when the structure of the soft parts of such forms as *Caryophyllia maculata* are examined, it will be found to correspond closely with that of *Caryophyllia*, or at least show far more affinity to the Turbinolidæ than to such simple corals of undoubted alliance to the Astræidæ as those composing the genus *Antillia* for example. I have similarly neglected the fact of the presence of dissepiments in placing Professor Martin Duncan's genus *Solenosmilia* in its order in my list. It is most obviously closely allied to *Lophohelia*, and might possibly with advantage be absorbed within it. A similar bigemmation in the terminal calicles to that occurring in *Solenosmilia* may be not unfrequently observed in the case of *Lophohelia*. I conclude that the presence or absence of dissepiments is probably of no more value as a criterion for the determination of the natural affinities of various forms of Madreporaria than is the presence or absence of tabulæ amongst Cœlenterates forming a corallum.

Corals following the usual law as to early development, it necessarily occurs that nearly allied species are in the young condition very closely alike, and sometimes indistinguishable. In the very early stages the young of even widely different species of the same genus are almost absolutely alike. I have had the opportunity of noticing this to be the case, especially in some species of the genus *Flabellum*, as will be described in the sequel. In some nearly allied species of the genus, such as *Flabellum stokesi*, *Flabellum patens*, and *Flabellum australe*, the young remain alike even after they have reached a considerable size. It is only in the larger adult form that their specific distinctness becomes marked. They should not, however, for this reason be placed together on the ground of apparent gradation into one another.

No doubt some of the deep-sea corals here described may be identical specifically with certain Tertiary fossil forms, or even older species, and I have reason to believe that this may be the case with regard to more than one species of *Flabellum*; but, unfortunately, in so many instances the fossil specimens are so much obscured by the presence of matrix, or so fragmentary, that none of the finer points, on which the question of specific identity turns, can be discovered, at all events without great labour. I have, therefore, in such instances merely noted the possibility of the identity of species described with evidently allied fossil forms.

It is probable that the genera *Duncania* and *Thecocyathus* are closely related. Both have an epitheca, which grows out into hollow roots, and an internal "stereoplasma,"[1] and the columella is alike in both forms. Lindström does not place *Duncania* with the Rugosa. It is probable that the non-demarcation of the septa into groups of sixes in these genera is of itself of small importance. Pourtalès has shown from the study of the structure of *Lophophyllum proliferum* that the septa are in that coral primarily arranged in sixes. On comparing specimens of *Duncania* with those of species of *Thecocyathus*, there can scarcely be a doubt that it is most unnatural to separate widely

[1] G. Lindström Öfversigt af Vetenskabs, Akad. Förh., 1873, p. 30.