

ment of spongin-fibrillæ and the relatively smaller quantity of xenophya (for the most part Radiolarian shells) which are disposed in the maltha between them. The fibrillæ are very much alike, and regularly arranged in thick crossed bundles (Pl. II. fig. 2). The leaf, therefore, is coriaceous, more elastic and coherent than in the four other species. Its surface is soft and velvet-like, and marked by a number of distinct concentric zones, which run parallel to the semicircular distal margin.

The second species, *Stannophyllum radiolarium* (Pl. I. fig. 2), connected with the first by numerous intermediate forms, is composed almost entirely of Radiolarian shells; the spongin-fibrillæ between them are scarce, very thin, of nearly equal breadth. The leaf, therefore, is homogeneous, and in the dry state is like a thin plate of fine sand; the external surface is quite even, finely arenaceous, without zones and ribs. The physical consistence is rather inelastic, stiff, and fragile.

Whilst in these two species the pseudo-skeleton is composed mainly of siliceous Radiolarian ooze, it consists in the third almost entirely of calcareous *Globigerina* ooze. The spongin-fibrillæ in the connecting maltha of this *Stannophyllum globigerinum* (Pl. I. fig. 5) are very unequal in size, many coarse and thick between the main mass of thin threads which are irregularly interwoven in all directions like cotton threads. Usually they are more fully developed in the softer medullar plate of the leaf, in which the network of symbiontes expands between the canals of the sponge, and in which the smaller shells and fragments of *Globigerina* are crowded; whereas the two parallel porous dermal plates contain only a small quantity of fibrillæ, and are usually composed for the most part of larger *Globigerina* shells. In consequence of this composition the leaf of this species is extremely flaccid and soft in the wet state, non-elastic, fragile and friable in the dry state. The surface is coarsely granular or sandy, and exhibits sometimes (but not always) indistinct concentric zones, like those of *Stannophyllum zonarium*; with this species it is connected by numerous intermediate forms (compare Pl. I. figs. 1, 5).

The two remaining species, *Stannophyllum venosum* (Pl. I. fig. 4) and *Stannophyllum pertusum* (Pl. I. fig. 3), appear in a certain sense as intermediate forms between *Stannophyllum globigerinum* and *Stannophyllum radiolarium*. They are distinguished by the possession of thick, prominent, branched ribs, which arise from the insertion of the basal pedicle. These thick ribs are whitish, and composed mainly of *Globigerina* ooze, while the thin brown membrane between them is supported by Radiolarian ooze; the quality and quantity, however, of these two different materials is very variable in the different specimens of these two species, *Stannophyllum venosum* approaching generally nearer to *Stannophyllum globigerinum*, and *Stannophyllum pertusum* to *Stannophyllum radiolarium*. The spongin-fibrillæ are in the two latter species more equal and delicate than in the two former. Besides, *Stannophyllum pertusum* is characterised by the presence of a great quantity of siliceous sponge spicules (mainly Hexactinellida), and perhaps to this is due the greater fragility and flaccidity which characterises this species,