

and the origin of the upright stems, which bear the hydræ, may be readily traced; but when these animals grow upon the narrow branches of the more slender Fucoids, the stolons cross and recross each other, in such an inextricable mass, that it is next to impossible to distinguish one hydrarium from another. The creeping stolonial stem has the appearance of being more slender than the upright stems, but in reality it is quite as thick as the latter, which only seems more stout, because it is bordered on two opposite sides by the calyces of the hydræ.

The upright stems vary in height, from half an inch to an inch and a half, according to the position in which they grow; those nearest low-water mark being usually the most luxuriant, and more or less branching, while those at higher levels are quite simple, as our figure represents them (*Fig. 1*). Some specimens in my possession are an inch and a half high, and tripinnately branched, but by far the greater number of those collected between high and low-water are, at most, an inch high, and branch only once. The stolonial portion of the colony is about as thick as common sewing-thread, and clings very closely to the surface upon which it creeps. At irregular intervals, varying from one twelfth to one sixth of an inch, the upright stems arise from the stolon, and in such a way that the opposite cells (*Fig. 3, op, op*) of the hydræ stand transversely to its trend. The upright stem is straight; it has, at least, no abrupt turns, but may be, as a whole, gently curved from base to tip. At pretty regular intervals, usually equal to the breadth of the stem, the calyces (*Fig. 2, 3, 6<sup>a</sup>, 12*) stand in pairs above one another; they are not exactly opposite, but converge slightly toward one side of the stem, and that side faces toward the younger part of the colony: the same is the case with the branches, the calyces of which, standing transverse to those on the stem, converge toward the upper side. This is carried out with the most perfect regularity, even to the second and third branching, and, moreover, the reproductive calyces, which, like the branching ones, usually arise from, or just below, the bases of the sterile calyces (*Fig. 10<sup>a</sup>, A*), all converge in the same direction as the latter. The first, or lowest pair of calyces, is situated about the depth of a cell from the base of the stem; the latter rises with a slight constriction, and then expanding, transversely to the trend of the stolon, into a V-shaped form (*Fig. 6<sup>a</sup>*), suddenly contracts to its former breadth, and then proceeds, with a slight and gradual widening, a short distance, varying from one half to twice the distance across the V-shaped portion, and finally contracts to the same thickness which it has at the base. On that side toward which the calyces converge, the stem, which lies between them (*Fig. 2*), appears quite narrow, when compared with the other side (*Fig. 12*) from which the calyces diverge. Upon each of the two arms of the V, and against the gradually widening portion rising immediately above it, a calyces is placed in such a manner that for about two thirds