

Finally the author describes two new species of *Pterocles*, namely:—*P. Severzowi* (= *Tetrao caudacutus*, Gmel., = *T. alchata*, Gmel., = *T. chata*, Pall., = *Pterocles caspius*, Ménétr.) from the Aralo-Caspian steppes, Turkestan, Transcaucasia, and North Persia; and *P. Elliotti* from Abyssinia.—*Bull. Acad. Imp. Sci. St. Pétersb.* tome xxvii. pp. 164–168.

Investigation of certain Points in the Anatomy of Sternaspis scutata.
By M. MAX. RIETSCH*.

The *Sternaspis* measures about 0·030 metre in length and 0·010 metre in breadth. Its body, which is attenuated anteriorly in a state of repose, is inflated in front and behind and constricted in the middle when the animal, in order to move, throws forward the retractile anterior portion of its body. The latter bears three rows of setæ, which are interrupted upon the dorsal and ventral lines, and which may be concealed by the invagination of the anterior region of the trunk. The mouth, which is somewhat ventral, is surmounted in front by a small prominence homologous with the cephalic lobe, and indicating the place occupied by the cerebroid ganglia. In the posterior region we observe a ventral shield fringed with tufts of setæ, except at its anterior margin; above its posterior margin is placed the somewhat dorsal anus, which is surmounted by two oval perforated plates garnished with numerous branchial filaments. Towards the anterior third, upon the ventral surface, we may distinguish two small conical appendages, axially perforated; these are the external terminations of the generative organs. There are also small bundles of setæ in the median ventral region of the body; but they do not appear beyond this.

The integuments consist of a thick and resistant fibrous layer, striated parallel to the surface, covered externally by a layer of hairs, which alone seem to represent the epidermis, and lined internally with a granular stratum, in which we may sometimes succeed in detecting nuclei: from this layer, which internally is in contact with the muscles, a number of more or less undulated filaments start, traversing the fibrous zone perpendicularly and terminating in the hairs; chloride of gold, employed as suggested by M. Ranvier, gives them an intense violet colour, as also to the granular layer, while the fibrous zone remains nearly colourless. I think we may regard these filaments as nervous terminations.

Further in we meet with an external layer of transverse muscular fibres, then an inner layer of longitudinal fibres, which are inserted upon the reentering lines bounding the segments. I shall confine myself here to indicating further the powerful development of the retractor muscles, formed principally of two bundles placed on the sides of the nervous cord, and the fibres of which are implanted in front at the base of the anterior setæ, and behind upon the ventral surface of the integuments: these fibres are of unequal

* The author's examinations of this worm were made on specimens from off Cape Breton, in the Bay of Biscay, and from the Gulf of Lyons.

lengths ; some of them reach the ventral shield. These muscles cause the invagination of the anterior part of the trunk, the protraction of which is brought about by the posterior transverse muscles, which, by contracting, drive forward the fluid of the general cavity.

The digestive canal at first travels from before backwards, bends round near the perforated plates, returns forward, then turns again backward to terminate at the anus : it forms numerous convolutions, and is further irregularly twisted spirally with the generative organs. We may distinguish in it the following regions:—1, a wide, short, protractile pharynx, in the form of a bulb, presenting glandular ridges ; 2, a much narrower and longer œsophagus, which is analogous in structure to the stomach, but is destitute of the vibratile furrow, and its less developed epithelial layers possess no granulations ; 3, a stomach considerably wider than the other parts of the intestine, and composed of the peritoneum, of a feeble muscular layer, the scattered fibres of which are partly longitudinal, partly transverse, and of a greatly developed glandular epithelium which forms prominent longitudinal ridges in the interior ; at the commencement of the stomach originates a vibratile furrow, which only stops at the terminal part of the intestine ; the stomach secretes a yellowish liquid which gives a green colour with Gmelin's and a red colour with Pettenkofer's reagent ; I think it may be regarded as bile ; 4, a recurrent intestine, and, 5, a posterior intestine, which I distinguish from each other principally because of their general direction, and to facilitate a more detailed description ; their structure essentially resembles that of the stomach, except the smaller development of the epithelium, which is here no longer glandular ; 6, a protractile terminal intestine, destitute of the furrow and presenting the structure of the external skin.

The nervous system consists of two cerebroid ganglia, of a wide collar embracing the pharynx, and of a ventral cord, which widens considerably behind over the shield, in consequence of a greater development of its connective elements. On its ventral surface this cord gives off numerous unpaired nerves, directed downwards and backwards, which afterwards bifurcate into two symmetrical branches. I have not yet completely elucidated the question of the relation of these branches with the granular layer and the nervous filaments mentioned above.

The branchial filaments, destitute of cilia, have their internal cavity divided longitudinally by a fibro-muscular partition ; the two elongated sinuses thus formed communicate by a loop at the free extremity of the filament, and unite to form a single canal near the point of insertion upon the perforated plate. In the living animal we see some of these filaments elongated in the water, which they beat ; the red blood contained in them enables the loop formed by the two sinuses to be recognized ; but most of the filaments are usually retracted and spirally rolled up by the contraction of the longitudinal muscles which line the two sinuses, and which drive back the blood to the interior of the body, whilst the elongation of the branchiæ makes it flow into them. At the point

of insertion of each filament the perforated plate is traversed by a short canal lined with an epithelial layer, and afterwards dividing into several branchial vessels. Between the filaments the plates, the structure of which is analogous to that of the skin, have numerous hairs. The branchial vessels of the two plates all open into a wide and very short canal, which opens into the dorsal vessel.

In a future communication I will summarize my observations on the vascular and generative systems, the segmental organs, and the embryogeny of this worm.—*Comptes Rendus*, April 11, 1881, p. 926.

The Bears of the Cavern of Lherm. By M. H. FILHOL.

As is well known, the bone-cave of Lherm, in the Ariège, has furnished numerous remains of animals, including *Ursus spelæus*, *Felis spelæa*, *Hyæna spelæa*, *Rhinoceros*, *Cervus*, &c. The most frequent of these is the first-named species, *Ursus spelæus*, of which not less than one hundred crania have been obtained. M. Filhol remarks that these numerous crania prove the great fixity of character of this species, and that *Ursus spelæus* in its most modified forms has nothing to do with the existing *Ursus arctos*. M. Marty has recently found two skulls of bears different from any previously met with. One of these, a perfect skull, measuring along its lower surface 35 centim. from the incisive margin to the occipital foramen, has six teeth behind the canine, as in existing Bears, instead of three as in *Ursus spelæus*, and the form and proportions of those organs are as in *Ursus arctos*. This applies to the other characters of the skull; and M. Filhol identifies the animal with the living Brown Bear, which, he considers, cannot have descended from *Ursus spelæus*, but must have originated in some distant region, perhaps North America, and gradually advanced to take the place of the great Cave-Bear in these countries.

The second specimen consists of the anterior parts of a bear's head, also differing from those hitherto found in caves. In the upper jaw it had four teeth behind the canine, and the first premolar was preceded by a free space of 15 millim. Consequently the face was very short, but at the same time it was remarkably widened. Its transverse diameter behind the carnassial tooth is 10·3 centim. The anterior nasal aperture measures 64 millim. across and 51 millim. from front to back. In all other bears the antero-posterior diameter is the larger. The forehead was depressed and almost horizontally continuous with the nasal bones. Its elevation above the palatine arch at a point answering to the postorbital apophyses is only 10·8 centim.; in the *Ursus arctos* above mentioned this measurement gives 11·8 centim., and in *Ursus spelæus* 18·3 centim. The width of the forehead between the apices of the postorbital apophyses is 13·9 centim., or only a few millimetres less than in the largest crania of *Ursus spelæus*. These characters lead M. Filhol to regard this skull as representing a new species of bear; and he proposes to name it *Ursus Gaudryi*.

M. Marty has also found in the cavern of Lherm the femur of a fossil lion 46 centim. long.—*Comptes Rendus*, April 11, 1881, p. 929.



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