

is of rare occurrence in any form of axes or hammers belonging to our American Indians, except in the case of ceremonial weapons. The length of the haft-hole in this mall is four and a half inches; but its width of one inch, which in the drilling from either end toward the centre, narrows to half an inch, does not seem to be sufficient in comparison with its size to warrant the insertion of a handle; for this reason the speaker was inclined to believe that it was in an unfinished condition. Malls have been found in the ancient copper mines at Keeweenaw Point and Isle Royal in Lake Superior without grooves for hafting, and occasionally with double grooves. There are malls in use at present among the Sioux Indians for breaking bones and pounding pemmican, but these are firmly encased in raw hide, except that portion of the head used in striking. The occurrence of this kind of haft-hole, excepting as before stated in the ceremonial weapons, is not often seen, resembling in this respect some of the neolithic malls and hammers of the eastern continent.

FEBRUARY 13.

The President, DR. LEIDY, in the chair.

Thirty-three persons present.

The following papers were presented for publication :—

“A new *Unio* from Florida,” by Berlin H. Wright.

“Notes on the Birds of Westmoreland Co., Penna.,” by Chas. H. Townsend.

The Publication Committee reported in favor of publishing the following papers in the *Journal of the Academy* :—

“*Urnatella gracilis*,” by Jos. Leidy, M. D.

“On the Extinct Peccaries of North America,” by Jos. Leidy, M. D.

“The Terrestrial Mollusca inhabiting the Society Islands,” by Andrew Garrett.

Change of Color in a Katydid.—Professor LEWIS recorded a curious instance of modification in color in the case of a katydid, where the normal light green tint had been replaced by a bright scarlet, the complementary color. The insect, which was found at Point Pleasant, N. J., differs in no way from the common katydid, *Cyrtophyllum concavum* Say, except in the unusual color.

On the Reproduction and Parasites of Anodonta fluviatilis.—Prof. LEIDY directed attention to a basketful of living fresh-water mussels, *Anodonta fluviatilis*, which were obtained for him through the kindness of Rev. Jesse Y. Burke, and are now placed at the

disposal of members who wish to have them. They are fine robust specimens, the larger ones measuring 6 inches in length by 3 inches in height and almost $2\frac{1}{2}$ inches in thickness. They were obtained from a little pond occupying an old marl pit, near Clarksboro, Gloucester Co., N. J.

These mussels appear to be exceedingly prolific. The pregnant females have the branchial uteri, as they have been appropriately named by Dr. Isaac Lea, enormously distended with perfected embryos. These appear with a cinnamon-brown shell, having a conspicuous spinous tooth or hook to each valve, and are furnished with long byssal threads. Wishing to ascertain the proportionate amount of embryos, the following plan was adopted:—In an individual 6 inches long the soft parts were weighed and found to be 135.44 grammes. The branchial uteri weighed 64 grammes and the inner gills 7.34 grammes. Supposing the latter to be of the same weight as the outer gills, free from embryos, this weight subtracted would leave 56.66 grammes as that of the embryos, and 78.78 grammes as the weight of the rest of the animal. In another specimen in which the weight of the soft parts was 113.75 grammes, the branchial uteri weighed 45.5 grammes, and the inner gills 5.2 grammes. Subtracting the weight of these would leave 40.3 grammes as the weight of the embryos, and 73.45 grammes for the rest of the animal. In another specimen by weight, and counting, the embryos in a milligramme were estimated to be 1,280,000.

The mussels are infested with many water mites creeping about among the gills. The young of the same, in various stages, were observed imbedded in the mantle. The mite appears to be identical with the species *Atax ypsilophorus*, which is a parasite of the common mussel, *Anodonta cygnea*, of Europe. It was discovered and described just 100 years ago, under the name *Acarus ypsilophorus*, by Dr. Christophori Gottlieb Bonz (Nova Acta Phys. Med. Acad. C. L. C. Nat. Cur., Nuremberg, 1783, 52, Tab. I, figs. 1–4). It is described and figured by Pfeiffer, with the name of *Limnochares Anodontæ* (Naturg. deutscher land und süß-wasser Molusken, 1821, Taf. I, fig. 12); by Dr. Karl Ernst v. Baer, under the name of *Hydrachne concharum* (Nova Acta, Bonn, 1826, 590, Taf. XXIX, fig. 19); by P. J. van Beneden (Mem. de l'Acad. R. des Sciences de Belgique, XXIV, 1850), and by Ed. Claparede (Zeits. f. wiss. Zoologie, 1868, 445).

Dr. Bonz's description, referring chiefly to the form, color and marking of the mite, applies to ours; and further he thought the description of the details, of Claparede, applies sufficiently well to the same.

The characters of our mite are briefly as follows:—

Body ovoid, black, with a sulphur-yellow median line, often more or less interrupted, forked in front, and ending in an angular spot behind. The yellow marking divides the black into a pair of lateral reniform spots and an anterior irregular lozenge spot. Sides brown, from the eggs shining through. Head gray, with

dumb-bell eye-spots. Limbs gray, translucent, with the chitinous investment bluish black, hirsute, ending in pairs of double falcate unguis. Terminal joint of the palps ending in three minute unciniate denticles. Anal plates of the females usually with about 18 to 22 acetabula to each. Length of body 1.375 to 1.75 mm., breadth 1.125 to 1.5 mm. Inhabits the branchiæ and mantle of *Anodonta fluviatilis*.

The colors depend mainly on the contents shining through the transparent chitinous investment, which under reflected light exhibits a bluish-black tint. Commonly the black color is intense; and in alcoholic specimens the whole body is black. In several individuals the black passed into a chocolate hue. Dr. Bonz describes the European mite as black, with the median dorsal mark pale yellow; Pfeiffer as red-brown with a citron-yellow mark, and Beneden says it shows a Y in white, from which it was named.

The number of acetabula to the anal plates is variable; in one mite he found 23 to each plate, in a second 22 to each, in a third 22 to one and 17 to the other, and in a fourth 18 to one and 17 to the other. Claparede gives from 15 to 20 as the number to each plate in the European mite.

The variations of our mite, from the characters given of the European mite, are such as occur among individuals of either, and he therefore saw nothing distinguishing ours as a different species. Claparede describes another mite which infests the European Unios, which he distinguishes under the name of *Atax Bonzi*. The speaker had also observed a different mite, infesting the common mussel, *Unio complanatus*, of the Delaware River; of this mite he exhibited a drawing made in November, 1854. He suspected it to be the *Atax Bonzi*; but the question can only be more positively answered after the examination of certain details, which he hoped soon to have the opportunity of making.

If our two parasitic mites are identical with those of European mussels, it not only makes it appear probable that they are of common origin, but renders it the more probable that this is likewise the case with their hosts, even if these are not regarded of the same species.

Professor LEIDY also exhibited a collection of body-lice, *Pediculus vestimenti*, from Jews of Odessa, Russia, presented by Dr. A. G. Stratton. They range in size from 1.25 to 3.875 mm. in length, and appear in no respect to differ from those found on natives of our own country.

The Ice of the Glacial Period.—Professor HEILPRIN, referring to the subject of glaciation, stated that in his opinion the vast sheet of ice which is generally supposed to have covered during the great ice age a considerable portion of the northern regions of the European and North American continents, could not have had its origin, as is maintained by most geologists, in a polar “ice-cap,”



1883. "On the Reproduction and Parasites of *Anodonta fluviatilis*." *Proceedings of the Academy of Natural Sciences of Philadelphia* 35, 44–46.

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