

are directed backward, as in swimming animals. The dorsal and lumbar vertebræ are shorter and more numerous; the lumbar vertebræ bear no ribs; the tail represents only one fifth of the whole length of the body, whilst in the salamanders it equals nearly the half.

The *Salamandrella* is very distinct from the reptiles of the Carboniferous formation which have been described under the names of Labyrinthodonts, Ganocephali, and Microsaurians (such as *Dendrerpeton*, *Hylerpeton*, *Hylonomus*, *Parabatrachus*, *Anthracherpeton*, *Urocordylus*, *Ceraterpeton*, *Sauropleuræ*, *Molgophis*, &c.); but it differs less widely from *Raniceps* (*Pelion*) *Lyelli* from Ohio.

Now that the existence of true Batrachians in the Palæozoic rocks seems to be proved, probably no difficulty will be raised to placing *Raniceps* among those animals, as was proposed by Mr. Wyman in 1858. It is probable that *Raniceps* had a naked skin, and that it possessed no entosternum, episternum, postorbital, or subsquamosal. Nevertheless it cannot belong to the same genus as the fossils of MM. Loustau and Delille; its vertebræ are much more elongated, its frontals are less widened, the supraoccipital is thrown less backwards, and its mandibles are more prolonged. Lastly, the animal from Ohio is three times as large.

In 1844 Hermann von Meyer described, under the name of *Apateon pedestris*, the impression of a reptile found in the Carboniferous formation of Münster-Appel. Notwithstanding the opinion of this talented palæontologist, I think that it belonged to an animal of the group of salamanders; and if it were allowable to form a judgment from an impression so vague as that of *Apateon*, I should be inclined to believe this fossil to be identical with *Salamandrella petrolei*. Thus we should be acquainted with true Batrachians in the Palæozoic rocks of France, the United States, and Germany.

The bituminous schists which contain *Salamandrella petrolei* also include remains of plants, numerous coprolites, and fishes (*Palæoniscus*). M. Loustau has communicated to me a small crustacean derived from them, a series of well-ossified vertebræ of a still unknown reptile, and a fragment of a humerus or femur agreeing in size with that of *Actinodon Frossardi*, a curious Ganocephalous reptile, also collected in the bituminous schist, at Muse, not far from Igornay and Millery, which I brought before the Academy in 1866.

To complete the list of Palæozoic reptiles found in France, I must remark that M. Paul Gervais has described a reptile from the Permian schists of Lodève under the name of *Aphelosaurus*; that learned naturalist has shown that it is very distinct from the Batrachians.—*Comptes Rendus*, February 15, 1875, p. 441.

On the Motive Power of Diatoms. By Prof. J. LEIDY.

While the cause of motion remains unknown, some of the uses are obvious. The power is considerable, and enables these minute organisms, when mingled with mud, readily to extricate themselves and rise to the surface, where they may receive the influence of

light and air. In examining the surface-mud of a shallow rain-water pool, in a recent excavation in brick-clay, the author found little else but an abundance of minute diatoms. He was not sufficiently familiar with the diatoms to name the species; but it resembled *Navicula radiosa*. The little diatoms were very active, gliding hither and thither, and knocking the quartz-sand grains about. Noticing the latter, he made some comparative measurements, and found that the *Naviculæ* would move grains of sand as much as twenty-five times their own superficial area, and probably fifty times their own bulk and weight, or perhaps more.—*Proc. Acad. Nat. Sci. Philad.* p. 113.

On the Peripheral Nervous System of the Marine Nematoids.

By M. A. VILLOT.

The marine Nematoids possess well-characterized organs of sense, consisting:—1, of organs of touch, represented by numerous setæ or papillæ distributed over the whole surface of the body, but particularly abundant round the head and the genital orifice; 2, of an apparatus of vision, composed of two eyes, of rather complex structure, situated on the dorsal surface towards the anterior extremity. The nature of these different organs ought not to be doubtful; but the fact is that their relations with the nervous system have hitherto been very obscure. According to M. Marion * nervous filaments penetrate obliquely “into the midst of the longitudinal muscles to arrive soon at a fusiform, nucleolated cell, itself situated at the base of a cuticular hair, and united with this hair by another nervous thread which terminates at the base of the hair.”

M. Bütschli, whose memoir is very recent†, has figured an analogous arrangement; but he states that he has not detected the fusiform cell described by the French writer. He expresses himself as follows:—“Marion states with regard to his *Thoracostoma setigerum*, that a little before the entrance into the setule a fusiform cell is interposed in each of these filaments; with the exception of gangliiform dilatations, which, however, seem to me to have no regular occurrence, I have detected nothing which could be interpreted in favour of this observation.”

In presence of these contradictory assertions it became necessary to undertake fresh researches, and to subject those which had been made to the check of the experimental method. Hence my attention was directed most particularly to this point when, in the month of May last, I commenced my investigation of the Helmintha of our shores, in the laboratory of Professor de Lacaze-Duthiers. Now it appears from my numerous observations made at Roscoff upon living individuals, and repeated at Paris upon my preparations, that the two naturalists whom I have just cited have been deceived by false

* “Additions aux recherches sur les Nématoïdes libres du Golfe de Marseille,” *Ann. Sci. Nat. Zool.* 5^e série, tom. xix. p. 13, pl. xx. fig. 1.

† *Zur Kenntniss der freilebenden Nematoden, insbesondere der des Kieler Hafens*, p. 8, pl. iv. fig. 19, b (1874).



Leidy, Joseph. 1875. "On the motive power of diatoms." *The Annals and magazine of natural history; zoology, botany, and geology* 15, 234–235.
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