

*callocyathus*, but which Bowerbank afterwards (1869) distinguished as *Myliusia grayi*. According to the label the form was found at St. Vincent, West Indies. Bowerbank briefly characterised it<sup>1</sup> in the following diagnosis:—"Sponge sessile, massive. Dermal surface unknown. Surface of rigid skeleton uneven and excavated. Oscula, pores, and expansile dermal system unknown. Skeleton stratified, forming a series of expanded crypt-like spaces. Fibre cylindrical, incipiently or minutely spinous. Interstitial spicula numerous, acerate, large and long, variable in size; disposed in lines at right angles to the stratification in loose fasciculi of two to four or five together. Retentive spicula spiculo-multifurcate hexradiate stellate." Bowerbank also gave<sup>2</sup> good figures of several specimens. From these two figures and from preparations which I was able to make during my stay in the British Museum at South Kensington, it can be distinctly seen that the dictyonal framework of *Aulocystis grayi* differs in several particulars from *Aulocystis zittelii*, Marshall. The most important difference consists in this, that on each of the nodes of intersection the octahedral edges are formed not of twelve simple, cylindrical, oblique buttresses, as in *Aulocystis zittelii*, but of twelve plates lying in the plane of the two connected axes, and perforated by several round or oval smooth margined holes of variable size. These plates expand to some extent in their different planes, so that in some places, especially on the free bounding surfaces of the entire dictyonal framework, conspicuous perforated siliceous membranes may be formed, as represented in one of Bowerbank's figures.<sup>3</sup> The small conical tubercles which occur all round the beams in *Aulocystis zittelii*, are here present in abundance on the freely projecting conical bosses, but elsewhere only on the edges of the perforated plates, and less abundantly, or not at all on the lateral surfaces of the same. The "long acerate interstitial spicules" of Bowerbank are slender, smooth, cylindrical needles which are disposed at right angles to the surface, and are in my opinion not free oxydiact parenchymalia, but the very much elongated proximal radial rays of the pentact dermalia.

Isolated parenchymalia are represented by numerous discohexasters with short principal rays, varying in size and in the number, strength, and length of the terminals. One of these is represented in Pl. CIV. fig. 7. Besides these I frequently observed bundles of those long and extremely fine terminal rays which characterise the graphiohexasters of *Aulocystis zittelii*. I found only a quite isolated occurrence of small simple oxyhexasters. I did not observe that special form of discohexaster with medium-sized principals which is so abundant in *Aulocystis zittelii* (Pl. CIV. fig. 6).

Consequently we are led to regard *Aulocystis grayi*, Bowerbank, as a form nearly related to *Aulocystis zittelii*, but yet different enough to be referred to a distinct species.

<sup>1</sup> *Proc. Zool. Soc. Lond.*, 1869, p. 335.

<sup>2</sup> *Loc. cit.*, pl. xxiii. fig. 8, and pl. xxv. fig. 1.

<sup>3</sup> *Loc. cit.*, pl. xxiii. fig. 8.