beginning with forms *(Aplysillidae)* having large sac-shaped chambers like those of Hexactinellids and ending with forms *(Spongiidae, Euspongia,* figs. 6, 8, 9) having small spherical chambers.

Along all four lines of descent it is probable that folding of the choanosome, or chamber-bearing layer of the sponge-wall, has played a very important part in the evolution of the canal-system. This folding is very clearly seen in the Hexactinellida and in such forms as *Oscarella* (Myxospongida) and *Plakina* (Tetraxonida). By this process inhalant and exhalant canal-systems have been formed, and then the ends of the inhalant canals have in most cases been closed in by development of an ectosome, as in *Plakina trilopha* and *Stelletta phrissens* (fig. 20). In the majority of cases (e.g.

*Euspongia)* the folding has become so complex that it is no longer recognizable as such, and the origin of the now well-defined inhalant and exhalant canals is completely disguised. In many cases the principal exhalant canals may be surrounded by a layer of tissue of considerable thickness in which there are no flagellated chambers at all, known as the endosome, so that the folded choanosome may be sandwiched in between ectosome on the outside and endosome on the inside.

The manner in which the flagellated chambers communicate with their respective branches of the inhalant and exhalant canal-

system varies considerably in different forms, and the following types are recognizable, though by no means sharply distinguished from one another. In the more primitive forms (e.g. Hexactincllida, Aplysillidae, Spongeliidae) each chamber is provided with several prosopyles and receives its water supply direct from relatively large inhalant canals or even lacunae, discharging it again through a wide mouth (apopyle) into a relatively large exhalant canal or lacuna which also receives water directly from other chambers.

To this type (fig. 4, *f)* the name "eurypylous ” has been given, and we may include in it cases where there is only a single prosopyle, and perhaps even a short, narrow inhalant canal. In more ad­vanced forms the water is dis­charged from each chamber through a narrow exhalant canaliculus (aphodus) peculiar to itself, and thence into wider canals. This is known as the 4< aphodal" type (e.g. *Cydo∙ nium,* fig. 21). In the “ dip- lodal ” type there is a special inhalant canaliculus (prosodus) as well as a special aphodus to each chamber, with usually, at any rate, only a single prosopyle (e.g. *Corticium,* fig. 22). The progress from the curypylous to the diplodal condition is accompanied by a corresponding increase in the development of the mesogloea, whereby the canals are greatly restricted in diameter, and at the same time the mesogloea tends to lose its transparent gelatinous character and to become compact and granular.

With the growth of the ectc. some we necessarily get a corresponding development of the proximal portion of the inhalant canal-system. At first the ectosome is merely a thin mem­brane, the *dermal membrane,* pierced by the inhalant pores, which are usually arranged in groups. Beneath the groups of pores (pore-areas) lie spacious *sub- dermal cavities* which form the commencement of the inhalant canal-system in the choanosome. In more advanced types the ectosome becomes greatly thick­ened and may be specially strengthened in a variety of ways to form a *cortex.* The inhalant pores now no longer lead directly into the subdermal cavities, but first into a series of cavities lying in the cortex and know n as *chones,* which may be separated from the underlying subdermal cavities (sub-cortical crypts) by definite sphincters *(Cydonium,* fig. 23).

The arrangement of the oscula and pores on the surface of the sponge varies greatly in different types, and sometimes gives rise to very striking modifications of the external form. The oscula or vents are usually relatively large openings situated on the more prominent parts of the sponge, often on special eleva­tions. Occasionally they are replaced by sieve-like oscular areas (e.g. *Geodia perarmata),* a modification which doubtless serves to prevent foreign bodies from entering the wide exhalant canals. The inhalant pores may be irregularly scattered over the surface of the sponge or collected in more or less well-defined pore-areas. In cup-shaped sponges the pores are usually confined to the outer and the oscula to the inner surface. In flabellate sponges we find pores on one side and oscula on the other. In *Tedania aclintiformis,* a deep- sea form, the pores are restricted to a narrow band surrounding the columnar body of the sponge just beneath the flattened top, which bears the vents; thus they arc kept from being choked up by the soft ooze on which the sponge lies. I n *Xenospongia,* a flattened discoid form, they are confined to narrow grooves on the upper surface, the chief of which run round the margin of the disk. In *Esperella murrayi* the pores are also confined to special grooves on the surface of the sponge, and in both these cases the grooves can apparently be opened and closed by special bands of musclc- fibres, and the supply of water thus regulated. In some species of *Latrunculia* we find the surface of the sponge covered with