

single genus *Cladocoryne*, to which two species belong—namely *Cladocoryne floccosa*, Rotch, from the Mediterranean and Atlantic, and *C. pelagica*, Allm., which has hitherto been found only in the Atlantic. This second species, instead of being littoral and from the bottom, has, as its name indicates, a pelagic existence. M. Duplessis thinks that perhaps we ought to approximate to the latter another pelagic form described as a new genus by F. E. Schultze from specimens collected at Trieste upon Fuci.—*Bibl. Univ., Arch. des Sci. Physiques et Nat.*, July 15, 1881, p. 98.

*Observations on the Structure of Dictyophyton and its Affinities
with certain Sponges.* By R. P. WHITFIELD.

In the Chemung group of New York and in the Waverley beds of Ohio and elsewhere there occurs a group of fossil bodies which have been described under the name *Dictyophyton*, but the nature of which, I think, has not been properly understood. In the 'Sixteenth Report on the State Cabinet of Natural History of New York,' p. 84, in the remarks preceding the generic description, they are referred to the vegetable kingdom, with the opinion expressed "that they are Algæ of a peculiar form and mode of growth," a reference which I think their nature does not warrant.

If we examine the figures of the various species described, given on plates 3 to 5 *a* of the above-cited work, it will be seen that these bodies are more or less elongated tubes, straight or curved, cylindrical or angular, nodose or annulated, and that they have been composed of a thin film or pellicle of network, made up of longitudinal and horizontal threads which cross each other at right angles, thereby cutting the surface of the fossil into rectangular spaces, often with finer threads between the coarser ones. When the specimens, which are casts or impressions in sandstone, are carefully examined, it is found that these threads are not interwoven with each other like basket-work or like the fibres of cloth, nor do they unite with each other, as do vegetable substances; but one set appears to pass on the outside and the other on the inside of the body. The threads composing the network vary in strength, and are in regular sets in both directions, while the entire thickness of the film or substance of the body has been very inconsiderable. In one species, the only one in which the substance filling the space between the cast and the matrix has been observed, it appears to be not more than a twentieth of an inch in thickness, and is ochreous in character. This peculiar net-like structure does not seem to be that of any known plant; nor does their nodose, annulated, cylindrical, or often sharply longitudinally angular form, with nearly perfect corners, indicate a vegetable structure; moreover it is not a feature likely to be retained in a soft yielding vegetable body of such extreme delicacy and large size, while drifting about by the action of water, in becoming imbedded in the sand of a sea-bottom,

but would rather indicate a substance of considerable rigidity and firmness of texture.

In examining the structure of *Euplectella* it is found to be composed of longitudinal and horizontal bands similar to those above described, with the additional feature of sets of fibres passing in each direction obliquely across or between the longitudinal and horizontal sets, but not interwoven with them; so that the longitudinal series forms external ribs extending the length of the sponge, and the horizontal series inside ribs or bands; and they appear as if cemented to each other at their crossings. The oblique threads, besides strengthening the structure, cut across the angles of the quadrangular meshes formed by the two principal sets of fibres, and give to them the appearance of circular openings, making the structure much more complicated than in *Dictyophyton*. The addition of oblique fibres in *Euplectella* is the most noticeable difference between the two forms; but if placed horizontally and longitudinally between the primary sets they would produce precisely the structure seen in *Dictyophyton*.

As yet we have no positive evidence of the nature of the substance which composed the fibres in *Dictyophyton*. The only cases known, so far as I am aware, of the preservation of the substance of the fossil are that mentioned above, where the space between the matrix and the cast is occupied by a ferruginous body, a material which so often replaces siliceous organisms in a fossil state, and specimens of *D. Newberryi* from Richfield, Ohio, on which there occur slight patches of a carbonaceous substance, but not sufficient to warrant the conclusion that it ever formed a part of the structure, even in the opinion of the author of the genus, who supposed these organisms to have been of vegetable origin, especially as they are associated with numerous fragments of terrestrial plants. I am therefore led to the opinion, from their firmness of texture, as evinced by the strong markings left in the rock and the almost perfect retention of their original form, that they were of a siliceous nature. Still in this opinion I may be mistaken, and it must be left for future discovery to determine; but that they were of the nature of sponges and not of plants I feel very confident.

The form given by Professor Vanuxem in the Geological Report of the Third District of the New York Survey, and also figured in the Sixteenth Report above cited, I think would also better conform to this idea than to that of a vegetable origin, although its broad flattened bands may be something of an objection.

The name *Hydnoceras* was originally applied by T. A. Conrad to designate a species of this genus (Journ. Acad. Nat. Sci. Philad. vol. viii. 1st series, p. 267), but was discarded on account of its objectionable signification, though, if the view here suggested prove correct, the later appellation is almost as objectionable.—*Amer. Journ. Sci.*, July 1881.



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