

of its depth it is attached, while the remaining third is free, and bent outwardly. In this way, the whole series of calyces is arranged along the stem, from base to apex, at such regular distances, that the base of any one is about double the depth of a calyx from the base of the next one above or below it. At the base of each calycle, there is an annular projection from its interior face, which forms a diaphragmic semi-partition (*Figs. 2, d, and 12, c', d*), through which the hydra (*Fig. 2, a, b*) connects with the main stem of the hydrarium, but without any, or with very slight constriction; but the lateral portion of the calycle is entirely closed up; in fact, as we shall show hereafter, when describing its growth, it has one and the same wall with the stem (*Fig. 15, m*), or rather the walls of the two are soldered together. The general outline of the hydra-cells is cylindrical, but not very regular, and the free, or actinal end, is more or less curved outwardly, and slightly narrowed, so that the two opposite calyces, and the included stem, form an equilateral, inverted triangle (*Fig. 3*). The aperture of the cell is prolonged into two broadly triangular lips (*Figs. 2, m, and 14, m*), one on each side of the plane through the two opposite cells, as if the cylinder had been sliced obliquely across from two opposite directions, one cut facing toward the main stem, and the other, the broader one, facing outwardly, and slightly to that side toward which the cells converge. The base of a branch (*Fig. 3, i*) arises just below the semi-partition of a hydra, and trends in a direct line with the plane of opposite calyces, and, as we have mentioned above, the opposite calyces (*k*) of a branch, or of a branchlet, always stand at right angles to these, on the stem from which the branch arises.

The reproductive calyces (*Figs. 7, 8, 9, 10, and 10**) are oval in outline, and terminate with a slightly flaring, truncate aperture (*g*), while below they taper away into a pedicel (*c*), which is a little smaller than the main stem, and more or less curved in the same direction, toward which the sterile calyces converge. Oftentimes we meet with a reproductive calycle, taking, as it were, the place of a branch, the latter being present on the opposite side; but most frequently they occupy both sides, or one side is destitute of any lateral growth. Occasionally we find two or three reproductive calyces (*Fig. 10**), arising from one joint.

The soft part of the hydrarium, or the hydra proper, is double-walled throughout (*Figs. 2, a, b, 12, a, b, 8, 9, and 10, a, c*); the stolonial part is a uniform, smooth cylinder; in the upright stems it arises directly, and at right angles, from the stolon, and proceeds with uniform thickness to a point just below the calyces, where it expands upon two opposite sides, and gives off from each a single uniform tubule (*Fig. 2, c, c'*), which, passing through the diaphragmic semi-partition (*d*), traverses the calycle, and terminates in a simple, short, conical proboscis (*p*), around which a single row of slender, tapering tentacles, usually sixteen in number (*t*),