Zoology Part LIII: Report on the HEXACTINELLIDA. By Professor F. E. Schulze. Bound in Volume 21,1887.

appressed. They spring from a projection and cover over a groove-shaped depression. Finally, we have to note the occurrence (here and there very abundant) of small thin oxydiacts, which exhibit on their surface fine tubercles or spines, or only irregular roughnesses. It seems to me improbable that the amphidiscs found in the parenchyma really belong to it. I believe rather that they are present only by secondary dislocation, having originated in the dermal, gastral or canalicular skin.

The dermal skeleton includes strongly developed hypodermal oxypentacts of variable size. While the long proximal ray has usually a perfectly radial disposition, the four tangentials extending below the dermal membrane do not always form right angles with one another, and frequently exhibit near their origin a marked curvature to the side or inwards. The rays may exceed 1 mm. in diameter, and that strength is indeed common enough, though not at the point of origin, but at some distance up the ray. Between pentacts of this sort, tetracts occasionally occur, arising by reduction of the proximal radial ray. Not unfrequently, in some or in all, the ends are more or less markedly rounded. The autodermal pentact pinuli, present in great number and in strong development exhibit great variations in the size and form of the cypress-like or fir-tree-like free distal ray. The four cruciately disposed moderately long and thin basal rays lie in the same plane. Near their origin they are smooth, but bear on the larger outer end small teeth and spines. They usually end in a point, but in the larger specimens the ends are sometimes more or less bluntly rounded off (Pl. XLV. figs. 2, 3). The distal ray of the larger dermal pinules attains a length of 0·3 mm. and more. In form it resembles a slender cypress, so closely lie the uniformly long, oblique, lateral spines (Pl. XLV. fig. 2). Between these long pinules numerous smaller forms occur, which are usually much more slender, and run out into a single long terminal point (Pl. XLV. fig. 3). Less frequently compressed, broad and bushy forms occur (Pl. XLV. fig. 5). The tall cypress-like pinuli are usually associated with the strong tangential rays of the large hypodermal pentacts, while the slender and smaller forms occur on the sieve-like perforated dermal meshes, which are enclosed by large hypodermal pentacts.

The larger amphidiscs, which do not occur in what could be called abundance, attain a length of 0·18 mm., exhibit a moderately thin, tubercled, axial rod, and short campanulate, almost hemispherical terminal umbels, with eight smooth, terminally slightly pointed rays (Pl. XLV. fig. 8). Less frequently, somewhat broader ovoid amphidiscs occur, in which the umbel rays almost, or actually meet the opposites (Pl. XLV. fig. 7). Finally, a large number of small amphidiscs are found, with longish form, and almost hemispherical umbels composed of eight uniformly slender rays (Pl. XLVI. fig. 5).

The gastral skeleton exhibits the same strong and somewhat slimmer oxypentacts which occur under the external skin. The numerous pentact pinuli otherwise resemble the bushy forms of the outer skin, but have a much shorter bushy radial ray. On the sieve-network in the gastral skin, which covers the large grouped apertures, there are

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