

The shortening of *one* of the six otherwise similar rays is very frequent, and leads finally to the formation of pentacts.

Much more frequent, however, than mere differences in length, are modifications of form. A ray may, in its entire configuration, more or less markedly differ from its five neighbours. This is the case, *e.g.*, in many hexacts with fir-tree-like distal rays, *pinuli*, such as occur in the skin of *Aulascus johnstoni* (Pl. XXII. fig. 3), *Caulophacus elegans* (Pl. XXV. figs. 4, 5), and many other Asconematidæ, and also in *Aphrocallistes* (Pl. LXXXIV. fig. 8; Pl. LXXXV. fig. 4). More frequently, however, the differentiation affects two radial rays generally on one and the same axis, as is usually the case in the hexacts which occur in the skin of the Asconematidæ, and are provided with one prominent, scaly, fir-tree-like, pronged ray (Pl. XXII. fig. 9; Pl. XXVI. fig. 9). Similar forms occur also in many Euplectellidæ (Pl. XII. fig. 3; Pl. XIII. fig. 2). Apart from the differences already noted, in regard to the rays of many rosettes, some other hexacts, with secondary rays, exhibit further irregularities. Thus, *e.g.*, *Aphrocallistes beatrix*, Gray, is markedly distinguished by the character of the spicules which lie separately in the soft parts. In these, two of the principal rays, not however on the same axis, are elongated and curved, and occasionally divided into four pointed terminals, while the four other principals remain simple and short (Pl. LXXXIV. figs. 9, 10).

PENTACTS.

In support of the theory that pentacts have phylogenetically arisen from hexacts by the atrophy of one ray, the existence of numberless transitional forms, with a more or less manifest rudiment of the sixth ray, may be adduced; while it ought to be noted that the disposition of the five well-developed rays is in thorough agreement with that of the corresponding rays in hexacts and, finally, that pentacts occur almost exclusively close to the bounding layer, where the development of one of the two rays standing at right angles to the limiting surface, is either impeded or specially favoured. Either the distal or the proximal ray may thus undergo atrophy, with the associated increase of the other.

The rays may be smooth (Pl. LVI. fig. 6), or rough (Pl. LV. fig. 3), cylindrical or attenuated towards the exterior, and pointed, rounded, or even thickened at the extremity.

The simple case in which all the five rays are of equal form and size is of frequent occurrence (Pl. LV. fig. 3), but the unpaired ray usually differs in some point from the four others. It may project freely beyond the bounding surface, bearing lateral prickles which overlap one another like scales. The resemblance to a fir-tree, thus produced, has earned for the entire spicule the designation *pinulus*. Such *pinuli*, in which