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the influence of excitations coming through the eye of the opposite side.

f. The luminous rays belonging to the blue-violet region of the spectrum act directly upon the contractile matter of the corpuscles, causing them to move and to approach the surface of the skin.

I think I am justified in expressing the hope that these investigations will at last throw some light upon the history of the vasodilator nerves, of which so little is known; they will also serve me as a starting point for studying the action that light must exercise upon the contractile substance under other circumstances, and particularly upon the sanguiferous capillaries of the human skin.—*Comptes Rendus*, November 22, 1875, p. 938.

*On the Anatomy and Histology of Lucernaria.*

By M. A. DE KOROTNEFF.

During the summer of the present year I occupied myself with the anatomical and histological investigation of *Lucernaria octoradiata* in the laboratory of M. de Lacaze-Duthiers at Roscoff. The abundance of the animal and the perfect arrangement of the laboratory enabled me quickly to arrive at the results which I now communicate to the Academy.

The walls of the body consist of four layers:—1, the ectoderm, covered by a cuticle; 2, the gelatinous layer; 3, the elastic membrane; 4, the entoderm. At the bottom of the ectoderm, as well as in the entoderm, there are cells which become transformed into nematocysts or into glandular cells. The gelatinous layer and the *membrana propria* are traversed by elastic fibrils, which are prolongations of the entodermic cells. Two kinds of muscles occur in the *Lucernaria*, longitudinal and circular; the latter always form an exterior layer. The longitudinal muscles are represented by four trunks, which commence at the bottom of the foot. Halfway up the body of the animal each trunk divides into two rods; and each rod enters into a bundle of tentacles. A layer of longitudinal muscular fibres occurs in the walls of the peristome and of the buccal tube. The circular muscles exist (1) round the mouth, (2) along the margins of the body, and (3) in the tentacles. Each fibre is a simple cell, containing a very refractive fibril. The cells may unite by prolongations and develop a single fibril, which traverses a whole series of cells. The fibril grows at the expense of the cell itself; the protoplasm of the latter disappears almost entirely, and the nucleus is enclosed in the fibrous mass. The peristome on its outer surface is clothed with well-developed muscular cells; these cells at the same time separate a perforated cuticle; the presence of the latter proves that it is a layer of a muscular epithelium.

With regard to the nervous system of the Hydraria there are many suppositions, but nothing is positively known. Kleinenberg, without much reason, attributes a nervous character to the cells of

the muscular epithelium. Schultze regards the threads (*cnidocils*) of the urticating organs as organs of touch. The study of *Lucernaria* has enabled me to extend Schultze's observations: the heads of the tentacles of the animal in question are covered with nematocysts (urticating organs). Each nematocyst is placed in a cell, which bears a thread. This cell is produced into a long fibril, which traverses another bipolar or multipolar cell. The fibril in question terminates by a small peduncle, which penetrates into the *membrana propria*. The multipolar cell may be regarded as a nervous cell. The analogy with the tactile organs of the Arthropoda is complete. Between these tactile organs there are long glandular cells filled with a mucous substance, which enables the *Lucernaria* to attach itself by its tentacles.

The digestive cavity contains a stomach and four wide radial canals; the walls of this cavity are clothed with a layer of entodermic cells, which are ciliated on the peristome and simple on the outer walls of the body. Among the entodermic elements there are unicellular flask-shaped glands, which secrete a digestive fluid. The surface of the cavity above mentioned is increased by mesenteric filaments. One side of each filament is formed by glandular cells, whilst the other is ciliated. I suppose that the ciliated cells serve to produce a circulation in the cavity, and the simple entodermic cells absorb the nutritive liquid.

The sexual elements are developed in special capsules of entodermic origin. Each capsule is composed of the entoderm and of an elastic membrane (*membrana propria*); the interior of the capsule is filled with ovigenous cells; the young ovum has a large germinal vesicle, which disappears as it enlarges. The developed ovum is surrounded by a strong membrane with a large micropyle. The mature capsule is furnished, near its base, with a duct, which serves for the issue of the sexual products; this duct is closed, which is due to the elasticity of the *membrana propria*. The pressure of the mature ova from the interior opens the duct; a few ova issue, and the duct closes again.—*Comptes Rendus*, November 8, 1875, p. 827.

*Instinct(?) in Hermit Crabs.* By ALEXANDER AGASSIZ.

While tracing the development of one of our species of hermit crabs I raised from very young stages a number of specimens till they reached the size when they need the protection of a shell for their further development. I was, of course, curious to see how they would act when first supplied with the necessary shells. For this purpose, a number of shells, some of them empty, others with the animal living, were placed in the glass dish with the young crabs. Scarcely had the shells reached the bottom before the crabs made a rush for the shells, turned them round and round, carefully examining them, invariably at the mouth; and soon a couple of the crabs decided to venture in, which they did with remarkable alacrity; and