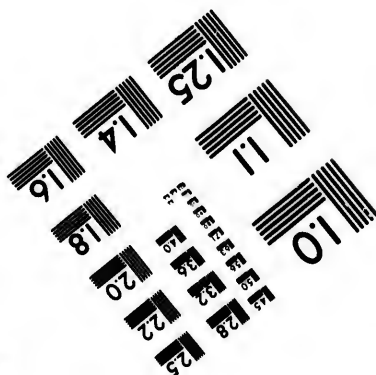
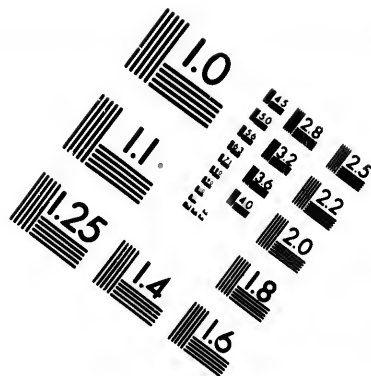




**23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503**

**CIHM/ICMH
Microfiche
Series.**

**CIHM/ICMH
Collection de
microfiches.**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1982

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

- ☒ Coloured covers/
Couverture de couleur
- ☐ Covers damaged/
Couverture endommagée
- ☐ Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- ☐ Cover title missing/
Le titre de couverture manque
- ☐ Coloured maps/
Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- ☐ Bound with other material/
Relié avec d'autres documents
- ☐ Tight binding may cause shadows or distortion
along interior margin/
La reliure serrée peut causer de l'ombre ou de la
distortion le long de la marge intérieure
- ☐ Blank leaves added during restoration may
appear within the text. Whenever possible, these
have been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées.
- ☐ Additional comments:/
Commentaires supplémentaires:

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- ☐ Coloured pages/
Pages de couleur
- ☐ Pages damaged/
Pages endommagées
- ☐ Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- ☒ Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- ☐ Pages detached/
Pages détachées
- ☒ Showthrough/
Transparence
- ☐ Quality of print varies/
Qualité inégale de l'impression
- ☐ Includes supplementary material/
Comprend du matériel supplémentaire
- ☐ Only edition available/
Seule édition disponible
- ☐ Pages wholly or partially obscured by errata
slips, tissues, etc., have been refilmed to
ensure the best possible image/
Les pages totalement ou partiellement
obscurcies par un feuillet d'errata, une pelure,
etc., ont été filmées à nouveau de façon à
obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
☐	☐	☐	☒	☐	☐
12X	16X	20X	24X	28X	32X

The copy filmed here has been reproduced thanks to the generosity of:

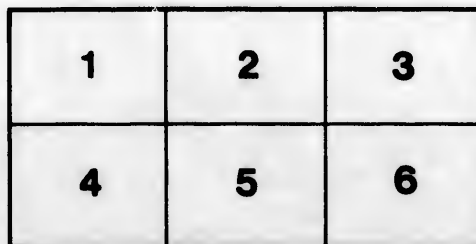
University of British Columbia Library

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol $\rightarrow$ (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

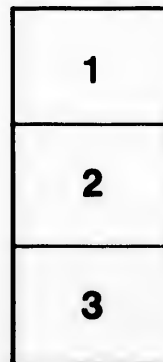
University of British Columbia Library

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole $\rightarrow$ signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.



✓
List

A FRESH WATER SPONGE FROM SABLE ISLAND.

BY A. H. MACKAY, LL. D.,
HALIFAX.

*From the Transactions of the Nova Scotian Institute of Science,
Vol. X, Session 1899-1900.*

XIV.—A FRESH WATER SPONGE FROM SABLE ISLAND.—By A.
H. MACKEY, 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 unbonate.

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 *Heteromeyenina*. I therefore propose the name *Heteromeyenina 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 *Heteromeyenina 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 *Heteromeyenina macouni* has been growing in abunda

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

PURCHASED 28th Nov. 1918

FROM Nest. Pub. Co

PLACE OF PURCHASE Dorroh

PRICE .35

LATER CATALOGUED PRICES

CKAY.

e skele-
ggested
ified, or

put the
propose
e distin-
t a com-
l to first
o *Hetero-*
publish-

s habitat
Atlantic
island is
road. It
es of loose
ide to the
not more
h."* This
growing

son, D. D., in

