

THE *Educational Review* for January, which is the first number of the seventeenth volume, opens with an article by Dr. W. T. Harris on the future of the normal school, reviewing 'the five stages' in education. Dr. Harris quotes for edification the anecdotes of Newton and the apple and Cuvier reconstructing an extinct animal from a single bone. Professor Thurston contributes the paper on professional and academic schools read by him at the Association of Colleges and Preparatory Schools of the Middle States and Maryland, and Dr. E. L. Thorndike points out the sentimentality of nature study, which interferes with the teaching of science.

THE Macmillan Company announces the publication, in February, under the editorship of Mr. Frank M. Chapman, of the first number of a popular bi-monthly magazine, addressed to observers rather than to collectors of birds. The contributors will include John Burroughs, Dr. Henry Van Dyke, Bradford Torrey, Olive Thorne Miller, Mabel Osgood Wright, Annie Trumbull Slosson, Florence A. Merriam, J. A. Allen, William Brewster, Henry Nehrling, Ernest Seton Thompson, Otto Widmann and numerous other writers.

A YEARBOOK of Neurology and Psychiatry is announced by S. Karger, Berlin, edited by Drs. Flatau and Jacobsohn, under the direction of Professor Mendel. The work is prepared with the cooperation of a large number of leading German neurologists, and will perform a useful function, owing to the wide dispersion in many journals of publications on the subjects included. It will give not only a bibliography of some thirty-five hundred titles of the literature of 1897, but also short reviews of their contents.

#### SOCIETIES AND ACADEMIES.

##### ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.

October 4. MR. LOUIS WOOLMAN, reporting on a specimen of the earth said to be eaten in the South, received through Mr. Wilfred H. Harned from Davidson county, N. C., stated that the substance is not diatomaceous. It had been found, on examination by Mr. S. H. Hamilton, to be composed of twenty per cent.

silica and eighty per cent. of kaolin, with a trace of alum.

MR. EDW. GOLDSMITH spoke of the igneous origin of the rocks on the Massachusetts coast. He suggested that they are of the same age as the Pennsylvania traps and may, therefore, furnish evidence of the existence of craters.

October 11. MR. PHILIP P. CALVERT, in connection with the meeting of the Entomological Section, presented a statement on recent study of neuroptera, reviewing the work of the last three years, or since 1895, when a synopsis of the natural history of the dragon-flies was given before the International Congress of Zoology by Dr. De Selys Longchamps, whose work on these insects extends over a period of sixty-seven years. He has described at least one-half of the two thousand recognized species. The important papers published since the date given were reviewed and their scope commented on.

MR. CHARLES S. WELLES described a vast swarm of the larvæ of *Daremma Catalpæ* observed during the summer at Media. The development and distribution of the insect were described and illustrated by specimens.

DR. HENRY SKINNER further commented on the life-history of the species.

MR. WITMER STONE spoke of the distribution and relationship of *Neotoma pennsylvanica* and its separation from the fossil *Neotoma magister*, described by Baird from the caves of Pennsylvania.

October 18. DR. EDW. J. NOLAN presented to the Academy five volumes prepared as a memorial of the late Dr. Joseph Leidy. They consist of a collection of biographical notices, portraits, autograph letters, manuscripts, original drawings of botanical and zoological subjects and notes, the latter having been contributed for the most part by Mrs. Leidy. After describing the contents of the volumes, Dr. Nolan commented on the attainments and personal character of the distinguished naturalist out of loving regard for whom they had been prepared.

MR. JOHN A. SHULZE called attention to specimens of *Isthmia nervosa* from Hudson's Strait. The species was formerly supposed to be confined to the western coast. Its geographical distribution was further considered by Mr. Lewis Woolman and Mr. Frank J. Keeley.

Mr. N. H. HARNED and Dr. J. C. MORRIS spoke of the effect of a plentiful supply of water on the growth of trees.

October 25. Dr. DANIEL G. BRINTON made a communication, illustrated by specimens from the Academy's collections, on the ethnography and resources of the Philippine Islands.

PROFESSOR J. WHARTON JAMES, by invitation, spoke of the Enchanted Meza and considered the statements of Professors Libbey and Hodge on the subject. He believed that, while there was evidence of the former presence of man on the Meza, the weight of testimony was entirely opposed to his ever having had permanent places of abode there.

PROFESSOR LIBBEY, who was present, being called on by the President, recounted his experience in exploring the Meza and dwelt on the care with which he had reached his results. He declared that the cairn described by Hodge and Lummis has been built by himself. He agreed with Professor James that the top might have been temporarily occupied, but he was sure it never was a place of residence.

November 1. Mr. STEWARDSON BROWN described the results of a recent botanical exploration of the South Mountain region of Somerset County, Pa., a district curiously distinct in its vegetation. The characteristic plants were enumerated.

Mr. JOSEPH WILLCOX spoke of the use of fresh-water mussels in the manufacture of pearl buttons.

November 8. Mr. H. A. PILSBRY described the physical characters of the Roan Mountain region of North Carolina, and dwelt in detail on the mollusca collected there. Even when the species are widely distributed they are here remarkable as presenting mountain modifications varying from racial characters to those of distinct species. The carinated forms of *Polygyra*, for instance, are extremely characteristic and found nowhere else. The district, in fact, has more peculiar species than any other outside the tropics. He was at a loss to account for this individuality.

Mr. ARTHUR ERWIN BROWN called attention to the specific characters of the Ourang, his observations being based on specimens in the Zoological Garden of Philadelphia and the

museum of the Academy. He believed in the existence of two well-marked species, the *Simia Satyris* of Linnæus and the *Simia Wurmbii* of Geoffroy St. Hilaire.

November 15. Mr. S. D. HOLMAN communicated the life-history of *Pleuromonas* as observed in covered life-slides.

Mr. PHILIP P. CALVERT and Dr. BENJAMIN SHARP spoke on the subject of cutaneous respiration.

November 22. Dr. A. F. WITMER, under the auspices of the Anthropological Section, made a communication on involution and the diseases of senility, dwelling on the atavistic tendency to certain diseases with special reference to forms of neurasthenia and their pathological conditions.

Dr. HENRY C. CHAPMAN spoke of the modern theory of the neuron, placing himself on record as believing that it rests on no foundation whatever.

November 29. A symposium was held on the natural history of the Philippines illustrated by specimens from the Academy's collections. Mr. PILSBRY spoke of the distribution and characters of the mollusca; Mr. Witmer Stone of the birds and mammals; Mr. Stewardson Brown of the plants; Dr. Henry Skinner of the lepidoptera, and Mr. P. P. Calvert of the dragon-flies.

Mr. Stone placed on record the recent finding of a small rodent, *Oryzomys palustris*, in New Jersey. It had been discovered in 1816 by Bachman in South Carolina, and the specimen belonging to the Academy, described by Harlan, had been regarded as incorrectly labelled, repeated search having failed to find the form in New Jersey until a week ago, when a number were collected in the southern part of the State by Mr. Henry W. Warrington.

December 6. Dr. FLORENCE BASCOM called the attention of the meeting to the determination of rock constituents with special reference to optical methods, the application of polarized light to the work being particularly dwelt on and illustrated.

December 13. Dr. J. C. MORRIS presented, in connection with the meeting of the Biological and Microscopical Section, a history of microscopic study and the development of microscopes and microscopic preparations during the last

fifty years, dwelling particularly on the work accomplished by Leidy, Goddard, Neill, Hyrtl and Gibbons Hunt before the recent improvements in methods and instruments were heard of. The communication was illustrated by a large number of instruments and slides and was fully discussed by Messrs. Goldsmith, Keeley, Calvert and Dixon.

Papers under the following titles have recently been presented for publication:

Some Cuban Species of *Cerion*. By H. A. Pilsbry and E. G. Vanatta.

Notes on the Growth of the Hobble-bush, *Viburnum lantanoides*. By Ida A. Keller.

The Occurrence of Marcasite in the Raritan Formation. By S. H. Hamilton.

*Margarita Sharpii*, a new Alaskan Gastropod. By H. A. Pilsbry.

The Bone-Cave at Port Kennedy, Pennsylvania, and its partial examination in 1894, 1895 and 1896. By Henry C. Mercer.

Observations on the Classification of Birds. By Dr. R. W. Shufeldt.

A Study of the Type Specimens of Birds in the Collection of the Academy, with a brief history of the Collection. By Witmer Stone.

Mr. Mercer's paper will be published in the *Journal of the Academy*, the others in the *Proceedings*.

E. J. NOLAN,  
Secretary.

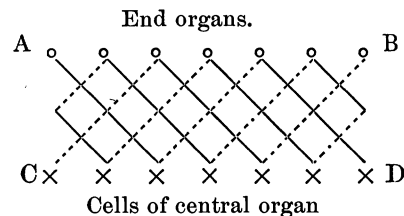
#### DISCUSSION AND CORRESPONDENCE.

##### THE SENSATION OF MOTION AND ITS REVERSAL.

TO THE EDITOR OF SCIENCE: The writer has for a number of years noticed, during railway journeys, a very peculiar reversal of sensations of motion received through the eye, of which he has never seen any description or explanation. The following description and explanation may, therefore, interest the readers of SCIENCE. A sensation of reversed motion of stationary points in the field of vision is perceived by the writer after gazing fixedly out of a car window at a moving landscape. This sensation is quite intense when the eyes are first turned away from the window, dies away gradually, and is greatly weakened by attentive vision. For example, when looking out of the rear door of the train the various objects in

the visual field appear to move towards the center of the field, and upon turning the eyes upon an object in the car everything seems to move away from the center of the visual field; if the train comes to a quick stop while the eyes gaze steadily out at a window the motion of the landscape and the inferred motion of the train appears to be momentarily reversed at stopping, etc.

The existence of this sensation of motion of stationary objects seems to indicate that neither the succession of stimuli nor the stimulation of successive nerve elements is the fundamental fact in the sensation of motion, but rather that the sensation of motion, like other specific sensations, depends upon a *state* of nervous commotion, a state which has, of course, resulted from and is the integral effect of a succession of stimuli. A concrete notion of the character of this state of nervous commotion is as follows:



Let the dots A B represent the end organs of sight—rods and cones—and the crosses C D the nerve cells of the central organ. We may imagine each end organ to be connected, either directly or through ganglion cells, with a number of the cells of the central organ. Let us consider the connections indicated by the diagonal full lines and dotted lines. A succession of stimuli of the end organs from A to B and a succession from B to A would result in radically different states of nervous commotion, especially if the cross connections are not entirely symmetrical or if the connecting nerve fibers are loaded with ganglion cells. Also during a succession of stimuli from A to B the fibers represented by the full lines might be fatigued, while the ones indicated by the dotted lines might be saved by inhibition due to the (outgoing) commotion to which they are subjected in advance of the moving stimulus, so that the effects of this moving stimulus reach