

The fundamental form of all the spicules is the simple, regular, six-rayed form. The manifold deviations from this form may be understood as the results of the following modifications:—(1) the unequal development of the rays, which may lead to the complete suppression of one or more, so that in extreme cases only a single ray attains full development; (2) division of the rays into terminal branches, varying in number, form, and direction; (3) the development of local thickenings or unilateral swellings in the form of knobs, thorns, prickles, knots, and similar ornamental protuberances; (4) the curvature of the chief rays or their branches.

The isolated spicules which sometimes occur, in which more than six principal rays seem to run out from a nodular point, may be usually referred to a very deep division of one or several of the principal rays, as the result of which the secondary or terminal rays have been closely approximated to the point of intersection, and thus simulate the principals (Pl. XCVII. fig. 3).

In many cases in the continuous frameworks, more than six beams are seen running out from a nodular point, but of these, as is well known, only six belong to one spicule, while the others belong to neighbouring hexacts, and have become fused to the former spicule at the node of intersection.

In our survey of the different forms of spicules which occur in the Hexactinellida, it will be convenient to divide them into six main groups, according to the number of perfectly developed rays. These six forms may be termed Hexacts, Pentacts, Tetracts, Triacts, Diacts, and Monacts, and they will be treated consecutively in that order.

### HEXACTS.

*Regular Hexacts* are all spicules in which the rays lie at right angles to one another, and are of equal length and similar form. One of the most simple and at the same time most frequent of the regular hexacts possesses straight, perfectly round and smooth rays, in which the diameter becomes uniformly less from the point of intersection to the extreme tips (Pl. III. fig. 15; Pl. XXVII. fig. 20). Even in these simple forms, however, there are manifold differences in the size of the radii. Besides the gradual running to a point, the rays frequently exhibit an irregular decrease of the diameter towards the outer extremity. The latter may thus be conically sharpened, rounded in various ways, or transversely truncated. The ray may also exhibit a terminal swelling of varying form, a sharply truncated terminal knob (Pl. XCV. figs. 3, 4), or a hemispherically arched, transverse, terminal disc provided with marginal prongs (Pl. XI. fig. 3; Pl. LV. fig. 8). In the latter cases there is no manifest decrease in the diameter of the ray from within outwards.

The rays may be roughened by small elevations thickly studded throughout their whole length (Pl. LV. fig. 5), or in particular regions (Pl. LII. fig. 5). They are often