horny skeleton of the former there is not that distinction between stout primary and delicate secondary fibres as in that of the latter. But one may suppose that the stout spongin-fibres of *Phyllospongia* forming its supporting scaffold have been lost in *Psammophyllum* and replaced by the chitinous tubes of the symbiotic hydrorhiza.

Skeleton.—The marked peculiarity of the five deep-sea Spongelidæ here described, and the principal distinction between them and the well-known Spongelidæ of shallow water, is the complete absence of stout spongin-fibres, forming the firm scaffold of the spongin-skeleton. As already mentioned, these seem to be replaced by the chitinous tubes of the reticular hydrorhiza, produced by the symbiotic Hydroids which traverse the whole body of these curious sponges. The production of the spongin-skeleton, however, is reduced to the scanty and thin fibrillæ or lamellæ which partly enclose the xenophya, partly connect them.

Xenophya.—The foreign enclosures, which fill up the scanty transparent maltha of *Cerelasma* (Pl. VI.) and of *Psammophyllum* (Pls. IV., V.), and which are partly enclosed by the lamellar or fibrous spongin productions, are in three of the five species observed Radiolarian tests, in the other two siliceous sponge spicules intermingled with volcanic mineral particles. The calcareous Globigerina ooze, which composes the pseudo-skeleton in most of the Psamminidæ and Stannomidæ, is rare or entirely absent in these deep-sea Spongelidæ, though the bottom at one Station (216) is true Globigerina ooze. The manner in which the xenophya are collected and disposed seems to prove that in these Spongelidæ (as in the Stannomidæ) there is a power of selection of materials for the construction of the pseudo-skeleton. The scarce transparent maltha, or the ground-mass of the mesoderm, which surrounds and connects the xenophya, contains two kinds of cells: small stellate, fusiform or roundish connective cells, and amœboid wandering cells; the latter probably produce the spongin-skeleton.

Symbiontes.—The firm scaffold of the body in all the deep-sea Spongelidæ is formed not by a network of stout spongin-fibres, as in all the shallow-water inhabitants of this family, but instead by a network of chitinous tubes, which belong to the hydrorhiza of a symbiotic Hydroid. This foreign network traverses all parts of the sponges so densely and continuously (as well in *Cerelasma*, Pl. VI. figs. 2–4, as in *Psammophyllum*, Pls. IV., V.), that in the preliminary examination I was inclined to regard it as an organ-system of the sponge itself, comparing it with the skeletal network of the Aplysinidæ, the branches of which are thin-walled spongin-tubules filled up with a dark medullar mass or pith-substance. But this first supposition was afterwards refuted by the discovery of hydranths, and in some places even of gonangia, being in direct continuity with the chitinous tubes of the network, and filled by the same dark (brown, greenish, or blackish) cellular mass. This mass is evidently the decomposed cœnosarc, the cells of which (entodermal and exodermal) could not be well preserved within the containing dense and decomposing sponge-tissue. The symbiotic