opposite the walls of the axial cells (*Figs.* 20 and 21, b^1), which are arranged end to end in a single series, and none are opposite the cells themselves, so that, as a natural consequence, they are not only arranged in longitudinal, but also in transverse rows or circlets. The proboscidal actinostome exhibits very clearly the changes which the component cells undergo during its contraction and expansion. During contraction they are more nearly equilaterally polygonal (*Fig.* 14^a), and do not seem to have any method in their arrangement; but in expansion (*Fig.* 12, *p*) they are disposed in rows, radiating from the centre, and are elongated (*Fig.* 14) in the same direction. Even with a magnifying power of five hundred diameters they appear small, but yet very well defined in outline. The cells of the lower, or actinal, surface of the disk (*Fig.* 15) are a little larger than the last, and differ in having finely granular contents. In the double, bulb-like protrusions (*Figs.* 21, γ, and 21^a) of the edge of the disk, at the base of each tentacle, the cells are much smaller than those of the actinostome, but, nevertheless, sharply polygonal.

Proles hydroidea.—Whenever a new branch, or a new pedicel begins to bud, the cells of the outer and inner walls of the old branch become quite conspicuous at that point (Pl. XXXIII. *Fig.* 3^a, a^1, b^1), and to some distance above and below it (ε), whereas, on the opposite side, they are not more prominent (α, β) than usual. In a later stage (*Figs.* 3 and 4, 4^a), we will describe the peculiarity of these cells. It will be noticed that the wall of the bud (*Fig.* 3^a, a^1, b^1) and of the old stem near it (ε), are considerably thickened, and press closely against the chitinous sheath; and that the latter is torn open and cast aside (c^2) by the protruding bud, which bears a new sheath (c^3) of much thinner and more delicate structure. From the beginning, the bud has a tendency in the direction of its future line of growth, and even overlaps (δ) the main stem (ε) to a considerable extent. As the stem or peduncle grows, it assumes at each point the form which it ever after retains, as may be seen by the examination of our figures. *Fig.* 3 represents a young branch which, at the lower part, has all its adult characteristics, as regards the general proportions (α, β, γ, ε); while at the end it is still growing, and, as it proceeds in this way, the rings are developed by a deposition from the exterior surface of the outer wall (a^1). As fast as the chitinous tube is completed, the outer wall withdraws from it, in a greater or less degree, leaving here and there isolated projections (γ) still adhering to the sheath. The completion of this tube corresponds, also, to the obscuration of the cellular structure of the outer and inner walls, in fact, the amount of development of the stem may be estimated by the degree of faintness of the cells of these walls. The chymiferous cavity does not follow the terminal growth of the stem very closely, as the tip of the inner wall of the young part of the pedicel is solid