fibro-gelatinous ; “ but when the axis assumes an erect or a branched tree-like form, the animals excrete in the centre of their body a more or less rigid support, which has been called their *axis,* and which has sometimes, though erro­neously (from its being commonly seen in collections with­out the remains of the investing animal), been considered the entire coral. This axis is thickened by depositions of fresh layers of horny matter on its surface as the mass in­creases in size and requires more support, the increase of the thickness and length of the axis being always simulta­neous with the growth of the mass.”—(*J.* *E. Gray.)* In some genera the axis is bony, in a greater number it is of a horny nature, and very compact, in a few it is formed by the aggregation of siliceous needle-shaped spicula, and in others it is calcareous and stony ; of which we have a fami­liar example in the red and black coral of the Zoophyte that furnishes the coral of commerce, so highly valued for ornamental purposes. In the genus *Isis*, “ the axis has been considered as jointed, because the stony and the horny parts easily separate from each other when the mass of the animal has been removed and the axis is dried ; but a larger and larger quantity of stony matter is gradually de­posited as the mass increases in size, and in the large masses the axis of the lower part is almost entirely stony, like the axis of *Corallium.”—(J. E. Gray.)*

The Helianthoida are all oviparous, and it has been recently affirmed that the sexes are distinct and separate. Dr Erdl of Munich says that he found in *Veretillum* only female individuals in one polypary, and in another only males ; and he has convinced himself of a similar distinc­tion existing in the genus *Alcyonium* or *Lobularia.* Plate DVI. fig. 9.

According to J. E. Gray, this order arranges itself under the following families and genera :

Fam. I. *Cornularidoe.—*Cornularia.

Fam. II. *Clavulariadae.—*Actinantha ; Clavularia; Telesto.

Fam. III. *Tubiporida.—*Tubipora.

Fam. IV. *Coradliada.—*Corallium, Plate DVI. fig. 3 ; Isis ; Mopsea; Melitæa; Prymnoa; Muricea; Scirpearia ; Eunicea; Plexaura ; Gorgonia ; Pterogorgia.

Fam. V. *Antipathidae.—*Antipathes; Leiopathes.

Fam. VI. *Briareidae.—*Briareum.

Fam. VII. *Lobulariadae.—*Lobularia; Ammothæa ; Anthelia; Sympodium ; I<hizoxenia.

Fam. VIII. *Zeniadae.—*Zenia; Nephthya; Nidalia.

Fam. IX. *Hyalonemidæ—*Hyalonema.

Fam. X. *Bennatulidæ.—*Pennatula, Plate DVΓ. fig. 8 ; Virgularia; Renifla, Plate DVI. fig. 11 ; Pavonaria; Veretillum.

Fam. XI. Umbellariada—Umbellaria.

III.—HYDROIDA.@@1

The Hydra, or fresh-water Polypus (Plate DVI. fig. 10and 14), of which more has been written than of any other Zoo­phyte, is the type of this order, very remarkable for the ex­treme simplicity of organization of its members, and for their wonderful powers of redintegration and reproduction. The polype, considered independently of its polypidom, possesses no defined organs whatever ; but when highly magnified, the whole body is seen to consist of a granular substance, the gra­nules being loosely connected by a semi-fluid albuminous matter. On the upper pole of this gelatinous and very con­tractile body there is an aperture encircled with a variable number of tentacula, roughened with nodules, and extremely extensible, so that the creature can spread and stretch them far and wide in search of prey, which consists of very active crustaceous animalcules and small worms. These are no sooner seized upon than they appear to be paralysed by some poisonous secretion of the polype, for their struggles and resistance are stopt as it were by magic, and they are carried unresisting to the mouth, and forced into the central digestive sac.

The Hydroida are reproduced by gemmules or buds, which are developed from the common substance of the body. In the Hydra they spring from no particular part, but in other genera they have a determinate origin, and in many others they are contained, like ova, in ovarian cap­sules, whence they are not discharged until ripe for evolu­tion. But perhaps the most remarkable feature in the history of these Zoophytes, is their power of being multi­plied by mechanical division. If a snip be made with a fine pair of scissors in the side of a Hydra, not only does the wound soon heal, but a young polype sprouts from the wounded part ; if it be cut into two portions by a trans­verse incision, each soon developes the wanting parts of its structure ; if longitudinally divided, both portions soon be­come complete animals ; if it even be cut into several parts, every one of them will rapidly assume the form and functions of the original. The inversion of its body, by turning it inside out, does not destroy it ; on the contrary, the exterior surface assumes the office of a stomachical cavity, and that which was originally internal will give birth to buds, and take upon itself all the properties of the skin. See R. Jones’s *Outline of the Animal Kingdom,* p. 26.

The Hydra is locomotive and naked, but the majority of its order are permanently affixed to their sites, and are in­vested with a horny sheath or polypidom, which in many instances excels all other zoophytical productions in the delicacy and gracefulness of its form. These polypidoms are converfoid and more or less divided, the ramifications being divided in a variety of elegant plant-like forms. The stem and branches are alike in texture, slender, fistu- lar, and almost always jointed at short and regular inter­vals, the joint being a mere break in the continuity of the sheath, without any character of a proper hinge, and evi­dently formed by regular periodical interruptions in the growth of the polypidoms. Along their sides, or at the extremities, we find the denticles or cup-like cells, within which the polypes are contained, arranged in a determinate order, and either sessile or elevated on a stalk. Plate DVI. fig. 12. Though of the same substance, the cell is some­thing more than a simple expansion of the stem or branch ; for near its base there is a distinct partition or diaphragm, on which the body of the polype rests, with a plain or tu- bulous perforation in the centre, through which the con­nection between the individual polype and the common medullary pulp is retained.

According to Mr J. E. Gray, this order embraces five fami­lies, viz.

Fam. I. *Hydraidæ—*Hydra. Plate DVI. fig. 10 and 14.

Fam. II. *Tubulariada—*Tubularia ; Eudendrium ; Corymorpba. Fam. III. *Corynaidae—*Coryne; Syncoryna.

Fam. IV*. Sertulariadæ—*Thoa ; Sertularia; Dynamena ; Thuiaria ; Pasythea ; Epistomea ; Lirizoa ; Plumularia ; Λntennularia ; Cymodoce ; Salacia ; Idia.

Fam. V. *Campanulariadae—*Laomedea ; Campanularia ; Peripyxis.

V—SPONGES@@?

The Sponges differ so much from all other Zoophytes, that De Blainville has constituted with them a separate

@@@1 Synonymes : Sertulariens, Μ. Edwards : Polypiaria, J. E. Gray.

@@@S Synonymes : Spongiæ ; Spongiadæ ; Spongiaires ; Porifera ; Amorphozoa.