

"Buds grow from some part of the parent, generally appearing first as a small protuberance upon its side, and afterwards perfecting into a complete young animal with its mouth and tentacles. Each of the compound zoophytes above alluded to, commenced with a single polyp and was thus formed; bud followed bud, and so the germ grew up into the coral tree or dome. Calculating the number of polyps that are united in a single *Astræa* dome, twelve feet in diameter, each covering a square half inch,—we find it exceeding one hundred thousand; and in a *Porites*, of the same dimensions, in which the animals are under a line in breadth, the number exceeds five and a half millions; there are here, consequently, five and a half millions of mouths and stomachs to a single zoophyte, contributing together to the growth of the mass, by eating, and growing, and budding, and connected with one another by their lateral tissues and an imperfect cellular or lacunal communication. There is hence every variety, as to number, among compound zoophytes, down to the simple polyp, which never buds at all, and has, for its corallum, a simple calicle,—it may be a tiny goblet, with a stellate cell, as in the *Cyathina*—a cylindrical cup, as in some *Dendrophyllias*—or a radiated disk, as in the *Fungias* and *Cyclolites*."

After treating of the various modes of growth which result in the production of trees, vases, domes, or incrusting sheets of coral, he says: "There is much to surprise and interest us in tracing out the simple causes of results so remarkable. The small polyp, incapable even of extending its arms without a drop of water to inject them, is enabled, by means of a simple secretion in its texture, in connexion with the process of budding, to rise from the rock and spread wide its branches, or erect, with solid masonry, the coral domes, in defiance of the waves that break over them. The microscopic germ of a *Gorgonia* develops a polyp barely visible to the naked eye, which has the power of producing a secretion from its base. The polyp buds, and finally the growing shrub is covered with branches and branchlets, many a mere thread in thickness, which stand and wave unhurt in the agitated waters. The same secretions fix it to its support, so strongly, that even the rock comes away before the zoophyte will break from its attachment. Tens of thousands of polyps cover the branches, like so many flowers, spreading their tinted petals in the genial sunshine, and quiet seas, but withdrawing when the clouds betoken a storm.

"*Excelsior*," is the grave motto of the zoophyte. Ever upward, they continue growing and elongating, although death is at work below, with as rapid progress. A beautiful provision protects the branching coral-tree—often the work of ages—from being destroyed by the dissolving waters, when exposed, on the death and removal of the polyps. Certain minute incrusting corals—the *Bryozoa* and *Sertularidæ*, together with *Nullipores*—make the surface their resting place, as soon as it is laid bare, and go on spreading and covering the dead trunk, and so prevent the wearing action of the sea. The *Madrepore* may thus continue to enlarge beyond its adult size; the *Caryophyllia* may multiply almost endlessly its cylindrical branchings, although the living animal but tips the extremities of each: for protection is given at once, when needed, and the polyps die, only to leave the surface to other forms of life, more varied and no less strange.