class, under the denomination of *Amorphozoa*, to mark that want of a definite and constant form in their species for which they are remarkable in the animal kingdom. Their general appearance and structure must be familiar to every one. They are soft, elastic, porous or cellular bodies, of a uniform structure in every part, without any organs or ves­sels, and capable of absorbing large quantities of liquid, which they again yield up on pressure, without injury to their textures. They are quite insensible to every sort of irritation, and can contract neither the body as a whole, nor any portion of it ; nor can they remove in any way from the site on which they have grown.

In a recent state the sponge is filled with a colourless animal jelly, the quantity of which varies much in different species. This jelly is apparently homogeneous ; but, with the assistance of the microscope, it has been discovered to be full of numerous transparent spherical granules. It is dif­fused through every part of the sponge, filling the intercel­lular spaces, and it lines also the canals which permeate the mass, and often covers the surface with a slimy coat.

The sponges used in domestic economy are composed of a horny fibre, netted together so as to form small irregular meshes, with larger canals and holes interspersed. The fibre is solid and transparent, generally smooth, but sometimes closely invested with a fine branched vascular tissue. These sponges are soft, compressible, and eminently bibu­lous ; but there is a gradual passage from them into others of a more rigid and compact texture ; and on examining into the cause of this change, we find that the fibre has become loaded with crystalline needle-shaped spicula, which, chemical tests assure us, are formed of pure silex or flint. There are many sponges in which these spicula predominate so far that the horny matter has become of secondary importance ; and such sponges, after being dried, resemble crumbs of bread, and are easily rubbed down into a powder merely by friction between the fingers. Mr Bowerbank has shewn that the transition from the fibro-horny to these siliceous sponges is insensibly made, and that many species which were believed to be purely fibrous, contain in fact numerous minute imbedded spicula.@@1

There is another class of sponges, rather of a felted than reticular structure, and containing a very scanty proportion of organic fluid. They are usually of a grayish-white colour, and are loaded with spicula, but the spicula are composed of carbonate of lime. These spicula are more variable both in form and size than the siliceous kinds ; for in the same sponge we often find some which are needle- shaped, others that are club-shaped, and others that are formed of three or four divergent prongs. There has not been discovered any sponge in which the calcareous and siliceous spicula naturally co-exist ; but some species of a compact fleshy texture have been described, in which, while the central parts are crammed with spicula of flint, the surface is covered with a layer of calcareous earth.@@’

In all sponges the surface is porous, and of a finer and closer texture than the interior, which is also permeated with some irregular sinuous canals, that open on the surface in the form of circular orifices, which have been called their *oscula,* but which are properly their vents. When living and in health, the sponge is continually imbibing by the pores the water which surrounds it. This water, penetrat­ing to every part, fills the cells and distends the body equally ; it is then forced into the canals, and driven, in an agitated current, from the body, through the oscula. By this circulation the air and food of the sponge is supplied, and its effete excretions removed ; but by what agency it is originated and kept up, is not positively ascertained. Dr Grant thinks it probable that minute vibratile cilia planted in the canals and pores are the moving power ; while Dutrochet ascribes the phenomena to that law of *endos­mose* which he has discovered to regulate the transmission of liquids of unequal densities through all organic mem­branes.

Sponges are propagated by gemmules, which originate in the organic mucus, and are carried out of the body by the effluent currents just described. In some sponges these gemmules are ciliated and locomotive when mature ; but it seems probable that the majority of the species produce only unciliated gelatinous grains, which are nevertheless endowed with a very active motility, like the ultimate par­ticles of even inorganic matter.

With one or two exceptions, sponges are natives of the sea, ranging from tide-marks to a very considerable depth. They are scarce and small in cold latitudes, and gradually increase in size and numbers as we trace their course towards the tropics, but perhaps they abound most of all in the genial seas of the Australasian islands. The sponges of commerce are chiefly procured from the Mediterranean, and from the Bahama islands in the West Indies.

The classification of sponges is in a state of the utmost uncertainty, and most of the genera rest on very insufficient characters. The names of such as have been proposed are as follows :

Alcyoncellum. Hallirhoa. Siphonia.

Achilleum. Hippalimus. Scyphia.

Cæloptycium. Halichondria. Spongia.

Choanitea. Geodia. Tethia.

Cnemidium. Lvmnorea. Tragos.

Chenendopora. Manon. Ventriculites.@@’

Grantia. Myrmecium.

VI.—LITHOPHYTES.@@4

The Lithophytes, in the restricted sense in which we use the term, are plant-like marine organized bodies, which adhere to other substances by a crustaceous base, and are composed of an internal fibrous axis encrusted over with a chalky porous bark, either continuous, or divided by septa into numerous equal articulations. From the time of Ellis, who was a strenuous advocate of their animality, they have been always described as members of the animal kingdom; but the observations of Blainville and Schweigger leave no doubt of their being truly vegetables, differing little from many algæ.

There are two families of lithophytes. In the first the calcareous crust is rather thick, compact or minutely porous, and jointed. The family corresponds exactly with the genus *Corallina* of Linnæus, subdivided by Lamarck and Lamouroux into the following genera: Cymopolia, Corallina, Jania, Flabellaria, Amphizoa, Penicillus, Galax- aura, Acetabulum, and Polyphysa. Many of the species are very pretty, and the Acetabulum is a parasol in minia­ture. Plate DVI. fig. 13. One species *(Corallina officinalis)* has been much celebrated as a powerful vermifuge.

The second family, from being more decidedly vege­table in its aspect, is named by Blainville *Fucoideae.* In it the cretaceous crust which covers the stem and branches is very thin and continuous, and it offers to observation no trace of pores. The organic substance is also more gelati­nous, and consequently approaches nearer to that of the true sea-weeds. The genera are, Udotea, Dichotomaria, Liagora, and Neomeris. (d. μ.)

*@@@’ Microscopic Journal,* i. p. 8, 4c.

@@@S Lam. *Anim. sans Vert.* 2de edit ii. p. 606.

@@@3 For the fullest and most accurate account of the structure and physiology of the sponges, the reader is referred to Dr Grant’s papers in the 13th and subsequent volumes of the *Edinburgh Philosophical Journal;* and for a description of the genera and species, to the 2d vol. of Lamarck’s *Animaux sans Vertèbres.*

@@@4 Synonymes : Coraliinæ ; Calciphytae.