the myths and folk-lore of the several tribes in their own languages, with interlinear translations. The paper of Mrs. Erminnie A. Smith, although it does not in this volume present the original language, is written after the reduction of the original to writing in the course of her linguistic work, after a prolonged residence among the Iroquois tribes, into one of which, the Tuscarora, she was adopted. It is therefore an authoritative rendering of some of the Iroquois myths, some of which have appeared in other forms, and others of which have been for the first time collected by herself. Mr. Henshaw, in forty-four pages, discusses the animal carvings from the mounds of the Mississippi valley, and reaches the following general conclusions: —

1°. That, of the carvings from the mounds which can be identified, there are no representations of birds or animals not indigenous to the Mississippi valley, and consequently that the theories of origin for the mound-builders suggested by the presence in the mounds of carvings of supposed foreign animals are without basis;

2°. That a large majority of the carvings, instead of being, as assumed, exact likenesses from nature, possess in reality only the most general resemblance to the birds and animals of the region which they were doubtless intended to represent;

3°. That there is no reason for believing that the masks and sculptures of human faces are more correct likenesses than are the animal carvings;

4°. That the state of art-culture reached by the mound-builders, as illustrated by their carvings, has been greatly overestimated.

Dr. Matthews' paper is of eight pages, and is illustrated with five plates. Mr. Holmes's paper, one of the most important in the volume, is noticed on another page. Mr. Stevenson's papers are also fully illustrated, a number of the plates being colored; and his catalogues are not merely enumerations, but are accompanied by a judicious amount of discussion and comparison, which render them of substantial value. The volume has not only a complete table of contents and a full index, but each paper has a separate table of contents, and list of illustrations.

RECENT PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Academy of natural sciences, Philadelphia.

June 10. — The Rev. Dr. H. C. McCook stated that in November, 1883, he received from Mr. Webster of Illinois two globular nodules of earth, each 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 under side of fallen boards. 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 Cress. Subsequently Mr. Webster sent other specimens, some of which were opened. They contained silken sacs embedded in the centre of the mud-ball, apparently of spider spinning-work; and within these were fifteen or twenty yellowish eggs, evidently those of a spider. The disjecta membra of two adult spiders taken near the balls, although much broken, enabled him to determine them as drassids (a family of the tube-weavers), and probably of the genus Micaria. These had been found simply near the mud-balls, but the connection between them had not been established. Dr. McCook moistened the cocoons in order to give a natural condition more favorable for the escape of the spiderlings, should they hatch; and on May 30, on opening the 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 embedded in hard earth, and thence protruded, forming the cocoon-stalk by which the ball was attached to an under surface. The appearance of the spiderlings indicated that they had been hatched two or three days when first seen. They were evidently drassids of 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 very many localities, 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. Dr. McCook had named the species, provisionally, Micaria limnicunae (*limnus*, mud, and *cunae*, a cradle), although it is possible that Hentz may have described the species as one of his genus Herpyllus. The only spider-cocoons known to the speaker, at all resembling those of M. limnicunae, he had collected at Alexandria Bay, N.Y., on the St. Lawrence River, in 1882. They were attached by very close spinning-work to the under side of stones. But the external case, instead of being of mud, was a mass of agglomerated particles of old wood, bark, leaves, blossoms, the shells and wings of insects, etc. These were held together by delicate and sparsely spun filaments of silk. Two of these chip-balls were opened, and found to contain whitish cocoons similar to those in the mud-balls of M. limnicunae. 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. On comparing these specimens with those from Illinois, it was believed that they were the work of closely related or perhaps the same species. It is very 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.

June 17. — Referring to the Lycosa, whose weaving of a round cocoon had been the subject of study in the early part of May (see *Science*, iii. 685), Rev. H. C. McCook stated that on June 4 the spider was found with the young hatched, and covering the upper surface of her body. The empty egg-sac still clung to the spinnerets, and the young were grouped over the upper part of the same. The entire brood was tightly packed upon and around each other, the lower layers apparently holding on to the mother's body, and the upper to those beneath. Twenty-four hours afterward the cocoon-case was dropped, and the spiderlings clung to the mother alone. An examination of the cocoon showed that the young had escaped through the thin seam or joint formed by the union of the egg-cover with the circular cushion when the latter was pulled up at the circumference into globular shape. There was no flossy wadding within, as is common with orb-weaving spiders — nothing but the pinkish shells of the escaped young. One week later about one hundred of the spiderlings had abandoned the maternal perch, and were dispersed over the inner surface of the jar, and upon a series of lines stretched from side to side. About half as many more remained upon the mother's back, but by the 13th all had dismounted. Meantime they had increased in size at least one-half, apparently without food. —— Professor Angelo Heilprin exhibited a number of microscopic slides, received from Mr. K. M. Cunningham of Mobile, containing foraminiferous dredging from the Red Snapper Bank, off Mobile harbor, Gulf of Mexico, and preparations of organisms from the rotten limestone of the north-eastern portion of Mississippi, — a rock which represents the inner border of the Gulf during the cretaceous period. The recent forms of foraminifera are interesting as affording material for comparison with those of the ancient sea. There is a remarkable difference in the forms. From the present waters, about eight genera are indicated by the slides in question; Discorbina, Rotalia, Textularia, Cristellaria, and Nodosaria being included among the Perforata. Although Globigerina forms such an important feature of the ooze of the open seas, not a single specimen which could with certainty be referred to this genus was found in the material from the Gulf of Mexico. Textularia was the most abundant form. Among the Imperforata, we have, of the family Miliolidae, a very considerable abundance of Quinqueloculina and Biloculina. In the foraminifera of the limestone the family represented by these genera seems to be entirely absent, and but few of the others are left. Discorbina and Textularia almost make up the entire fauna represented by the specimens received. Even these are of much smaller size than corresponding forms from the Gulf ooze. It is not a little surprising that there should be such a distinction between the organisms of the two periods, in view of the continuous existence of the body of water in which they lived, and of the persistent types which they represent. About twenty-five distinct forms of foraminifera had been determined from the greensand of New Jersey, which is the approximate geological equivalent of the rotten limestone of Mississippi. —— Professor Heilprin also exhibited a specimen of a beautiful little trilobite, Calymene Niagarensis, from the bank of the Yazoo River, above Vicksburg. The formation at the locality indicated is eocene; but, as Silurian beds exist farther up the stream, the presence of the specimens at the point from which they were collected undoubtedly represents a downwash from above.

Botanical section, June 5. — 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, — a fact which has much significance. This species is of that section which has the flowers co-aetaneous 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.

Engineers' club, Philadelphia.

June 7. — Mr. William H. Ridgway described a simple crane, consisting of a cylinder hung from the jibs of an ordinary foundry crane, and using the steam directly to hoist the load. —— Mr. C. Henry Roney exhibited specimens of American sectional electric underground conduits as laid in Philadelphia. —— Prof. L. M. Haupt supplemented his paper of May 17, upon rapid transit, by an interesting collection of statistics of the growth of the city from the time of the 'pack-horse' to the present, and showed by maps that his previous statements were verified by these statistics. —— Mr. A. E. Lehman exhibited to the club a model of a new protractor, and described the invention and the improvements he has made in it. It consists of a combination of protractor, T-square, scales, etc., which may be worked separately or together. As a protractor only, it is complete, being

graduated to degrees and fractions thereof, and provided with a vernier reading to three minutes. It can be used, like an ordinary paper or ivory protractor, for hasty plotting, and combines triangles and scales in one instrument. For careful and precise work, it is said to be equal to the best special instrument, and to be no higher in price. —— Mr. E. V. d'Invilliers read a paper on some characteristics and the mode of occurrence of the brown hematite (limonite) ores in central Pennsylvania, taking for his field of illustration the lower Silurian limestone valleys of Centre county. He described the anticlinal structure of these valleys, and the great erosion, aerial and subaerial, which these rocks (six thousand feet thick) have undergone, influencing the position and character of many of the present ore-deposits. He noted three varieties of ore: 1°. The wash and lump hematite of the Barrens; 2°. The true limestone 'pipe ore.'; 3°. An intermediate *transition* variety. The first is always associated with the sandy magnesian beds low down in the series of No. 2, or below five thousand feet beneath the overlying Hudson-River slates of No. 3. This class shows rounded ore and flint balls, and tough, barren clay, and are secondary or derived deposits of irregular shape. They have been tested a hundred feet deep, and contain from 45% to 53% iron, and .051% to .113% phosphorus. The almost total absence of bisulphide of iron is noticeable. The cost of mining is about a dollar and a half per ton. The transition variety was assigned a position in the formation from thirty-five hundred to five thousand feet below the slates. They are characterized by a more calcareous clay, are compact, amorphous, liver-colored ores, containing from 40% to 49% iron, and from .115% to .365% phosphorus. The pipe ores occur usually higher in the limestones than either of the other two, but in this county *below* the four hundred feet of upper Trenton layers. These ores occur *in situ* between parallel walls of limestone, in plate-like masses, scales, or as cylindrical pipes in bunches eight or ten feet long, while feathering out both in line of strike and dip. The deeper banks show the repeated occurrence of crystals of iron pyrites in all stages of metamorphism. They occur at great depths, and show from 45% to 53% iron, and from .100% to .185% phosphorus. The flint or quartz grains accompanying them are rarely water-worn; and this clay is very calcareous and easily washed, not requiring the jigging necessary for cleansing the lower ores. Cost of mining these ores varies from ninety cents to a dollar and a quarter per ton.

New-York microscopical club.

June 6. — Rev. J. L. Zabriskie read a notice of Appendicularia entomophila Peck, a new fungus parasitic on the fly Drosophila nigricornis Loew. The fly, determined by Dr. H. A. Hagen of Cambridge, was noticed at Nyack, N.Y., between the 13th and 31st of March last, infested with the fungus. But infested specimens have not since been found. In the spring of 1880, three specimens of the same fly, similarly infested, were captured at New Baltimore, N.Y. These latter specimens were preserved and mounted; but, from lack of time and opportunity, the true nature of the parasite was not then recognized. The fungus has been submitted to Prof. C. H. Peck, New-York state botanist, who has kindly examined it, and named it Appendicularia entomophila. It is closely related to the Sphaeronemei of the family Coniomycetes. Like Sphaeronema, the fruit has a bulbous conceptacle, surmounted by a long beak perforated at the apex, where the spores ooze out in a globule; but, unlike any described Sphaeronema, this has the conceptacle seated upon the broad summit of a pedicle as long as the conceptacle itself; and also on one side of the summit of the pedicle and at the base of the conceptacle, it has an erect, leaf-like appendage, with strongly serrate margins, like a white-elm leaf folded along its midrib. The spores are slender, pointed at each end, and divided by a septum into two unequal cells, one cell being twice as long as the other. The total length of the fruit is from .02 to .03 of an inch, and that of the spores from .001 to .002 of an inch. The conceptacles of the fungus project directly from different points of the surface of the fly; so that they are found in all positions, — erect, horizontal, and dependent. They grow sometimes singly, but oftener in clusters of two, three, or more, and are found most frequently on the tibiae of the hind-legs, but also springing from the inner posterior surfaces of the abdominal rings, from the costal vein of the wing, from the head, and from the thorax. One of the New-Baltimore flies had about fifty of these conceptacles on various parts of the body and limbs.

NOTES AND NEWS.

DR. GILL has recently paid a visit to the workshop of the Messrs. Repsold, and gives an account of the great Russian telescope, with several particulars not contained in Professor Newcomb's report (*Science*, No. 60). The tube, instead of being cigar-shaped, as in the Washington and Vienna telescopes, is cylindrical, and therefore no larger at the centre than at each end. The object of choosing this form is in order that the centre of gravity of the tube may be as near as possible to the polar axis of the instrument. The central part is of cast-iron. The steel plates diminish in thickness from the centre towards the object-glass, so that the whole structure is extremely rigid. In order to get a sufficient field of view, the micrometer has been made about a foot long. The micrometer contains a small spectroscope, so arranged that the spectrum of any celestial object can be observed without any change of the instrument. It is expected that the telescope will be mounted at Pulkowa during the coming autumn. Some delay, however, has been experienced in getting the dome into working order, and this may still farther delay the mounting of the instrument.

— A memorial tablet, in honor of the late Professor Charles F. Hartt of the geological survey of Brazil, has been placed in the library of Acadia college, Wolfville, N.S. It was here that Professor Hartt