by all the known representatives of the group, to conclude that the primitive ancestors must have had a similar structure, though in very simple form.

As I have already noted, the generally sack-like, extremely loose body consists essentially of two approximately parallel bounding lamellæ, the dermal and the gastral membranes, between which there extends the variously sinuous membrana reticularis, usually forming a folded chamber-layer, and supported by a framework of fine beams. The principal strands of this trabecular framework enclosing the parenchymal skeleton extend at right angles from each of the two limiting lamellæ, and usually meet one another in such a way that they form beams penetrating the body-wall transversely, while they are also laterally connected by numerous trabeculæ, which, running in another direction, form a somewhat irregular framework, though longitudinal and transverse strands predominate.

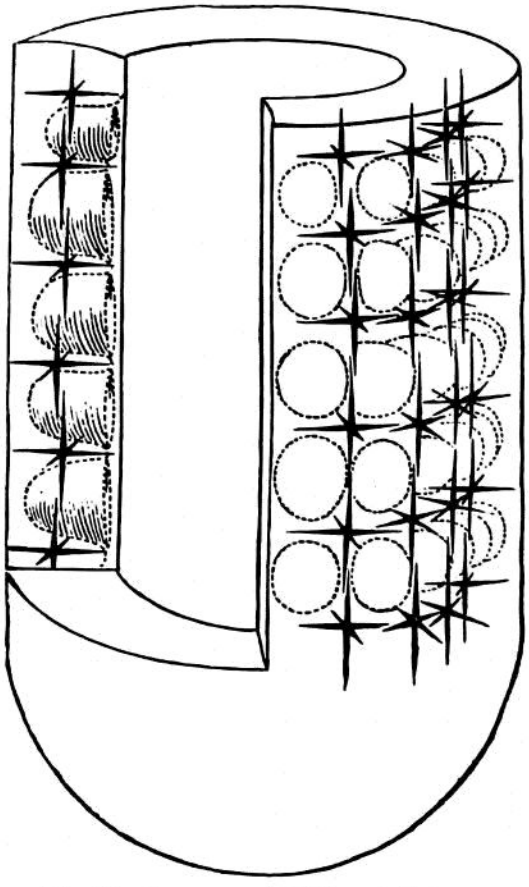

FIG. 13.—Arrangement of Hexacts between the chambers.

It thus appears to me evident that, in these circumstances, no more advantageous form of spicule for the support of such a simple, loose Hexactinellid body, could be devised than the regular hexacts, disposed in such a way that one radial ray unites the two bounding lamellæ, while the second is tangential, and the third longitudinal (fig. 13), just as they do indeed occur in the simplest Lyssacina, *Holascus*, *Bathydorus*, &c.

By the firm union of all such hexacts a lattice-work is formed such as we find to be developed with almost ideal regularity in the younger portions of *Farrea*. As the wall becomes thicker new layers of similar regular hexacts are laid down, as we find best developed among the Lyssacina in *Holascus fibulatus*, and among the Dictyonina in the older portions of *Farrea*-stocks, but more or less distinctly in all Dictyonina and most Lyssacina.

Thus it appears that a consideration of the mechanical conditions of the soft parts to be supported affords in this case also an insight as to the utility of the specific structure of the skeletal elements as here represented by the regular hexacts.