shown of this work in Mesa Verde Park, McElmo Canyon, Monument Park and Grand Gulch, the latter containing several hundred cliff-dwellings of the "Basket Makers." The work in New Mexico was concentrated on a large ruin in the Puye, where 120 rooms were cleared out and a collection secured numbering 3,500 artifacts. The paper was discussed by the president, Dr. Hrdlicka, and Mr. Robinson.

WALTER HOUGH,
General Secretary

THE CHEMICAL SOCIETY OF WASHINGTON

THE 177th regular meeting of the Chemical Society (Washington Section) convened at the Cosmos Club, November 14, at 8 P.M., President Fireman presiding. Two councilors, L. M. Tolman and F. K. Cameron, were elected to represent the section at the general meeting of the society.

The following paper by C. A. Crampton and L. M. Tolman, "The Changes taking Place in Whiskey during Storage in Wood," was read by Mr. Tolman. Graphic illustrations showed the chemical changes in whiskey during nine years' study. The attendance was about eighty.

J. A. LECLERC,
Secretary

DISCUSSION AND CORRESPONDENCE

THE HOLOTHURIAN IN DREW'S INVERTEBRATE ZOOLOGY

THE laboratory guide written by Dr. Gilman A. Drew with the aid of members of the zoological staff of instructors of the Marine Biological Laboratory at Woods Holl, like its predecessor by Dr. Bumpus, has many excellent features. Since it is probable that a number of teachers will place this work in the hands of their students before a new edition can be issued, I venture to make a few suggestions concerning the description of *Thyone,* the type representing the Holothurioidea.

On page 69 the paragraph numbered 2 relates that "Ten forwardly directed canals leave the water-ring and pass into the tentacles." Some of the older text-books affirm this error, while others do not state clearly the origin of the tentacles but most of the newer works on zoology like Parker and Haswell, Delage and Hérouard, Goodrich in Lankester, Lang and others properly describe the tentacular canals arising from the *radial canals.* Ludwig, in 1891, demonstrated in the embryology of *Cucumaria planci* that the tentacles arise from the radial canals and not, as previously given, from the circular canal (water-ring). The student should be directed to inject the water vascular system with Ranvier's Prussian blue through one of the Polian vesicles. After cutting away the œsophageal wall he can see the tentacular canals branching from the radial canals just before the latter bend over the radial pieces of the calcareous ring. He will thus understand that the tentacles are simply modified pedicels.

Since in the study of holothurians it is important to distinguish the ambulacral appendages with suckers, as *pedicels,* from those without, as *papillæ,* it would be better, on page 67, to substitute *cylindrical pedicels* for "papilliform ambulacral suckers." The term sucker could then be limited to the terminal sucking disc.

Under Digestive System (p. 68) *the calcareous ring* should be substituted for "a cartilaginous structure."

Under Reproductive System (p. 68) the gonad should be described as made up of two brushes, one on either side of the dorsal mesentery.

It is to be regretted that no mention is made of the paired bands of longitudinal muscles, so characteristic of holothurians, and of the five powerful retractor muscles possessed by *Thyone* and the other members of the family Cucumariidæ. For comparison with the skeleton of the other Echinoderma described by Drew something should be said of the spicules, in the form of *tables,* found in the walls of the pedicels of *Thyone.* The student can easily examine these spicules under the microscope after placing a few pedicels in caustic potash for a short time.

CHARLES L. EDWARDS

THE "CENSUS OF FOUR SQUARE FEET"

CONCERNING Nathan Banks's recent notice[1]

[1] SCIENCE, N. S., XXVI., p. 637.

of the article[2] on a "Census of Four Square Feet," the writer desires to state that he had hoped to anticipate such criticism by the statement in the opening paragraph that the results detailed are not held applicable to any classes of surface other than those examined. The scope of the article was further restricted by noting that all of the material was collected in winter months (November and March), on the surface of the ground and in the ground itself to the depth a bird can scratch. Moreover, the limits of the inquiry were again emphasized in next to the last paragraph, where it is referred to as an investigation of the surface fauna. In view of these facts, my statement that the population of the meadow is much more dense than that of the woods should not have been misinterpreted. By frequent reference to the special character of the investigation it was intended to leave no doubt that a survey was attempted of only the surface life. Hence all of Mr. Banks's comment on the fauna of above-ground growths, while interesting as showing what would be the nature of a census including these objects, has no bearing on the subject in hand.

Mr. Banks says of meadows and woodlands: "the two regions are so variable that a comparison from selected spots has little significance." The use of the term "selected" here is unfair, as it applies only in the sense that necessarily some spot must be chosen (indeed the plot of forest floor was designated by another person), but it is not more unfair than the efforts made to discredit the results of the "census," by instances every one of which in a very special sense is selected. Each instance, moreover, characterizes the summer, not the winter fauna, which alone was studied. For these reasons the writer fears that Mr. Banks has a mistaken conception of the paper he criticizes.

W. L. McAtee

PROFESSOR ANGELO HEILPRIN AS AN ARTIST

To the Editor of Science: The Pennsylvania Academy of the Fine Arts has at present on exhibition eight oil paintings by the late Professor Angelo Heilprin. Their subjects are: The Ash Cloud; Mont Pelé and the Ash Cloud; Looking into the Crater, June 1, 1902; The Tower of Mont Pelé; Mont Pelé in eruption with a graveyard in the foreground; A View into the Crater; An Eruption; Afterglow on the Ash Cloud.

Scientists undoubtedly know how much good work Heilprin accomplished in exploration, in natural history, in geography and in geology. But few of them realize as yet that Heilprin was a great landscape painter.

His painting is distinctly art, the art of a painter, not the art of a scientist. His pictures are not diagrams, they are not illustrations of any science—they are purely color records, memory sketches of phases of nature, which in the case of some of these Mont Pelé pictures, he saw at the risk of his life.

He seems to have had the technique of oil painting at his fingers' ends: his drawing is good: values understood; gradation of light and atmospheric perspective accurate: the quality and handling of the paint masterly.

These eight pictures, grouped together on one wall, have a jewel-like glow of color. They are all more or less in somber tones, except the Tower of Mont Pelé. Clouds, fire, darkness, smoke, have never been so painted before. And all of these pictures have the first and underlying art requisite—beauty.

It would be a boon to science and a boon to art, if these pictures could be kept together, and placed either in the American Museum of Natural History or the United States National Museum.

Edwin Swift Balch

Philadelphia,
November 23, 1907

BADGES AT MEETING OF THE AMERICAN ASSOCIATION

To the Editor of Science: The prospectus for the forthcoming meeting of the American Association for the Advancement of Science is now out. Will you allow me a few words in Science?

To me, and probably likewise to a large part of the attendance, meeting friends and seeing eminent men is very attractive. We gather very largely for this purpose—to see and be seen. At the meetings in Indianapolis

[2] Science, N. S., XXVI., pp. 447–449.