

6. *Subcortical spheraster*, an evident centrum and numerous rod-like actines, 0.016 mm. in diameter.

7. *Choanosomal chiaster* (Pl. XXVI. fig. 9), no visible centrum, somewhat, but not very numerous, slender, hair-like or rod-like actines, from 0.0118 to 0.016 mm. long; total diameter 0.024 to 0.0276 mm.

*Colour*.—In the dried state nut-brown.

*Habitat*.—Station 122B, off Brazil, September 10, 1873; lat. 9° 9' S., long. 34° 53' W.; depth, 32 fathoms; bottom, red mud. Trawled.

*Remarks*.—The species is represented by a single specimen, the largest Tetractinellid sponge known. The cup stands on a rounded base about 12 cm. in diameter, and rises to a height of 40 cm. At its broadest part its diameters are 22 and 31 cm. The interior conical or funnel-shaped cavity commences about 12 to 13 cm. from the base. In the illustration it is represented as extending completely through the basal part of the sponge; this is the result of an injury, or to the sponge having grown over some stake-like support which has since been torn away. The actual extent of the true internal cavity is indicated in the figure (Pl. XXV.) by the broad white line which represents the cortical layer of the interior; this will be observed to suddenly cease at the point where the basal perforation begins. The diameters of the cup at its margin are 21 and 15 cm. Thin at the margin, the walls increase in thickness downwards, and 12 to 13 cm. from the summit they measure 45 mm. where thinnest and 85 mm. where thickest. Both inner and outer surfaces are much folded, growing out into irregular, sinuous, branching, anastomosing ridges, diversified by lobes and tubercles. On the outer surface the ridges in their upward growth frequently terminate in lobate summits; and the irregular grooves between them are frequently circumscribed, forming pits, which descend deeply into the thickness of the sponge-wall, as sinuous cavities. The mouths of these canals are shown in Pl. XXIV. The upper half of the interior surface (Pl. XXV.) is folded into sinuous, more or less longitudinal, ridges, which as they descend become confluent in an irregularly undulating surface. Looking at the margin of the cup, face on, it is seen to be irregularly plicated or "goffered." The margin may be regarded as the latest formed part of the sponge, and from its manner of growth we obtain a key to the complications of the older and indeed aged part of the sponge-wall. Let us assume that at an early stage the young sponge acquired a cup-like form. The mode of growth of the margin was similar to that of the existing margin; *i.e.*, the growth of the surface proceeded more rapidly than that of the interior of the wall, and folding of the margin was the result (Fig. 2, *a*). The pleats once formed continued to grow in the same manner, *i.e.*, the superficial growth was more rapid than the deep-seated, and secondary and tertiary pleats arose upon those first formed (Fig. 2, *b, c*), more particularly on those of the exterior of the sponge-wall. It is well known that concrescence frequently results when two growing surfaces