

branches, which come off at right angles and immediately divide into a large number of divergent twigs which bear the polyps at their ends. Each twig bears, on an average, five polyps. Owing to the regular ramification each secondary branch, as well as the smaller main branches, forms a short, convex umbel. All the umbels are crowded together so that each branch appears to be covered with a continuous coat of polyps. The polyp umbels of the four main branches themselves are likewise crowded together. The area of each only appears defined by a groove, owing to the different development as regards length, so that the areas of the branches correspond to four convex protuberances. The polyp heads, each of which appears distinctly isolated on the surface, are placed singly on short peduncles, 1 to 0.8 mm. in length; the older ones on a twig, being usually more prominent than the others. They diverge somewhat from one another, and are surmounted each by a rigid spicule for a distance of 0.5 to 0.8 mm., upon which they appear to be laterally placed. The diameter of the head reaches 0.8 mm.

The twigs, like the polyp heads, are usually stiff and rigid, owing to the numerous calcareous spicules embedded in the mesoderm. More especially may be noticed amongst these a band of large spindles which occupies the portion of the twig and of the polyp peduncle, which is turned away from the head. The spicule which surmounts each head projects from amongst these spicules. The mesoderm of the barren part of the stem, which is penetrated by very wide canals, contains numerous spicules of special shape, easily distinguishable from those of the preceding species.

The following are the principal forms which occur:—(1) Small spicules, usually in the form of quadriradiate structures, sometimes in the form of an oblique cross, sometimes of more irregular shape, and covered with spines, warts, or jagged branching processes. Size, 0.2 by 0.13; 0.15 by 0.14; 0.12 by 0.08 mm. (2) *f*-shaped spindles, thickly covered with short, branched warts. Size, 1.0 by 0.13 mm. (3) Simple, curved spindles, covered with sharp spines, which bear in the centre, where they are broadest, branched, thorny processes; length, 0.51 by 0.1 mm. (4) Club-shaped structures, 0.31 mm. long and 0.1 mm. broad at the thickened end, where they bear branched spines.

In the polyp-bearing portion there occur, in place of these structures, straight, slender spindles, covered with fine spines, or such as are slightly curved or *f*-shaped. In the stem and main branches they are chiefly placed transversely; in the twigs they form longitudinal bands, of which one, on the dorsal side of the twig and of the peduncle, is especially developed and distinguished by the great development of the spicules. Here the spicules are 3 to 4 mm. long, with a diameter of 0.2 mm. Their surface is covered with very fine spines, and one end is often shortly bifurcate. The smaller spicules have the following dimensions—length to thickness, 1 by 0.07 mm.; 0.92 by 0.04 mm.

The spicules of the polyp heads are usually arranged *en chevron* in eight series;