the property upon which the economic value of the bath sponge depends. In the living sponge the fibres are embedded in the mesogloea, where they are secreted by special cells known as spongo- blasts, which are often found thickly clustering around them (fig. 7). The canal-system (figs. 6, 8) is very complex and shows but little indication of its origin from a folded rhagon. The in­halant pores lead each into a short, narrow, inhalant canal ; these unite in roomy subdermal cavities lying in the ectosome, and from these in turn the main inhalant canals come off. The latter divide and subdivide, and thus ramify through the deeper parts of the sponge amongst the flagellated chambers, to each of which a small number of slender canaliculi are ultimately given off (fig. 9). The chambers themselves, lined by the usual collared cells, are small and approximately spherical, and each one discharges its water through a short and narrow exhalant canali­culus (fig. 9). The openings of the inhalant canaliculi into, the chambers, of which there are several, correspond to the prosopyles of an Olynthus, while the single exhalant opening, or apopvle, may possibly correspond to an Olynthus osculum. The exhalant canaliculi unite to­gether to form larger and larger canals which finally lead the stream of water to the vents on the surface of the sponge (fig. 8). the various parts of the canal-system, other than the chambers themselves, are lined by a flat pavement-epithelium, and the mesogloea, occupying all the spaces between the different parts of the canal-system, contains cells of various kinds, embedded in a very granular matrix.

*Comparative Anatomy.*

*External Characters.—*Amongst the simpler calcareous sponges, which are all of comparatively small size, the external form is usually symmetrical and is evidently a kind of outward expression of the arrangement of the canal-system. This is well seen in the simplest form of all, the sac-shaped Olynthus, and also in its simpler Syconoid and Leuconoid derivatives (described later on), which may be regarded either as individuals of a higher order or as colonies of Olynthus persons grouped around a central indi­vidual whose large gastral cavity opens to the exterior through the single oscu- lum. In the more complex Leuconoids, however, the process of colony formation becomes very irregular and may give rise to great compound masses, with many vents. In these masses we may perhaps recognize the presence of individuals of three orders: (1) the primitive Olynthus persons, represented by the individual flagellated chambers; (2) the Leuconoid persons, indicated each by its osculum; and (3) the entire colony formed by the union of many such Leuconoid persons in an irregular manner. It is, however, very doubtful how far the flagellated chambers in such forms as this can be regarded as morphologically equivalent to Olynthus pcrsons.

In the non-calcareous sponges we are always dealing with individuals of a high order, which usually form complex aggre­gates (colonies) of large size and very various shape. As a general rule the form of those non-calcareous sponges which grow in shallow water is extremely irregular and variable while at great ocean depths the shape is usually defi­nite, constant and often exquisitely symmetrical, a fact which may perhaps be accounted for in part by the absence of disturbing influences such as are met with in shallow water. Perhaps the most extraordinary external form yet discovered is that of *Esperiopsis challen­geri,* discovered by the “ Challenger ” expedition in deep water off the Philip­pine Islands (fig. 10), a form which reminds one strikingly of a number of flowers arranged in a raceme, except that the largest and oldest member of the compound colony is at the top of the stalk and the smallest at the bottom. In other deep-water species the external form may frequently be explained as an adaptation to the special exigencies of the environment. Thus, for example, many species are provided with long stalks which lift up the body of the sponge out of the soft ooze in which it would otherwise be smothered, while the bottom of the stalk is frequently extended in root-like processes which serve to attach it to some solid object *(e.g. Stylocordyla).* In other cases the sponge supports itself on the surface of the ooze by long stiff processes, formed of bundles of spicules which radiate from the central, cap-shaped body; this is known as the "Crinorhιza form,” and is met with in several distinct genera (fig. 11). Amongst the Hex- actinellida, which are essentially a deep-water group, many very beauti­ful external forms are met with, the best known, perhaps, being the so-called Venus’s flower basket *(Euplectella,* fig. 12).

Flabellate (or fan-shaped) and cup-shaped forms are frequently met with even amongst shallow-water sponges, and in widely separated genera, such as *Poterion* (the great Neptune’s cup sponge) and *Reniera testudinaria.* In *Phyllospongia* the flabellate and cup-shaped forms pass insensibly into one another, the cup being apparently merely a folded lamella. Slender branching forms are also not uncommon in shallow water, as seen in the common *Chalina oculata* of the British coast. Spherical forms, such as *Tethya,* likewise occur. By far the greater number of shallow-water sponges, however, are quite irregular in shape and either form crusts of varying thickness on the surface of rocks and sea-weed, or large and massive aggre­gates which may rise to a consider­able height above the substratum. In the boring sponges (Family Clionidae) the sponge occupies an elaborate system of chambers and passages which it excavates for itself in the shells of Mollusca and other calcareous organisms. the common British *Cliona celata* begins