

VII.—*Additional Information on the Structure of Tethya dactyloidea, Cart.* By H. J. CARTER, F.R.S. &c.

[Plate X. figs. 1-5.]

THIS sponge (erroneously termed “sand-sponge,” because it grew in the sand, whereas the term should rather be restricted to sponges which build up their respective structures *partly* with sand &c.) I described and figured in the ‘Annals’ for Jan. 1869, vol. iii. p. 15; and at p. 16 is the following line:—  
 “More detail I cannot offer, as I have given away the specimen.” The fact is that I had left only the drawing and what I remembered of the circumstances connected with the sponge itself to assist me in retrieving for science all that I could glean of this interesting form, which I found in the “land-wash” on the south-east coast of Arabia, in the autumn of 1845, and subsequently gave to one who could or will make no use of it.

What the woodcut in the ‘Annals’ shows of it, with the exception of the spicule, is almost a facsimile of the sponge of its natural size; for I had taken care to secure this long before I parted with the specimen; and, with the exception of having stated that this sponge was “hollow internally,” the text is equally correct.

Searching, however, a few days since for an illustration of the antheridium of *Chara* in my journal, I came upon the whole microscopic description, with illustrations and measurements, of *T. dactyloidea*, and thus am able to offer the additional information which will complete the description of this interesting sponge.

Omitting that which has already been published, the rest of the matter in my journal runs as follows:—

“ July 1854.

“The free extremity [of the sponge] is provided with a large aperture, which may be seen to divide into several canals a short way in.

“When the shreddy twisted fibres of the base or root are examined, they are found to be composed of bundles of long spicules overlapping each other in spiral arrangement, respectively surrounded by granular sarcoderm, and finally ending in anchor-shaped extremities, which were originally imbedded in the sandy bottom of the sea where the sponge grew (Pl. X. figs. 1 & 2).

“When, again, the surface of the body is examined, the projecting spicules there, which are in little tufts, are also found to be long and flexible; but their free extremities, instead of being anchor-shaped, are all trifid extended, consisting of one long and two short arms (fig. 3).

“On making a vertical section of the sponge, the terminal aperture is observed to divide into a number of branches, which, subdividing, permeate the mass generally down to its base.

“Immediately where the aperture begins to be divided is a portion of the fleshy substance which is more dense than the rest, owing to the presence of a greater number of spicules and their smaller size, from which also arises a framework chiefly composed of acerate, slightly curved spicules of different lengths (fig. 4), that more or less, in bundles, extends in a radiating manner backwards to the periphery of the body generally. No spicules take the opposite direction, as in the globular species (*T. arabica*, see ‘Annals,’ vol. iv. p. 1, July 1869), where this denser part, which represents the ‘nucleus,’ is at the base or middle, and not at the summit of the species.

“Throughout the fleshy mass, which is very tough and elastic, are a number of little white specks, of different sizes, which can be seen with a magnifying-glass of low power, being about 4-4300ths of an inch in diameter. They are spherical, filled with granules, and chiefly visible about the middle of the body. With them, also, is occasionally seen a much larger spherical one (viz. 11-4300ths of an inch in diameter), which seems to have a hilous opening, and is covered with points more or less quincuncially arranged. The former are probably sponge-cells, and the latter the gemmules.

“Where these bodies were most numerous there was also an abundance of minute C- and S-shaped siliceous bodies [bihamates], which in some places were not single, but in groups, as if developed in cells. These average 1-1800th of an inch long in the curve” (fig. 5).

Thus on the south-east coast of Arabia we have a sponge very like Schmidt’s *Tetilla polyura* (Atlantisch. Spong. Faun. p. 66, tab. vi. f. 8), which came from Iceland, with only these differences, viz. that in the latter the surface was not uniform, but interrupted by nodular projections, and among the inæquifurcate spicules there were also anchor-headed ones. Of the colour Schmidt states nothing; and there are no anchor-headed spicules represented on the surface of the body in his *figure*, all being confined to the long bundles at the base, where there is an equal absence of forked spicules (just as in *Tethya dactyloidea*), as if they had been intended to act as little grapnels in the sand. But how fares this inference, when, in *Tethya casula* (‘Annals,’ Aug. 1871, vol. viii. pl. 4), there are no anchor-headed spicules in any part of the sponge, and the long spicules which were imbedded in the sand, similar to those of the foregoing species, are *all* forked? Is it

not that, whether recurved or extended, the presence of these arms serves this purpose?

Hence we have on the shores of Iceland, the south-east coast of Arabia, and the Cape of Good Hope, a similar kind of *Tethya*, all probably, certainly the two latter, fixed in the sandy bottom of the sea by similarly extended bundles of spicules, and all agreeing in possessing the minute bihamate spicules in great abundance.

EXPLANATION OF PLATE X. figs. 1-5.

*Fig. 1.* *Tethya dactyloidea*, Cart. Diagram of twisted bundle of anchor-headed spicules of the root: *aa*, anchor-heads.

*Fig. 2.* The same, anchor-head much magnified, to show its characteristic shape.

*Fig. 3.* The same, trifold or inæquifurcate head of spicule abundant in the tufts which project from the surface of the body.

*Fig. 4.* The same, form of acerate spicule.

*Fig. 5.* The same, bihamate spicules.

N.B. Figs. 2, 3, & 5 are relatively magnified on the scale of 1-24th to 1-4300th of an inch.

VIII.—*Fossil Coral allied to Merulina (Ehrenberg), from the Upper Greensand of Haldon Hill, near Exeter.* By W. VICARY, F.G.S.

[Plate X. fig. 6.]

*Merulina*?, n. sp.

*Corallum* composite, foliaceous, with the ridges rounded, reticulately coalescent. Septa serrulate and alternately larger. Ridges 1-20th of an inch wide; distance between them 1-35th of an inch; height of ridges 1-20th of an inch. Specimen fragmentary; natural size about one inch square. (Plate X. fig. 6, magnified a little more than two diameters.)

*Loc.* Upper Greensand, Haldon Hill, near Exeter, Devonshire.

*Mineral composition* siliceous.

*Obs.* The Haldon Hills are situated about five miles to the south-west of Exeter. Their base is composed of the New Red Sandstone; and they are capped by the Upper Greensand. The latter has been found to be prolific in species of corals, compared with the Greensand of other localities, since it contains ten species out of the sixteen which is the entire number stated by Dr. Duncan, in his "Monograph" published by the Palæontological Society, to have been found in this formation.

At Black Down, on the eastern borders of Devon, where

Fig. 1



J.C. del

Fig 6

