repository for the national collections, these reports touched but lightly upon the vast amount of material stored away. Within the past five years, however, and since the National Museum has become recognized as the place where all government expeditions shall deposit the material collected by them, a large volume has been annually devoted to this branch alone. Those which have been issued are filled with information upon a great variety of subjects, although special attention seems to have been devoted to ethnology. Naturally, other matters are treated of, and it is likely that, in the future, place will be given to all departments as fast as the several curators find time or see fit to devote their attention to making the collections under their charge known to the outside world.

The article under review, for it is merely an excerpt issued under a separate cover from the Report of the Museum for 1890, and covering pages 503–591 of that report, is one which, while designed to be a handbook for the collections, is in reality a condensed account of the rocks forming the earth's crust. In it one will find concise descriptions of the sixteen principal elements that go to make up rock masses; a list of the original and secondary minerals of these rocks; an account of the macroscopic and microscopic structure of rocks; the chemical composition (in brief) and the color. The most extensive portion of the handbook, however, is that which deals with the kinds of rocks. Under this head we have described the four varieties of (1) *aqueous*, those formed through the agency of water either as chemical precipitates or as sediments; (2) *œolian*, those formed from wind-drifted meterials; (3) *metamorphic*, those changed by dynamical or chemical agents from an original aqueous or igneous origin; and (4) *igneous* (eruptive), those brought up from beneath the surface in a molten condition. It is not necessary to go into details as to all these classes, or to mention the various divisions made of them; an extract or two will serve to show the character of the remarks. For example, under Chlorides we read: —

"Sodium chloride, or common salt, is one of the most common constituents of the earth's crust. From an economic standpoint it is also a most important constituent. It occurs in greater or less abundance in all natural waters, and, as a product of evaporation of ancient seas and lakes, it occurs in beds of varying extent and thickness among rocks of all ages wherever suitable circumstances have existed for their formation and preservation. Salt-beds from upwards of a few inches to thirty feet in thickness occur in New York State and Canada, while others abound in Pennsylvania, Virginia, Ohio, Michigan, and Louisiana. There are also numerous surface deposits, of great extent, in the arid regions of the West" (p. 533).

Under the head of *Siliceous group*, infusorial or diatomaceous earth, we find the following: —

"This is a fine white or pulverulent rock composed mainly of the minute shells, or teats, of diatoms, and often so soft and friable as to crumble readily between the thumb and finger. It occurs in beds which, when compared with other rocks of the earth's crust, are of comparatively insignificant proportions, but which are nevertheless of considerable geological importance. Though deposits of this material are still forming, e.g., in the marshes of Yellowstone Park, and have been formed in times past at various periods of the earth's history, they appear most abundantly associated with rocks belonging to the Tertiary formations.

"The celebrated Bohemian deposit is some fourteen feet in thickness, and is estimated by Ehrenberg to contain 40,000,000 shells to every cubic inch. The Australian specimen exhibited is from a deposit four feet in thickness. In the United States, beds are known at Lake Umbagog, New Hampshire; Morris County, New Jersey; near Richmond, Virginia; Calvert and Charles Counties, Maryland; in New Mexico; Graham County, Arizona; Nevada; California; and Oregon. The New Jersey deposit covers about three acres, and varies from one to three feet in thickness; the Richmond bed extends from Herring Bay, on the Chesapeake, to Petersburg, Virginia, and is in some places 30 feet in thickness; the New Mexico deposit is some six feet in thickness and has been traced some 1,500 feet; Professor LeConte states that near Monterey, in California, is a bed some 50 feet in thickness; while the geologists of the fortieth-parallel survey report beds not less than 300 feet in thickness of a pure white, palebuff, or canary-yellow color as occurring near Hunter's Station, west of Reno, Nevada.

"The earth is used mainly as a polishing powder, and is sometimes designated as *tripolite*. It has also been used to some extent to mix with nitro-glycerine in the manufacture of dynamite. Chemically the rock is impure opal" (p. 540).

It is in such books as these that the young student finds his best helps. The information given is accurate; the paths are made pleasant; the rough places are smoothed. It is greatly to be desired that the other departments of the Museum may have as useful descriptions of their contents.

JOSEPH F. JAMES.

Washington, D.C., Aug. 8.

Phases of Animal Life, Past and Present. By R. LYDEKKER. London. Longmans, Green & Co. 8°. $1.50.

THIS admirable series of essays, which was originally published in *Knowledge*, has been reprinted in an attractive form both as regards typography and illustrations. The essays are concisely written, and reveal a wealth of knowledge on the part of the author. The explanations of scientific discoveries and conclusions are neither too elementary nor too technical, and the essays will be read with pleasure as well as profit by anyone interested in zoological lore.

The earlier and the closing chapters of the book are devoted to the consideration of various morphological adaptations, such as protective armor, the modifications of limbs for flying and swimming, and the forms of teeth and horns. The author then takes up the fossil reptiles, describing the characteristics of the ichthyosaurs, plesiosaurs, and dinosaurs, and explaining the differences between them. Other chapters relate to the tortoises, the extinct gigantic birds, the egg-laying and marsupial mammals, and other animals whose structure and history are of special interest. There is for the most part no close connection between the various topics, but they are all important and worthy of attention.

In the treatment of morphological subjects Mr. Lydekker makes use of certain metaphorical expressions which may possibly mislead the unwary reader. Various modifications are spoken of as if they resulted from the conscious, intelligent action of the animals concerned. It is stated, for example, that the ancient mail-clad fishes "appear to have come to the same conclusion as the more advanced divisions of the human race, that a massive armor for the protection of the body is an encumbrance" (p. 7). Again, the reptiles "held divided opinions as to whether a bony coat of mail was or was not a thing to be retained as a permanency." Such expressions are calculated to induce a wrong way of looking at things unless, indeed, the Lamarckian idea that modifications result directly from the efforts of organisms is to be accepted.

One is surprised to find in the writings of so good a naturalist as Mr. Lydekker the statement, or insinuation, that the separation of the amphibians from the reptiles is due to "that tendency to multiply terms for which they (the naturalists) are so celebrated" (p. 8). Mr. Lydekker, of course, well knows and, indeed, takes pains to explain, that the separation was made on account of the fact that the typical representatives, at least, of these two groups are very different both in structure and mode of development. There have undoubtedly been many instances in which naturalists have coined new names unnecessarily, but this is certainly not a case in point.

These are small defects, however, and are entirely overbalanced by the excellencies of the book. It deserves and will repay perusal.

AMONG THE PUBLISHERS.

"THE Delaware Indian as an Artist" is the subject of a fully illustrated paper by Dr. Charles C. Abbott, to appear in *The Popular Science Monthly* for September. The objects of art which are represented include carved-stone gorgets, a wooden spoon-handle, wooden masks, and other carvings, many of them showing much skill. Professor J. S. Kingsley will describe "The Marine Biological Laboratory at Wood's Holl," giving pictures of its building and interior arrangements. Something is told also of its neighbor, the laboratory of the United States Fish Commission. Surgeon George M. Sternberg, U.S.A., will have a paper on "In-