as brachiopods which abounded in Siluria, and had a very wide geographical range, being met with in the same place in the Silurian series of Russia and the United States. Among its fossils, too, *Tentaculites annulatus* (fig. 590), an annelid probably allied to *Serpula*, is exceedingly common. This also is a link to connect it with the Lower rather than the Upper Silurian. All the shelly sandstone of the Malvern and Abberly Hills, of Tortworth in Gloucestershire, and of the centre of the May Hill and Woolhope districts belong to this Middle Silurian, which in the Malvern range attains a thickness of 600 feet. Of the same age are dense masses of sandstone with shale, 2000 feet in thickness, in the higher and disturbed regions of North Wales, as in the Berwyn Mountains for example. According to Professor Sedgwick the hard quartzose Coniston Grits of Westmoreland may also be referred to the same period.

Fig. 590.

Tentaculites annulatus, Schlot. Interior casts in sandstone. Eastnor Park; nat. size and magnified.

LOWER SILURIAN ROCKS.

Llandeilo Flags.—The Lower Silurian strata were originally divided by Sir R. Murchison into an upper group, already described, and termed the Caradoc Sandstone, and a lower one, called, from a town in Caermarthenshire, the *Llandeilo Flags*. The strata last mentioned consist of dark-colored micaceous flags, frequently calcareous, with a great thickness of shales, generally black, below them. The same beds are also seen a Builth in Radnorshire, and here they are interstratified with volcanic matter. Above these typical Llandeilo beds, however, the Lower Silurian contains, both in North and South Wales, some strata in which the Pentameri of the Middle Silurian, already alluded to (p. 438), are associated with species of fossils identical with those in the Llandeilo flags. The corals of the calcareous zone of the Llandeilo belong to the genera *Halysites* (see fig. 579), *Heliolites*, *Petraia*, *Stenopora*, *Favosites* (fig. 580), and others;* and there are peculiar Crinoids and Cystideans in the same rocks. These last are amongst the most recent additions made by paleontologists to the *Radiata*. Their structure and relations were first elucidated in an essay published by Von Buch at Berlin in 1845. They are the *Sphæronites* of old authors, and are usually met with as spheroidal bodies covered with polygonal plates, with a mouth on the upper side, and a point of attachment for a stem (which is almost always broken off) on the lower (fig. 591, *b*). They are considered by Professor E. Forbes as intermediate between the crinoids and echinoderms. The Sphæronite here represented (fig. 591) occurs in the Llandeilo beds in Wales,† as also in Sweden and Russia.

Examples are not wanting, though very rare, of star-fish in the same

* Murchison's Siluria, p. 178.

† Quart. Geol. Journ. vol. vii. p. 11; and Mem. Geol. Surv. vol. ii. p. 518.