

DEATH OF PROF. COPE.

Prof. Edward Drinker Cope, Ph.D., died at his Philadelphia home April 12. He was professor of zoology and comparative anatomy in the school of biology at the University of Pennsylvania. In the death of Prof. Cope America has lost one of her greatest men of science; a man of world-wide reputation. He was born in Philadelphia in 1840 and studied medicine in the University of Pennsylvania and comparative anatomy at the Philadelphia Academy of Sciences. In 1859 he joined the group of young naturalists who were associated together in the Smithsonian Institution under Prof. Baird. In 1863 he went abroad to study in the universities of Europe. He returned in 1864 to accept the chair of natural science in Haverford College. He resigned this place three years later, becoming palæontologist to the government Geological Survey. His work in this connection has resulted in the discovery of more than one thousand new species of extinct and as many recent vertebrata. Prof. Cope's range, like that of Cuvier, extended from the lowest vertebrates to man and from the dawn of the vertebrate life in the remote palæozoic fishes to evolution in the contemporary races of man. For a while his studies were parallel with those of Leidy and Marsh, but, fortunately for science, they all soon took up different branches of the field. The monumental researches of Prof. Cope were published by the government. Only Part I of the very bulky Tertiary Vertebrata has been published. The plates and preliminary manuscript for Part II are ready. It was Prof. Cope's intention to devote the coming year to their completion. His palæontological studies were thus practically cut in two by his untimely death.

In zoology his investigations were no less important, and include equally striking proofs of his genius as a comparative anatomist.

Prof. Cope is widely known as the leader of the Neo-Lamarckian school in this country, and it is noteworthy that in this sphere he has shown many of the brilliant qualities which characterize the great French predecessor of Darwin. In the preface of his first collected essays, "The Origin of the Fittest," Prof. Cope says that the important point is not only the survival, but the origin of the fitness, and this he traces to the inheritance of the individual reaction to environment. The essays by Weismann in 1882 upon such inheritance do not discredit Prof. Cope's statements, he simply resting upon facts of palæontology as demonstrating the actuality of such transmission, and has proposed a purely hypothetical heredity theory of his own, entitled "Diplogenesis."

Prof. Cope was the chief editor of the *American Naturalist*, which occupies an enviable position among the periodicals of the world which are devoted to pure science and natural history.

In his Philadelphia home he had a wonderful collection of specimens of all kinds. The titles of his papers number upward of three hundred and fifty, and form a systematic record of the development of palæontology in the United States. In the *SCIENTIFIC AMERICAN* of August 22, 1896, a partial list of Prof. Cope's principal papers will be found. The Bigsby gold medal was conferred on him by the Geological Survey of Great Britain in 1879, and his name is on the rolls of many of the scientific societies in this country and abroad, including our own National Academy of Sciences, to which he was admitted in 1872.

He joined the American Association in 1868, and in 1875 was advanced to the grade of fellow. The section on biology made him its presiding officer in 1884, and in the following year he addressed the society on "Catagenesis." In 1895 he was elected president.

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**The Annual Exhibition of the New York
Microscopical Society.**

The eighteenth annual exhibition of the New York Microscopical Society was held in the American Museum of Natural History, Tuesday evening, April 13.

Three of the large exhibition halls of the museum were devoted to the society's use for the evening, and the great crowd of people present testified to the general interest prevailing in this form of scientific study. The society is an incorporated organization and is now in the twentieth year of its existence. It has for its objects the cultivation and advancement of microscopical science and consists of men and women devoted to or interested in microscopy, this being the only qualification for membership. The idea of diffusing a popular knowledge of the revelations of the microscope developed early in the history of the society, and in February, 1880, was begun the series of annual public exhibitions which has been continued to the present time.

The exhibition was somewhat larger than usual, as there were seventy-five separate exhibits, requiring the use of about one hundred and fifty microscopes for their display. It does not seem to be the aim of the society in these exhibitions to show the progress in microscopy during the preceding year so much as to get together an interesting assemblage of beautiful and wonderfully minute objects for the edification of the vast numbers of people who are not in the habit of looking through a magnifying glass. There is such an infinite variety of available objects that one exhibition need not duplicate another, and it would hardly seem necessary to exhibit vinegar eels and cheese mites year after year, but these particular forms of life attracted as much attention this year as they did last, and probably will be as much sought after next year as ever before. Recent advances however in instruments and methods and newly discovered or rare objects were not absent from the exhibition, and this feature was sufficiently pronounced to render the affair interesting and valuable even to the veteran microscopists. Several firms of microscope makers and dealers displayed their newest forms of microscopes and accessories. One of the microtomes exhibited can be made to cut at one slice a section less than $\frac{1}{16}$ inch thick of an anatomical or botanical preparation. Probably the most elaborate microscope shown was one just made by Fuess, of Berlin, for Miss F. R. M. Hitchcock, of Orange, N. J. It is a large instrument devised especially for the study of thin sections of rocks and

minute crystals being sharper and more brilliant than large crystals of the same minerals.

Mention should be made of a series of botanical preparations and microdrawings exhibited by members of the post-graduate, senior and junior classes of the College of Pharmacy of the City of New York. The preparations and drawings were made from studies undertaken during the year, and illustrated, among other things, adulterated opium, true and false cascara, cinchona bark, showing the isolated bast fibers, and mould from a medicinal solution. Another educational exhibit was that made by J. D. Hyatt, assisted by members of the cooking class in Grammar School No. 85. It consisted of sections of wheat, rye, barley, oats and corn, showing the relative amounts of starch and gluten cells in each. The head of a centipede, the musical apparatus of some forms of insects, the head of a moth, with its antennæ, the leg and foot of the honey bee, the wing of a butterfly and the ear of a cricket were objects that attracted much attention and aroused much interest, and even enthusiasm. Certain aquatic plants (*Vallisneria spiralis* and *Nitella*) were shown, in the cells of which one could see the circulation of the protoplasmic contents, and another microscope near by revealed for comparison the circulating blood in the vessels of the tail of a common tadpole.

Arguments for purifying and maintaining the purity of our city water supply were forcefully presented by the exhibit of microscopic organisms, of both animal

and vegetable origin, obtained from Croton water by K. M. Vogel and Dr. S. E. Jelliffe. A more enjoyable exhibit, however, was that on the same table consisting of several kinds of mould prepared and mounted by Dr. Jelliffe. These were delicate green, brown and white forms of plant life raised from spores which were obtained by exposing plates of proper nutrient material to the atmosphere. The investigations made last summer by the Board of Health into the effects of sunstroke were brought to mind by an exhibit by W. Wettengel, which consisted of a section showing the condition of a normal ganglion nerve cell and another showing degenerate ganglion cells resulting from sunstroke. One of the most popular exhibits was that by R. L. Ditmars, consisting of four living snakes and a preparation under the microscope illustrating the change produced in normal blood by the infusion of snake venom. The snakes exhibited were a water moccasin five feet long, a very black rattlesnake, a coral snake and a corn snake. The last is a light, copper colored creature very handsomely marked.

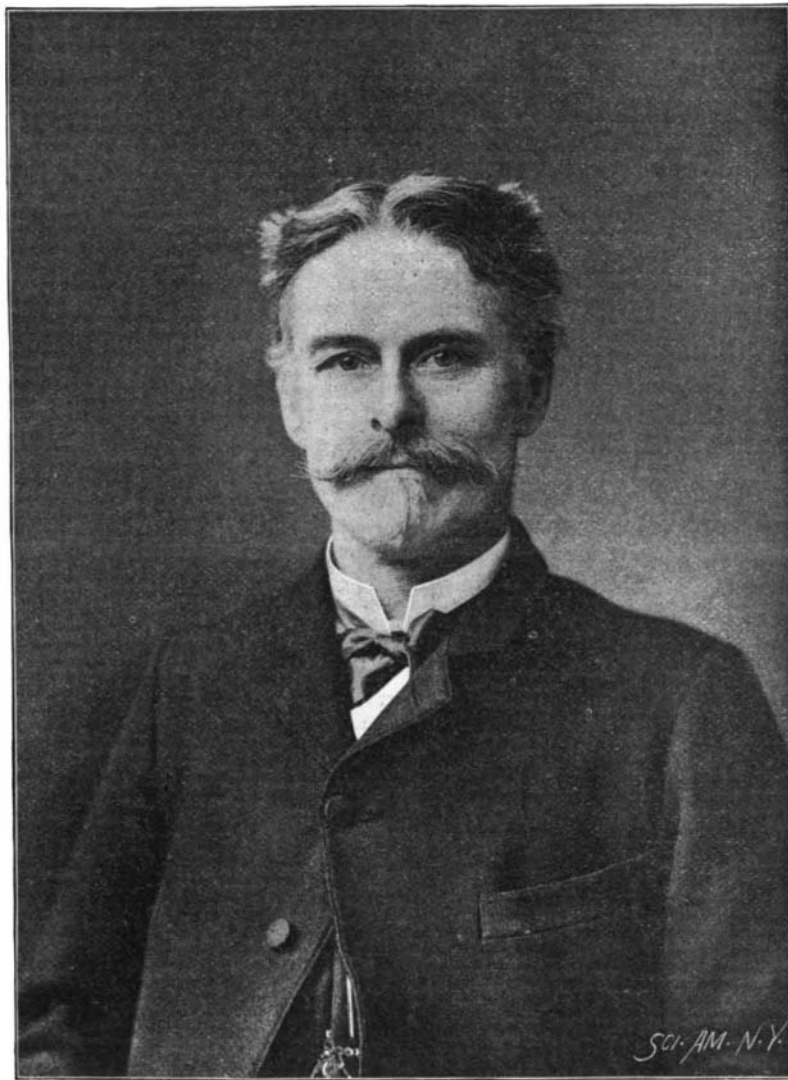
During the evening, Dr. A. A. Julien gave a brief lecture, illustrated by the stereopticon, on the subject "The Travels and Experience of a Sand Grain," in which he gave, in an interesting, popular manner, illustrated by lantern slides, the history of a fragment of rock torn off from some mountain peak by frost or some other agency, until, broken up and disintegrated by abrasion and the solvent action of water, the enduring portion has been deposited in sand banks along rivers, lakes and ocean, while the altered portion has formed beds of clay or mud, or been carried in solution out into the ocean. In arid regions wind plays an important part in the formation and transportation of sand.

In addition to water worn and wind blown sands, those derived from explosive eruptions of volcanoes are of importance, and those made up of the skeletons of organisms (diatoms and radiolarians) are worthy of note. Dr. Julien also presented, but did not elaborate, his scheme for classifying sands according to the size of grain, nature of components and origin.

The officers of the Microscopical Society for 1897 are: president, Frank D. Steel; vice president, F. W. Leggett; secretaries, J. E. Ashby and J. L. Zabriskie; treasurer, James Walker. The committee on the annual exhibition, to whom, together with the museum authorities, is due the success of the event, was J. W. Kosmak, Thomas S. Nedham and Stephen Helm.

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M. SALOMON REINACH has just published a pocket edition of Clarac's "Répertoire de le Statuaire grecque et romaine." There are 890 plates which are of greatest possible use to the student. A complete and well arranged index has been provided, as well as a bibliography. Clarac's text is of course disregarded. In spite of the small sized reductions, the details are clearly defined. Both the editor and the publisher, Leroux, of Paris, are to be congratulated for having thus placed a most useful work within the reach of all students of ancient art. The book is sold at the moderate price of five francs.



THE LATE EDWARD DRINKER COPE.

minerals. One feature of it is that, besides the usual revolving stage, it has a contrivance for rotating the whole polarized light apparatus independently of the stage and the thin section upon it.

In a darkroom at one side of the main exhibition halls, the J. B. Colt Company had a continuous stereopticon exhibition, which was very instructive, as showing something of what could be done with the microscope in connection with an arc light projection apparatus. Living fresh water organisms were shown by means of small aquaria four inches square and an inch and a half thick. These were placed in the stereopticon so that the images of their contents were thrown onto the screen, and the movements of the animals studied by the whole audience at leisure.

All grades of organisms, from the lowest plant to the highest animal, were shown in section, and a glimpse was to be had of the microscopic beauties of the mineral kingdom also. George F. Kunz exhibited a star ruby, showing that the characteristic effect in these gems is produced by some peculiarities in their crystallization, and under another microscope he had an assay button of gold showing over its surface the most delicate fernlike crystal markings. Next to this exhibit was one by W. G. Levison, consisting of twenty-five mounts of minute crystals of various minerals. These mounts are arranged so as to be viewed by reflected light and form most beautiful objects, these