

vering in *Chernes* an apparatus which much better fulfils the requirements of a spinning-organ. Thus in the cephalothorax, above the brain and the anterior hepatic lobes, there are two considerable glandular masses which touch each other in the median line, and with their much attenuated anterior ends enter the basal joint of the chelicerae. The glands themselves consist, on each side, of four or five cylindrical closely approximated tubes which contain granular cells grouped around a clear central canal; the chelicerae receive only the narrow, chitinized efferent ducts, forming a fine bundle, which may be traced through the basal joint into the movable finger of the chela, traverses this, and enters into a soft-skinned process at its apex, which is characteristic of the genera *Chernes*, *Chelifer*, and *Cheiridium*. This process in *Chernes* terminates in four short conical points into which the ducts may be traced singly, and in which they probably open by a fine aperture, which, however, I have not been able to see distinctly. I found the same arrangement also in *Chelifer*. The structure of the chelicera itself also seems to support my interpretation, seeing that a number of processes exist upon it, and seem perfectly fitted for pulling and arranging the threads. Along the inferior surface of the movable finger there is a long comb consisting, in *C. Hahnii*, of eighteen plates; whilst on the immovable arm of the chela there is inserted a serrated and denticulated process, at the base of which rises a semi-circular fold of skin.

## MISCELLANEOUS.

### *On the Structure of the Muscular Fibres of some Annelids.*

By M. JOURDAN.

THE author has made a special study of the muscles of the integuments of the following Annelids:—*Hermione hystrix*, Kbg.; *Polynoë Grubiana*, Clap.; *Eunice torquata*, Gr.; *Syllis spongicola*, Gr.; *Phyllodoce Paneti*, Bl.; *Siphonostoma diplochætos*, Otto; *Terebella Meckelii*, D. C.; *Sabellaria alveolata*, Lam.; and *Protula intestinum*, Lam.

The form of the muscular fibres varies between rather wide limits, but they may be referred to two types—some are nearly cylindrical, others distinctly lamellar. But there is an intermediate series of more or less ribbon-like elements. The muscular fibres are sometimes fusiform and short, when they are visible throughout their whole extent in the field of the microscope; in other cases they



are much longer, their extremities are broken, and it is difficult to ascertain their length.

As constituents of these fibres may be distinguished a contractile substance remarkable for its intense coloration and its homogeneous aspect, and a nucleus accompanied by a protoplasmic substance. The existence of an enveloping membrane seems doubtful; the author thinks that in most cases there is none, and at the utmost it is only at the level of the nucleus that one can detect a delicate hyaline pellicle, which seems to keep the nucleus in contact with the element to which it belongs; but this rudimentary membrane soon disappears in contact with the muscular substance.

When these fibres are lamellar one margin is always thicker than the other, their form being like that of a sword-blade with a straight thick edge, while the thin edge is notched and furnished with irregular processes.

The contractile substance of these muscles is perfectly homogeneous, and in most cases it is impossible to discover transverse or longitudinal striæ. Some, however, present a peculiar aspect, which might seem to indicate a coarse transverse striation; colouring reagents, especially hæmatoxyline, show alternate light and dark segments, which give the fibre a banded rather than a striated appearance; and it is easy to see that these false striations represent actual thickenings of the muscular substance, and must be regarded as waves of contraction, having nothing in common with the transverse striæ of the Arthropoda and Vertebrata. In a Tubicolar Annelid (*Protula intestinum*, Lam.), which is remarkable for the dimensions and lamellar form of the longitudinal fibres of the posterior region of the body, the author has, however, found a true striation, comparable by its fineness and regularity to that of the muscles of Mammalia. This striation is manifested chiefly in the dark regions of the fibre; and while its general direction is transverse, it varies according to the point examined, so that the striæ may become more or less oblique. The striæ appear to be grouped in areas in which their direction varies more or less. They are very fine.

The author thinks that this striation in *Protula intestinum* is not unique; but he regards its occurrence here as particularly interesting, as it is in relation to the rapidity of contraction which occurs in *Protula*.

The nucleus is oval and placed outside the mass of contractile substance. The protoplasm surrounding it is sometimes very abundant and accompanies the muscular fibre through a great part of its length; but generally it is reduced to small granular masses which surround the nucleus and form irregular ridges upon the edge of the fibres.—*Comptes Rendus*, March 14, 1887, p. 795.

#### *The Stigmata of the Scolopendridæ.* By Dr. ERICH HAASE.

The number and structure of the stigmata is of great importance in the classification of the very uniform family of the Scolopendridæ. Thus Newport distinguished fissiform, cribriform, and so-called



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