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 563-591 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) solcan, those formed from wind-drifted materials; (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, of the Chalk we read, "Sal Generation 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. 333). Under the head of Siliceous group, fusiform or diatomaceous earth, we find the following:—

"This is a fine white or pulverulent rock composed mainly of the minute shells, or tests, 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 geographical 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 Monte-

rey, in California, is a bed some 50 feet in thickness; while the geologists of the fourth-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. 549).

It is in such books as these that the young student finds his best help. The information given is accurate. The paths are made pleasant. Naturally, 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.


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, pleiosaurs, 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 instigation, 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 are here represented include carved-stone gorgets, a wooden spoon-handle, wooden masks, and other carvings, many of them showing much skill. Professor J. S. King and will describe "The Marine Biological Laboratory at Woods's Island," 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-
fectious Diseases: Causation and Immunity," giving the facts that have been established in this field up to date; and 'A Further Study of Involuntary Movements,' by Professor Joseph Jastrow, supplementing a previous paper on this subject, will appear. — Charles Scribner's Sons issued on Aug. 8 Stevenson's long-expected book on Samoa, entitled "A Footnote to History," being a narrative of the varied history of that island for the past eight years.

J. B. Lippincott Company's August Bulletin of New Publications appearing among other announcements, the following: Two volumes of Photography: Its History, Processes, Apparatus, and Materials. Comprising Working Details of all the more Important Methods," by A. Brothers. In the preparation of this work, the author's aim has been to produce a Handbook for the Use of Students of Photography, which should give the results of practical experience, and include, as far as possible within a moderate compass, information gathered from many sources, and not readily accessible. The newer methods have been dealt with in sufficient detail, and special attention given to the processes in use prior to the introduction of the gelatino- bromide method. Some of these processes are in danger of being neglected through the facilities which the newer methods have introduced. But, as Professor Brothers demonstrates, the new processes do not give results equal to the old, and are totally unsuited for some purposes — such as making negatives for photograph-lithography, and in various other ways. Where practicable, the plates illustrate the processes described, thus making the work distinctly more valuable to students.


-Ginn & Co. have nearly ready "German Orthography and Phonology," by George Hempel, Assistant Professor of English in the University of Leipzig. They will publish in the fall "Fourier's Series, and Spherical, Cylindrical, and Analytical Harmonics," with applications to problems in mathematical physics, by W. E. Ryster.

-Outing for August opens with the first installment of Wheeling Man Frank G. Lenz's description of a cycling tour around the world. The rider is at present somewhere on the broad western prairies, en route for the Pacific coast, and during his two-year jaunt he will traverse Japan, China, India, Persia, Turkey, Austria, Germany, Holland, France, England, Scotland, and Ireland. Mr. Lenz will communicate his experiences to Outing from convenient points of his journey, illustrating his articles by photographs taken by himself. The opening chapter describes the trip.

INDEXES TO VOLUMES XVII. AND XVIII.

OF SCIENCE.

are in preparation, and will be issued at an early date.
across the Alleghenies from Pittsburgh via Washington to New York, and is profusely illustrated.

— The experiment station of Cornell University conducted an experiment in 1890, showing very decided beneficial results from removing the tassels from a part of the growing corn; their calculations showing about fifty per cent gain from the rows from which the tassels were removed over the alternate rows on which the tassels were allowed to remain. This remarkable showing caused a similar experiment to be undertaken at the Ohio station in 1891. Thirty-two rows of corn, running over quite uniform land, were selected upon which to make this trial. On Aug. 1, the tassels were pulled from each alternate row. At cutting-time four rows, having the tassels removed, were cut and shocked together; then four rows from which the tassels were not removed were shocked together. Continuing this throughout the thirty-two rows, they had when done four shock rows of each. When husked these shock rows were weighed separately. They also separated the merchantable from the unmerchantable corn, and calculated the yield of each separately per acre. They find that the unmerchantable corn from the four plots from which the tassels were removed averaged 21 per cent, while the averages from the other four rows is 21 per cent unmerchantable. The calculations also showed that the average yield per acre is about one bushel less than where the corn was left undisturbed. It is probable that the tassels were not removed in this experiment early enough. To insure or even make possible beneficial results from removing tassels, the pulling should be done as soon as they appear; and before the stalk has weakened itself in an attempt to perfect the tassel. The theory upon which this experiment is based is that the strength that would otherwise go to the maturing of the tassel and production of pollen is diverted to the use of grains; and from their more complete development more corn is produced. The fodder in this experiment was not weighed, because back-water from a high river damaged it to such an extent as to make the weight unreliable.

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