

succeed two layers of ectoderm; and lastly, we meet with an endodermal layer surrounding a cavity which occupies the axis of the gonophore, and is in free communication with the general cavity of the colony.¹

If we now compare this with the structure met with in the Medusa we shall find the external ectodermal layer to be homologous with the outer epithelial layer of the umbrella. The next ectodermal layer will represent the subumbrellar or inner epithelial layer of the umbrella, while the endodermal layer which intervenes between these two layers of ectoderm corresponds to the endoderm lamella in which are formed the radiating canals of the Medusa. The next layer is an ectodermal one and forms the external layer of a *cul de sac* which occupies the axis of the medusoid, and corresponds to the manubrium of the Medusa. This layer represents the ectodermal layer of the manubrium, while the inner or endodermal layer of the *cul de sac* corresponds to the endodermal layer of the manubrium of the Medusa.

When the generative elements make their appearance in the gonophore they are seen in the hedrioblasts to lie between the endoderm and ectoderm of the central *cul de sac* which corresponds to the manubrium of the Medusa; while in the planoblast they lie either between the corresponding layers of the manubrium, or between the endoderm and ectoderm of definite points in the course of the radiating canals.

The intervention of the generative products between the endoderm and ectoderm of the central *cul de sac* in the hedrioblast, necessarily separates these two membranes from one another, and the endodermal portion then extends in the axis as an elongated closed sac surrounded by the generative products, and known as the *spadix*.

2. Origin of the Generative Elements.

It had been always believed that the generative elements had their origin in the gonophores in which they constitute so conspicuous and characteristic a feature. It was therefore with no little surprise that during an examination of the common *Sertularia pumila* of our coast I found the walls of the blastostyle of this species loaded with nucleated cells which it was impossible to regard in any other light than as young ova. This condition I described with an accompanying figure, stating my belief "that the true gonophores bud forth from that part of the blastostyle in which the nucleated bodies occur, and that these as young ova pass from the blastostyle into the budding gonophore, where they would then naturally occupy their normal position between the endoderm and ectoderm of an organ representing the manubrium of a Medusa, destined

¹ I do not here include the layer to which in my original description of the gonophore I gave the name of "ectotheca," for though I never regarded this otherwise than as an external capsule-like covering of the true gonophore (see *Gymnoblasic Hydroids*, pp. 32, 33), I willingly accept the criticism of Weismann, who objects to its enumeration among the layers of the gonophore as misleading. Neither do I include in the account here given of the development and homologies of the gonophore the structureless mesosarc which must be understood as intervening between the ectoderm and endoderm, or the gelatinous excretion by which in the Medusa this is more or less completely represented.