SOCIETIES AND ACADEMIES.

BOSTON SOCIETY OF NATURAL HISTORY.

THE Society met January 19th, thirty persons present.

Dr. G. H. Parker described a double-mouthed *Metridium marginatum*. The characters and the two types of internal structure shown in the normal form were described and compared with *M. dianthus* and allied species. Specimens with two discs were estimated to occur one in 700. The habits of the young were noted, and a detailed description of the two-mouthed specimen given. Fission probably takes place in the young specimen; both œsophageal tubes are entirely distinct; all but one pair of mesenteries are non-directive; division takes place through the endocœls; longitudinal fission, through the later stages, was considered probable.

Mr. B. H. Van Vleck said that he had found specimens of *Metridium* with two discs rather more frequently than Dr. Parker's experience indicated; he had seen, perhaps, 12 or 15, and considered their numerical proportion about one in 200 or 300.

Mr. G. M. Winslow spoke of an abnormal *Amblystoma*. The embryo showed a supernumerary joint behind and below the left hind leg; the abnormal cartilages are separate from the normal cartilages; the muscles were described; the alimentary canal has a number of blind tubules; the arteries are contracted; the veins can be traced. The abnormal pelvic girdle is closest to the 14th vertebra.

Professor C. S. Minot discussed the morphology of the true kidney. In vertebrates there are three distinct organs called kidney, the head kidney, the middle kidney and the true kidney; two of these may occur in the life-history of a single vertebrate. In structure the three differ at all periods. There are two views concerning the development of the true kidney; it may be due to embryonic connective-tissue, or to an actual outgrowth of the walls of the duct; in the pig the evidence obtained is not conclusive. The true kidney is fundamentally different from its predecessor; the head and middle kidneys are without capillary organs; they may be placed in one class, and the true kidney separated into another class. Dr. Minot drew attention to the specimens illustrating his studies, and also to a preparation showing a symmetrical picture of the optic nerve of *Pimelodus*.

Dr. Parker showed an embryo kitten prepared to show the centers of ossification; after removing the viscera, the specimen had been subjected to alcohol, potash, water and glycerine.

SAMUEL HENSHAW,
Secretary.

PHILOSOPHICAL SOCIETY OF WASHINGTON.

THE 479th meeting of the Society was held Saturday evening, February 5th. The first address was by Professor H. W. Wiley on 'Useful Bacteria.' Professor Wiley said in substance: In one sense nearly all bacteria may be regarded as useful. The following remarks, however, apply to those which are useful in agriculture. The growing of our crops depends upon the activity of bacteria in the soil. Especially is this true in respect of their supply of nitrogenous food. The higher vegetables, as a rule, eat only nitric nitrogen, while the original conditions in which nitrogen enters the soil is largely in an organic form, totally unsuited to nourish plants. The nitro-organisms, which are the cooks and prepare the food of plants, belong to three classes: First, those bacteria, molds and yeasts which act upon organic nitrogenous matter and convert it into ammonia; second, those bacteria which act upon ammonia and convert it into nitrous acid; and third, the bacteria which convert the nitrous into nitric acid. The soil also contains ferments which are capable of oxidizing the free nitrogen of the air and converting it into forms suitable for plant food. It has been supposed that these bacteria live chiefly in symbiosis with leguminous plants and in nodules which are found on their roots. It is probable, however, that leguminous plants furnish simply the most favorable environment for the growth of these bacteria and that they may be able to convert free nitrogen into nitric acid entirely independent of other plant life. It may be, however, that there are two classes of organisms of this kind, one oxydizing free nitrogen in symbiosis and the other independently. Advantage is taken of this character of bacteria to cultivate them in a pure state and supply them in small bottles for fertilizing pur-

poses. The bacteria thus prepared are mixed with moist soil and, when they have propagated sufficiently, this soil is spread upon the field and thus the proper fertilizing ferments are introduced into the soil.

The second exercise was a paper by General Geo. M. Sternberg on 'Pathogenic Bacteria.' General Sternberg, in his paper, gave a general account of the modes of action of pathogenic bacteria and of the different channels of infection. He dwelt upon the fact that infection depends upon the degree of virulence of the pathogenic microorganism, upon the number introduced, and upon the susceptibility of the individual exposed to infection. This susceptibility depends upon inherited predisposition, upon reduced vital resisting power due to various depressing agencies, such as malnutrition, fatigue, mental depression, etc., and in certain cases upon a direct exciting cause, such as exposure to cold.

Localized infections were then discussed, including boils, abscesses, wound infection, erysipelas, pneumonia and diphtheria. Some account was also given of general blood infections (septicæmias), and of the pathogenic action of bacteria which multiply in the alimentary canal, producing toxic substances, which, being absorbed, give rise to more or less fatal forms of diseases, *e. g.*, cholera infantum, Asiatic cholera, etc.

The last paper of the meeting was by Mr. E. A. de Schweinitz, on 'Toxins and Antitoxins.' No abstract of this address has as yet come to hand.

E. D. Preston,
Secretary.

TORREY BOTANICAL CLUB, DECEMBER 14, 1897.

The first paper, by Professor Francis E. Lloyd, 'On an Abnormal Cone of *Pseudotsuga taxifolia*,' discussed the inner scales of a cone recently observed on a leader of the Douglas Spruce. He figured and described certain lateral expansions of the primitive scale, remarking that, although of a stipular nature, they are exceptional in their absence of vascular tissue. In the abnormal cone the absence of these expansions from all but the inner scales suggested several lines of explanation, which were discussed in some detail and with the promise of further elaboration.

Remarks were made by Judge Brown, Dr. Rusby and Mr. Howe.

Dr. Underwood commended Mr. Lloyd's attempt to secure phylogenetic evidence from the leaves of seedlings, and spoke of the great difficulty of securing such evidence from the external organs of plants, changing so rapidly as they do because exposed to the immediate action of their environment.

The second paper, by Mr. E. O. Wooton, 'Botanizing in New Mexico during the Summer of 1897,' gave an entertaining and graphic narrative of this collecting trip made by Mr. and Mrs. E. O. Wooton in Dona Ana and Lincoln counties, N. M., in last June, July and August. The route extended from the Rio Grande valley, at Mesilla, near the Mexican line, at an elevation of 3,900 feet, to Sierra Blanca Peak, at 11,000 feet. Special interest attached to the collections made from the southern end of the White Sands, a region about 30x6 miles or more in area, not before explored by a botanist, except that a half dozen plants had been gathered on its margin by Professor T. D. A. Cockerell, of Mesilla. This vast expanse of sand, seeming like a sea of white, is moving slowly to the east. Even its lizards are white. Several new grasses were obtained here, and other very peculiar species. Very extensive collections were made in this trip, though in the midst of great hindrances from the summer rains.

Discussion brought out the great dissimilarity existing between neighboring floras in New Mexico. Mr. Wooton's collections numbered about 30 sets of as many as 450 species (with perhaps 150 species more in parts). Mr. A. A. Heller, collecting meanwhile about 250 miles northward, among 300 numbers had but about 50 duplicates. Dr. Rusby, collecting sometime ago at a similar distance west, among 450 species had also but about 50 duplicates.

Further remarks were made by Professor Lloyd regarding his collections in Chihuahua, and by Dr. Rusby in commemoration of remarkable kindness received when destitute in the desert and conferred by Professor E. L. Greene.

Edward S. Burgess,
Secretary.