

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recorded a curious instance of modification in color in the case of a katydid, where the normal light green tint had been replaced by a bright scarlet, the complementary color.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 specimens, the larger ones measuring in height and almost $2\frac{1}{2}$ inches in length from a little pond occupying an acre in Gloucester Co., N. J.

These mussels appear to be exceptionally large, and the females have the branchial uteri, as named by Dr. Isaac Lea, enormous. These appear with a conspicuous spinous tooth or hook with long byssal threads. Wishing to determine the amount of embryos, the following were measured: a typical 6 inches long the soft parts weighed 135.44 grammes. The branchial gills weighed 7.34 grammes. Subtracting the same weight as the outer gills, the remaining weight would leave 56.66 grammes as the weight of the branchial uteri weighed 45.5 grammes. Subtracting the weight of the embryos, the rest of the animal. In another specimen the embryos in a milligramme were

The mussels are infested with mites among the gills. The young of the mite observed imbedded in the mantle. It is typical with the species *Atax ypsilopoda*, a common mussel, *Anodonta cygnea*, and described just 100 years ago, by Dr. Christophori Gottlieb, *Atax ypsilopoda*, Acad. C. L. C. Nat. Cur., Nuremberg. It is described and figured by Pfeiffer, *Atax ypsilopoda* (Naturg. deutsches Mus., 1821, Taf. I, fig. 12); by the name of *Hydrachne concharum*, Taf. XXIX, fig. 19; by P. J. Van Beneden, *Atax ypsilopoda* (Zeits. f. wiss. Zoologie, 1868, 445).

Dr. Bonz's description, referring to the marking of the mite, applies to our description of the details, of Clay's mite to the same.

The characters of our mite are: Body ovoid, black, with a sulcus more or less interrupted, forked in front, a yellow spot behind. The yellow markings consist of lateral reniform spots and an anterior spot. Sides brown, from the eggs shining.

any form of axes or hammers belonging to, except in the case of ceremonial weapons. The hole in this mall is four and a half inches; the shaft, which in the drilling from either end divides to half an inch, does not seem to be commensurate with its size to warrant the insertion of a hole on the speaker was inclined to believe that the mall was in a better condition. Malls have been found in the State of Keeweenaw Point and Isle Royal in Lake Superior for hafting, and occasionally with double holes in use at present among the Sioux in the region of the Siouxs and pounding pemmican, but these are the exception, except that portion of the head used in hafting, excepting this kind of haft-hole, excepting the ceremonial weapons, is not often seen, except some of the neolithic malls and hammers of the same material.

FEBRUARY 13.

President, DR. LEIDY, in the chair.

Members present.

Papers were presented for publication:—

"Florida," by Berlin H. Wright.

"Mills of Westmoreland Co., Penna.," by Chas. H. Smith.

The committee reported in favor of publishing the

Journal of the Academy:—

"The Mammals of North America," by Jos. Leidy, M. D.

"The Mammals of North America," by Jos. Leidy, M. D.

"Mollusca inhabiting the Society Islands," by

Dr. Leidy. *A Katydid*.—Professor LEWIS recorded a modification in color in the case of a katydid, in which a green tint had been replaced by a bright yellow color. The insect, which was found at Philadelphia, differs in no way from the common katydid, *Scudder's*, except in the unusual color.

On and Parasites of Anodonta fluviatilis.—Attention to a basketful of living fresh-water mussels, *Anodonta fluviatilis*, which were obtained for him through Mr. 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 2½ 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 Mollusken, 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 ungues. Terminal joint of the palps ending in three minute uncinuate 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 branchiae 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,"

since it may reasonably be doubted to have been formed in the extreme North: ice of a magnitude sufficient to produce an estimated thickness of several thousands of hundreds of miles, and up mount five or six thousand feet. The magnitude of such a snow accumulation may attain under such conditions—(1), the quantity of aqueous vapour; (2), the upper limit in the atmosphere. It is well known that clouds, as a rule, rise to the highest temperature—the equatorial region, where by the atmosphere is greatest, and where condensation are most distantly rare. In the polar regions, and, likewise, they rise higher in the atmosphere. A minimum rise will necessarily be in the polar regions, and during the period of greatest cold, when clouds are a rarity in the polar region. Above this zone, which will be the "ice-cap," there can be but little snow. In fact, the officers of various Arctic expeditions noted that the high mountain-crests were frequently devoid of a snow cover, even over the heavy precipitations setting in only at the highest snow-clad elevation in the region. In Greenland, appears to be Washburn's height of six thousand feet, which glacial period. Although this peak is covered with snow (of undetermined thickness), it can be doubted whether snow of any great magnitude could accumulate in a much warmer climate, could accumulate at greater elevation. If not, this elevation of snow, was entirely inadequate to cause the propulsion of a glacier to the extent of the present.

Professor LEWIS remarked that in a theoretical explanation, the fact that the ice-sheet in America, at the time of maximum glacial extension, was at least in America, by the numerous moraines. He described the extent of the glacial sheet by its terminal moraine, and stated that the same phenomena at distant portions of the continent, continuous ice-sheet. The continuation of the ice-sheet is shown by the uniform direction of the moraine points. Thus the S. W. direction of the moraine tops of N. E. Penna., was identical with the direction of the Mountain of the Catskills, and of the Laurentians of Canada. The striations of the moraine more or less to the valleys, and did