

This seems to indicate clearly that the interarticular fibres of the cirri are muscular in function, though not striated like the ventral fibres which unite the arm-joints, and have hitherto been regarded as the only true muscles of the Crinoid organisation.

Four years ago I pointed out that the appearance of some of my sections had led me to think that the axial cord of the arm consisted of two lateral fibrillar masses enclosing a central structure.¹ According to Jickeli² this last is a longitudinal septum between two tubes which contain blood-corpuscles; while the whole structure is enclosed in a sheath of nervous tissue. Within the calyx the tubes of the different rays unite laterally and "gehen durch eben solche das gekammerte Organ theilweise bedeckende Fortsätze in ein spongiöses Geflecht über, welches dem gekammerten Organ wie eine Kuppe aufsitzt. Von diesem spongiösen Geflecht entspringen die Fortsetzungen in die Cirrhen. Die Wandung dieses Röhrensystems ist die nervöse Substanz, die Masse, welche dasselbe erfüllt, besteht aus geronnenem Plasma, in welches Blutzellen eingebacken sind." It does not appear, however, that these axial blood-tubes are in any way connected with the cavities of the chambered organ. Jickeli points out that his observations confirm the statements of Müller³ respecting the presence of a blood-vessel within the central canal of the arms, which subsequent workers have generally considered to be erroneous. He finds that the elements of the nerve sheath surrounding these blood-vessels are most easily demonstrated in the radial axillaries where the axial cords of two arms unite, and he describes the presence of ganglionic cells with from two to six processes, some of which unite with those of other cells. He has also seen the muscular branches of the axial cords, the existence of which, according to Weinberg, is only a supposition; and by the use of polarised light he has traced these into the dorsal as well as into the ventral musculature.

He doubts the presence of a definite oral ring in the ambulacral nervous system. For he finds that the ventral nerves extend down into the fore-gut beneath its epithelium, which is directly continuous with that lining the food-grooves. The appearance of several of my sections, both of *Pentacrinus* and of *Comatula*, has led me to suspect this fact; but I have hesitated to say so, as I wished to verify it by making some sections of individuals which had been properly prepared for histological work. This having been done by Jickeli, I am glad to be able to confirm his observations.

He believes himself to have discovered yet another nervous structure in the Crinoid organisation, "es ist noch ein drittes bis dahin nicht bekanntes, im Bindegewebe gelagertes Nervencentrum vorhanden, welches die Mundöffnung umgibt, und die radialen Wassergefäße jederseits als ein gesonderter, an die Tentakeln in regelmässigen Abständen Zweige abgebender Strang begleitet."⁴ The peripheral parts of this system appear to me to belong to what I have called the parambulacral network, situated in the ventral

¹ *Quart. Journ. Micr. Sci.*, 1881, vol. xxii., N. S., p. 187.

³ *Bau der Pentacrinus*, *loc. cit.*, p. 22.

² *Zool. Anzeiger*, vol. vii. p. 368, 1884.

⁴ *Zool. Anzeiger*, vol. vii. p. 370, 1884.