably be used in place of *Vaginulus*. Other such matters could be mentioned, but we may leave the subject with the wish that so useful a list might be compiled for many another division of our fauna, at least for the fresh-water mollusca, which have not been catalogued properly in recent times.

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MESILLA PARK, N. M., May 5, 1898.