

GENERAL REMARKS ON THE FORM AND STRUCTURE OF THE HEXACTINELLIDA.

Although the different species of the Hexactinellida vary greatly in form and structure, they nevertheless exhibit so essential an agreement in the fundamental features of their organisation, that it is easy to reduce all known forms to a common type. Apart altogether, for the present, from the skeletal portions, this common type resembles a simple sac, in which the outer surface is formed of a thin skin rich in pores (the *dermal membrane*), through which water enters into a space (the *subdermal trabecular space*) crossed by fine trabeculæ. Within this there is a single layer of closely arranged chambers shaped like the finger of a glove, with wide internal openings, and with fine walls (the *membrana reticularis*), supported by an elegant quadrate network, and penetrated by small round pores (*chamber pores*) for the passage of water. A connecting membrane extends between the internal openings of the chambers, and is in direct continuation with the walls of the chambers. This membrane generally agrees in structure with that bounding the chambers, and closes internally the clefts and apertures which occur between the latter. Through the pores of the chamber walls and the connecting membrane, the water reaches an *inner* or *subgastral trabecular space*, which is likewise crossed by fine trabeculæ, and is separated from the wide gastral cavity by a porous or net-like internal limiting skin, or gastral membrane.

From the exterior inwards the following successive layers occur:—(1) the outer limiting skin or *dermal membrane*; (2) the outer or *subdermal trabecular framework*; (3) the *chambers* with their connecting membrane; (4) the inner or *subgastral framework*; (5) the inner uniting or *gastral membrane*.

The body of every Hexactinellid is invariably made up of these five layers in the same order, but the designation of the layers as outer and inner refers not so much to their relation to the centre of the individual sponge, as to the direction of the stream of water. Thus the *dermal membrane* always refers to that through which the water enters the sponge body, and the *gastral membrane*, on the other hand, to that through which it escapes from the body-wall into the gastral space, or directly to the exterior.

In the attempt to trace the manifold modifications of the numerous species of