that the irregularly scattered loose parenchymal hexasters, which are present in large numbers, all bear terminal rays the ends of which are knobbed or provided with small thick transverse discs (Pl. LXXXV. figs. 3, 5, 8, 9). The diameter of these disco-hexasters varies from 0·08 to 0·03 mm. The principal rays remain, as a rule, uniformly short and crowded, but the two rays of one axis are often greatly prolonged in comparison with the others, and it is just in such cases that the latter usually remain simple (Pl. LXXXV. fig. 5), while the former become divided into two to four terminal rays.

4. *Aphrocallistes ramosus*, n. sp. (Pl. LXXXVI.).

Both among the sponges of the Challenger Expedition and among the Hexactinellida dredged by Dr. Döderlein in the Sagami Bay, there are dichotomously branched round tubes from 5 to 10 cm. in height, which are only from 3 to 4 mm. broad at the base, but become gradually wider in the upper branches, and finally open out by cup-shaped lateral and terminal branches from 8 to 10 mm. in width. The specimen represented from a photograph in Pl. LXXXVI. fig. 1, in its natural size, was obtained from the Philippines (Station 210 of the Challenger Expedition, lat. 9° 26′ N., long. 123° 45′ E.), from a depth of 375 fathoms and a blue mud ground.

The tube wall consists of the same honeycomb-like framework of six-sided meshes or prismatic radial tubes, as in the cup-wall of the other species of *Aphrocallistes*; and the microscopic examination shows that the minute structure of the meshes or prismatic septa does not differ essentially from that already described.

The tolerably smooth network of beams, which is only here and there provided with delicate tubercles consists of irregularly fused hexacts, and exhibits predominantly triangular narrow meshes. While the conical pegs on the dermal side run out to simple points, and are directed at right angles to the bounding surface, the terminal pegs on the gastral surface are elongated, provided with a rough pear-shaped end-swelling, and are frequently obliquely directed or somewhat curved round. The conical pegs projecting from the surface of the network of beams into the lumen of the radial tubes are directed obliquely outwards, that is to say, towards the dermal surface.

In the dermal skeleton, hexacts occur with a very variously developed distal ray, which is sometimes quite fir-tree-like (Pl. LXXXVI. fig. 8), sometimes club-like with lateral prongs (Pl. LXXXVI. fig. 4), sometimes simply rod-like or pear-shaped, or even quite rudimentary and knob-like (Pl. LXXXVI. fig. 3). The proximal ray equals or usually exceeds the four cruciately disposed transverse rays in length. More rarely it is shorter than the others, which often exhibit an externally convex curvature (Pl. LXXXVI. fig. 2) Besides the dermal hexacts, numerous dermal scopulæ occur. These present a smooth, pointed, or terminally rounded stalk, and the outer expansion bears