

## JUNE 3.

Mr. EDWARD POTTS in the chair.

Fifteen persons present.

A paper, entitled "On the Mutual Relations of the Hemibranchiate Fishes," by Theodore Gill, was presented for publication.

*Opposite Leaves in Salix nigra.*—At the meeting of the Botanical Section on June 2, Mr. THOMAS MEEHAN remarked that few botanists would expect to find opposite leaves in *Salix*; but in *S. nigra* Marshall, they appear at a certain stage of growth, which has much significance. This species is of that section which has the flower coætantaneous with the leaves; that is to say, instead of the aments being sessile they terminate short branches. They are, however, not absolutely terminal, but appear so by the suppression for a time of the terminal bud. In the case of the female ament this terminal bud usually starts to grow very soon after the flowers mature, and forms a second growth, when the fertile catkin or raceme of fruit, becomes lateral. It is the first pair of leaves on this second growth that is opposite—all the rest are alternate as in the normal character of the genus. The leaves are so uniformly opposite under these circumstances, that there must be some general law determining the condition, which has not yet been developed.

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## JUNE 10.

Mr. GEO. W. TRYON, JR., in the chair.

Fourteen persons present.

A paper, entitled "On the Anacanthine Fishes," by Theodore Gill, was presented for publication.

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## JUNE 17.

Rev. H. C. McCook, D. D., Vice-President, in the chair.

Thirteen persons present.

*A Spider that makes a spherical Mud-daub Cocoon.*—The Rev. Dr. H. C. McCook said that in November, 1883, he received from Mr. F. M. Webster, Assistant State Entomologist of Illinois, two globular nodules of earth, about the size of a grape, which were thought to be the cocoons of a spider. Similar balls had often been found attached, by a slender thread or cord of silk, to the underside of boards laid down on the ground. From some of



these Mr. Webster had bred a parasitic ichneumon-fly. One box, in which mud-balls had been placed the preceding summer, was found by him in the autumn (November) to contain such parasites together with a number of young spiders, all dead. The spiders were not preserved, but the mud-balls were sent to the speaker for determination. One of these had an opening in the side about one millimetre in diameter from which evidently an ichneumon parasite had escaped. It contained the stiff, white cell commonly spun by the larva of this insect. The other resembled closely the spherical mud egg-nest of the wasp *Eumenes*, there being even a small nozzle at one pole, from which, however, unlike the mud-daub of the wasp, a slight silken cord protruded. Dr. McCook was much puzzled to decide upon the nature of these objects, but on the whole believed them to be the work of some hymenopterous insect, and not of a spider. Two ichneumons, which emerged from similar cells, were determined by Mr. E. T. Cresson to be *Pezomachus meabilis* Cresson.

Subsequently Mr. Webster sent other specimens, some of which were opened. They contained silken sacks imbedded in the centre of the mud-ball, apparently of spider spinning-work, and within these were fifteen or twenty yellowish eggs, evidently of a spider. This, of course, modified the speaker's view, and he set aside the specimens, of which he had now a number, in the hope of hatching out the contents. The dissecta membra of two adult spiders taken near the balls, though much broken, enabled him to determine them as Drassids (*Drassoidæ*, a family of the Tubeweavers), and probably of the genus *Micaria*. Mr. Webster simply found these *near* the mud-balls, but did not know that they had any connection with them. Dr. McCook moistened the cocoons in order to give a natural condition more favorable for the escape of the spiderlings, should they hatch, and May 30, 1884, on opening a box, he found about thirty lively young spiders therein. On the bottom of the box was a dead ichneumon, which had cut its way out of the side of one of the balls, by a round hole. The spiderlings seemed to have escaped from their ball along the slight duct left at the point where the bit of silken cord was imbedded in the hard earth, and thence protruded, forming the cocoon-stalk by which the ball was attached to an undersurface. The appearance of the spiderlings indicated that they had been hatched two or three days when first seen. They were Drassids, evidently the same species as the broken specimens above alluded to. Thus the interesting habit of concealing her future progeny within a globular cradle of mud was demonstrated to belong to a spider, as well as to a wasp. That this particular species is much subject to the attacks of hymenopterous parasites is already proved; but that it is more exposed than many other species which spin silken cocoons otherwise unprotected in the very same locality, does not appear. There is no evidence that so strange a habit has developed from necessity,



and none that it proves more protective than the ordinary araneal cocoonery.

Mr. Webster has found these mud-cocoons throughout the whole range of Illinois, a State of great longitudinal extent. Two balls from Southern Illinois are larger than the others, and composed of yellowish earth, but Dr. McCook had not yet succeeded in breeding anything from them. The balls from Central Illinois are made out of the rich black soil common to the prairies; the spiderlings hatched were from this section. He had named the species provisionally *Micaria limnicunæ* (*limnus*, mud; *cunæ*, a cradle), but thought it possible that Hentz may have described the species among some one of his genus *Herpyllus*. The young have pale yellow abdomens, of uniform color, and legs and cephalothorax of a uniform livid or stone-color. The adults (females) are of a uniform dark amber color; the cephalothorax glossy, leathery and smooth. The cephalic part is depressed below the thoracic part, sloping forward and downward. The body length is about one-fourth inch.

The only spider cocoons known to the speaker at all resembling those of *Limnicunæ* he had collected in a field at Alexandria Bay, New York, on the St. Lawrence River, 1882. They were attached by very loose spinning-work to the underside of stones. But the external case instead of being mud, was a mass of agglomerated particles of old wood, bark, leaves, blossoms, the shells and wings of insects, etc. These were evidently gnawed off, gathered and placed together, and then held in position by delicate and sparsely-spun filaments of silk. Two of these chip-balls were opened, and contained whitish cocoons similar to those in the mud-balls of *Limnicunæ*; another had within it the characteristic cell of some hymenopterous parasite, containing a dried-up pupa. A very thin veneering of yellow soil enclosed the silken case, but otherwise no mud was used. He put aside three specimens which remained, in the hope of hatching out and thus determining the species of the maker, but nothing ever appeared, and he had not wished to destroy such interesting specimens for the sake of knowing the condition of the interior. But on comparing these specimens with those of Mr. Webster as now before him, Dr. McCook believed that they were the work of closely related, or perhaps even the same species.

It is quite common for spiders of various and widely separated families to give their cocoons a protective upholstering of scraped bark, old wood, etc., and not unusual to find species that cover their egg-nests wholly or in part with mud. But the speaker was not aware that any species had yet been published as making cocoons like either of the above-described forms. He believed, therefore, that the facts were wholly new to science—certainly they were new to the field of American Araneology.

The following were ordered to be printed:—



1884. "A Spider That Makes a Spherical Mud-Daub Cocoon." *Proceedings of the Academy of Natural Sciences of Philadelphia* 36, 151–153.

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