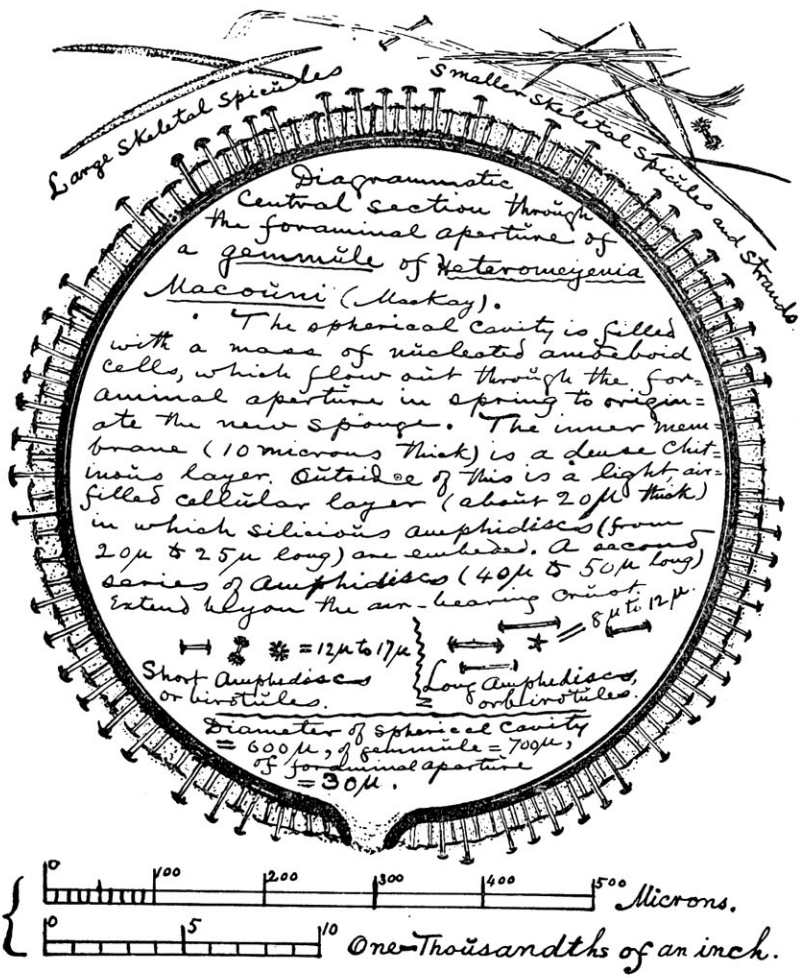
XIV.—A Fresh Water Sponge from Sable Island.—By A. H. MacKay, Ll. D., *Halifax.*

(Read 9th April, 1900.)



This sponge was collected in considerable abundance on the 18th of August, 1899, by Professor John Macoun, Botanist of

the Geological Survey of Canada, in the fresh water pond found in the centre of that great sand-shoal in the Atlantic Ocean, well known as Sable Island, nearly one hundred miles from Nova Scotia, the nearest part of the continent. It was growing around the submerged portion of the slender stems of *Myriophyllum tenellum*, Bigelow, in green, compact, lobular masses, showing, where broken, numerous orange yellow gemmules.

It appears to approach most nearly to the following fresh water sponges described by Potts: *Heteromeyenia ryderi, v. baleni*, found from Florida to New Jersey, in its spiculation; and *Heteromeyenia ryderi v. walshii*, from Gilder Pond, Massachusetts, in the fasciculation of its skeleton spicules.

General form: Encrusting the submerged stems of *Myriophyllum tenellum*, (which in the specimens examined are about 2 mm. thick), in a smooth, compact, green, lobular mass extending to a gross diameter of about one centimeter, and to a height or length along the stem of about 5 or 6 centimeters in some cases, the lobes suggesting an abortive attempt at branching; pores and osteoles very minute; gemmules very abundant, appearing wherever the central mass is broken.

Gemmules: Light orange in color, spherical, varying from 500 to 800 microns in diameter, but generally between 600 to 700 microns; foraminal aperture from 30 to 70 microns in diameter, not produced into a tube beyond the crust; dense inner (chitinous) coat of gemmule nearly 10 microns thick, surrounded by the light cellular crust (in which the short siliceous birotules or amphidisks are vertically embedded) to a depth of about 25 microns; both short and long birotules or amphidisks with one disk or rotule resting on the chitinous coat, their shafts radially directed, packed as closely as their disks allow, the long birotules being fewer with the distal rotules extending beyond the crust, their few slightly incurved rays somewhat adapted for attaching the gemmule to any finely fibrous environment.

Short birotules: From 18 to 26 microns in length, generally from 20 to 24, with a smooth uniform shaft

ranging from 1.5 to 2 microns thick; the rotules being plane disks less than 2 microns thick from the point where the shaft begins to swell into them, and from 10 to 16 microns in diameter, commonly near 12 microns, laciniately blunt-lobed around their margins, the shaft occasionally extending 1 micron beyond the disks, making the exterior of the rotule slightly umbonate.

Long birotules: From 35 to 50 microns, commonly from 40 to 45, with usually a smooth, uniform shaft about 2 microns thick; the rotules generally of 3, to 4 or 5 rays which are slightly incurved, the rotule ranging from 8 to 14 microns in diameter, commonly from 10 to 11 microns.

Larger skeleton spicules: Slightly curved, microspined or rough, tapering gradually from the middle, then more rapidly towards the ends; ranging from 150 to 260 microns in length, commonly from 180 to 220; and from 3.5 to 5 microns in breadth at the thickest part.

Intermediate skeleton spicules: Generally smooth, and from 2 to 3 microns thick, and from 150 to 200 microns in length, numerous and generally fascicled into strands which are often connected transversely by the larger spicules.

Smaller strand spicules and filament strands: Finer strands than those referred to above, appearing as if made up of continuous filaments instead of spicules; strands commonly from 10 to 15 microns across, made up of about 20 filaments or more, each about one micron thick, where broken across appearing as if they were flexible to some extent, the ends of the filaments showing a more or less distinct curvature. Under the microscope they appear identical with the more slender spicules with the exception that they appear to be continuous in the strand. Examined with polarized light they are visible in the dark field, as are also, more or less, the strands made up of the intermediate spicules while the spicules are cemented together, suggesting a peculiar colloidal siliceous or a spongin cement. When heated with nitric acid these filaments appear first to separate and break into pieces, then partly at least to disappear. At the earliest opportunity I purpose to examine the nature of these

strands and their relationship to the other portions of the skeleton; but this crude provisional treatment of them suggested that the filaments might be spongin fibres partly silicified, or nascent siliceous spicules.

The two classes of birotules arming the gemmule put the sponge into Potts's genus *Heteromeyenia*. I therefore propose the name *Heteromeyenia macouni*, in allusion to the distinguished naturalist who discovered it. It is possible that a comparison of the sponge with the two varieties referred to first above as approximating to this species may reduce it to *Heteromeyenia ryderi v. macouni;* but from the descriptions published it appears to be specifically distinct.

The sponge is especially interesting on account of its habitat in the only fresh water pond of a sand island in the Atlantic Ocean nearly 100 miles from the continent. The island is about 20 miles long at present and about one mile broad. It has been described as consisting of "two parallel ridges of loose grey sand, in a bow or crescent shape, with the inner side to the north. In the valley between these is a lake, now not more than eight miles long, formerly nearly twice that length."* This is the pond in which *Heteromeyenia macouni* has been growing in abundance.

* Sable Island: Its History and Phenomena, by Rev. George Patterson, D. D., in Transactions of the Royal Society of Canada, Section II., 1894, (3).