conspicuous projections of two kinds, some conical and bearing each a single vent, others truncated at the top and bearing the inhalant pores.

*Skeleton—*The original ancestral form *(Protolynthus)* from which all the Porifera are supposed to be descended, probably possessed no proper skeleton at all, and this condition has been retained in the existing Myxospongida, although these sponges have made considerable progress in the evolution of their canal- system. There appears to be little doubt that the Myxo- spongida arc *primitively* devoid of skeleton, and in this respect they must be carefully distinguished from the genus *Chondrosia*, in which the skeleton has been secondarily suppressed, as well as from numerous and divers species in which the proper skeleton has been more or less completely replaced by grains of sand or other foreign bodies. The Calcarea, Triaxonida, Tetraxonida and Euceratosa, except in cases of extreme degeneration, all possess a well-developed proper skeleton. Λs this skeleton has been independently evolved in each of these great groups it is necessary to deal with it separately in each case.

*Calcarea.—*The skeleton in this group is composed of spicules of crystalline carbonate of lime (usually calcite), developed within special mother-cells or scleroblasts. Each spicule is enclosed in a delicate membranous spicule-sheath and contains an axial thread of organic matter. Three main types of calcareous spicule are met with, triradiate, quadri­radiate and monaxon (fig. 24). the triradiates and quadriradiates, however, are not simple spicules, but spicule-systems formed of three or four rays each originating independently from its own scleroblast (actinoblast) and all uniting together secondarily. There is reason to believe that this may also sometimes be the case with the monaxon or oxeate spicules. In the most primitive triradiate spicules all three rays lie in the same plane. Three chief varieties may be distinguished: (1) Regular (fig. 24, *b),* with all the rays and all the angles equal;

(2) Sagittal (fig. 24, *c,* *d*, Z, &c.), with two of the rays or two of the angles forming a pair, differentiated in some respect from the re­maining ray or angle, the paired rays being termed ” oral ” and the odd ray “ basal (3) Irregular (fig. 24, *p),* when conforming to neither of the above types. It has been proposed to draw a very sharp distinction between "equi-angular ” triradiates and “ alate ” forms (in which the angle between the oral rays differs from the paired angles), but it may be doubted whether such a distinction has any great value. The quadriradiate (fig. 24, *e, f, k, m)* is formed by the addition of an “ apical ” or “ gastral ” ray to the three "facial ” rays of the triradiate; this ray lies in a plane at right angles to that of the facial rays. The monaxon spicules (fig. 24, *h, i, q,* *r*, *s*) are straight or curved and the two ends are usually more or less sharply differentiated from one another. In all these spicules the form and arrangement of the rays is usually clearly correlated with their position in the sponge in such a manner that they are specially adapted for the work which they have to do.

The arrangement of the spicules in the case of the genus *Leucosolenia* has been dealt with above, and we must pass on at once to the Calcarea Heterocoela. In this group the skeleton exhibits an evolutionary scries no less remarkable than that of the canal-system. We may take as a convcnient starting-point the genus *Sycetta,* a typical Syconoid form, with the flagellated chambers radiating independently from the central gastral cavity. The wall of the gastral cavity is supported by a gastral skeleton of triradiate or quadri radiate spicules. These may be sagittal, in which case the oral rays arc turned towards the osculum while the basal ray is directed downwards. If there is an apical ray it projects into the gastral cavity. The walls of the radial chambers are supported by a special “ tubar ” skeleton (cf. fig. 14), consisting exclusively of triradiates with their basal rays directed towards the distal end of each chamber. The oral rays are spread out at right angles to the length of the chamber, and as several spicules generally lie at the same level the tubar skeleton forms a series of more or less definite joints and is said to be “ articulate.” This type of skeleton is almost invariably associated with the Syconoid type of canal-system . In the genus *Sycon* itself we find the distal ends of the chambers specially protected by tufts of monaxon spicules (fig. 14), but the next great advance in the evolution of the skeleton is brought about by the development of a dermal cortex, in which a special dermal skeleton is developed. This is well seen in the genus *Ute* (fig. 15). After this the skeleton of the chamber layer in the sponge- wall begins to undergo modifications, some of which are obviously correlated with the gradual change of the canal-system from the Syconoid to the Leuconoid condition (cf. figs. 16 and 17). Finally all trace of the articulate tubar skeleton is lost, and we get a “ paren­chymal ” skeleton of scattered radiate spicules in the chamber layer. the skeleton of the chamber layer, no matter what the type of canal-system, may be supplemented by large subdermal sagittal triradiates or subdermal quadriradiates (fig. 17), whose basal or apical rays project inwards from the dermal cortex (Heteropidae and Amphoriscidae). Very generally a special “ oscular ” skeleton is developed in the form of a fringe of long monaxon spicules around the vent.

Various aberrant types of skeleton are met with in the group. In the genus *Lelapia* we find a partly fibrous skeleton, in which the fibres are composed of bundles of triradiates shaped like tuning­forks (fig. 24, 0), and in *Petrostoma* the main skeleton is formed of calcareous spicules actually fused together. In *Astrosclera* (fig. 25) a very anomalous type of calcareous skeleton is found, consisting of spherical masses of arragonite, each originating in a special sclero­blast and having a radiate structure, recalling that of a siliceous