

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 Hérourard, 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 oesophageal 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 notice¹
¹ SCIENCE, N. S., XXVI., p. 637.