

where, especially towards their outer extremities. It is the  $\frac{1}{145}$ th of an inch in diameter.

My specimen consists of at least three layers inclosing two inner cavities, which contain a green endochrome. In this it resembles many other allied forms. From what has appeared to be a single disc of *Arachnoidiscus Japonicus*, I have separated as many as six siliceous layers.

This separation into laminae, marking the existence of so many individual frustules, reminds us of *Meloseira* and its allies;—a resemblance that becomes the more striking, when we remember that as in *Meloseira*, the first frustules of *Arachnoidiscus*, *Cocconeis* and many others are attached, as parasites, to some other body. In the analytical table of the *Bacillariæ* originally given by Ehrenberg he includes many of these objects; classing *Cocconeis*, *Actinocyclus*, and what he calls *Bacillaria*, together in his group of *Naviculaceæ*, and characterizing them as “free,” in contradistinction to his “fixed” forms, in which latter he includes *Isthmia* and other genera. It appears evident, however, that *Cocconeis* and *Arachnoidiscus* are as “fixed” when found *in situ* as any of the *Diatomaceæ*, and probably many of these other allied genera will eventually be found to exhibit the same feature when better known. I have elsewhere\* endeavoured to show the close relationship which exists between these discs and the already recognized *Diatomaceæ*, and I cannot but think that by the time my enthusiastic friend Mr. Ralfs resumes his valuable labours upon the British species of this interesting group, he will find it necessary to include in his classification a large portion of our native species of what are commonly called “Siliceous Infusoria.”

I would propose for the above species of *Campylodiscus* the name of *C. horologium*.

Manchester, March 23, 1848.

XXXIII.—*Notes of Diatomaceæ found in the stomachs of certain Mollusca.* By GEORGE DICKIE, M.D., Lecturer on Botany in the University and King's College of Aberdeen†.

PROFESSOR E. FORBES has remarked that the stomachs of fishes are often zoological treasuries. The Haddock is a great conchologist; the Cod is more devoted to the Echinodermata, having a great taste for that tribe.

Certain Mollusca are equally indefatigable collectors of *Diatomaceæ*; they have been found in the stomachs of the Oyster,

\* Memoirs of the Manchester Literary and Philosophical Society, vol. viii. p. 48 *et seq.*

† Read before the Botanical Society of Edinburgh, March 9, 1848.



Clam, &c.; and Dr. Hooker in the 'Botany of the Antarctic Voyage' states, that the stomachs of *Salpæ* and other (especially of the naked) Mollusca invariably contain *Diatomaceæ*, sometimes several species. These *Salpæ* were washed up in masses on the pack ice, and in decay they left the snow covered with animal matter impregnated as it were with *Diatomaceæ*. He found that the contents of the stomach of every *Salpa*, between the latitudes of the North Tropic and 80° South, invariably contained the remains of these minute plants. *Dictyocha aculeata* was universally observed in the stomachs of those found off Victoria Barrier. Mr. Lee has found them abundant in the stomach of the common Barnacle.

The following notes of species detected in the stomachs of different species of *Ascidia* and of the freshwater Mussel (*Mya margaritifera*, L.) may be worthy of record. They do not appear to have the same discrimination as to their prey which the fishes would seem to exercise, every object, whatever be its nature, coming within the sphere of the currents produced by the cilia, is swallowed, provided its size be not too great. The *Ascidia* examined were from depths varying from twenty-five to thirty fathoms, and five to six miles from land.

A time was when there would have been some hesitation in offering to the Society such a communication as the present, owing to the conviction that some of the organisms to which it has reference really belonged to the animal kingdom. The very important discovery made by Mr. Thwaites, that they present examples of conjugation like *Zygnema*, &c., leaves their true nature no longer a doubtful question. There may still be some dispute respecting the position occupied by such forms as *Coscinodiscus*, *Actinopterychus*, &c.; but if it be admitted, and there seems no reason for hesitation, that such genera as *Meloseira* and its allies are true plants, it will not be difficult to understand also the nature of those just mentioned, the transition from the one to the other being obvious.

*Diatomaceæ* found in the stomachs of different species of *Ascidia* :—

<i>Eunotieæ.</i>	<i>Cocconioideæ.</i>
Epithemia Sorex, Kg.?	Cocconeis Pediculus, Ehr.
<i>Fragilarieæ.</i>	Doryphora amphi-ceros, Kg.
Fragilaria pectinalis, Ehr.	<i>Achnantheæ.</i>
Diatoma flocculosum, Ag.	Achnanthes longipes, Ag.
<i>Meloseireæ.</i>	<i>Cymbelleæ.</i>
Meloseira sulcata, Kg.	Cymbella maculata, Kg.
M. Jurgensii, Ag.?	<i>Gomphonemeæ.</i>
<i>Surirelleæ.</i>	Gomphonema pohliæforme, Kg.
Surirella?	
Synedra lævis, Ehr.	



*Naviculeæ.*

*Navicula Hippocampus*, Ehr.  
*Ceratoneis Closterium*, Ehr.

*Coscinodiscus eccentricus*, Ehr.  
*Actinocyclus undulatus*, Bailey.  
*Actinoptychus senarius*, Ehr.

*Coscinodisceæ.*

*Coscinodiscus Patina*, Ehr.  
*C. lineatus*, Ehr.

*Actinisceæ.*

*Dictyocha gracilis*, Kg.

This list will afford some idea of the nature of the deposits going on in the Aberdeen bay at the depth and distance from land already mentioned.

The following species were evidently in a living state :—*Meloseira sulcata*, *M. Jurgensii*, *Synedra lævis*, *Navicula Hippocampus*, *Surirella*?, *Coscinodiscus Patina*, *Actinoptychus senarius*, and they were also very common ; in this latter respect, however, they were not superior to the *Dictyocha* and *Doryphora*.

Of those enumerated, the following are usually met with in fresh water : *Fragilaria pectinalis*, *Diatoma flocculosum*, *Cocconeis Pediculus*, *Cymbella maculata* and *Gomphonema pohliæforme* ; they were also much less abundant than the others. Their presence is readily accounted for, when it is considered that two large rivers, the Dee and Don, besides numerous smaller streams, empty themselves into the bay. Mr. Thwaites informs me that he has found the *Meloseira sulcata* both in fresh and brackish water. Some of the species mentioned are not uncommon in the mud of our harbour.

Mixed up with the *Diatomaceæ* were numerous individuals belonging to two or three forms of Foraminifera, also spiculæ of a species of *Grantia* and fragments of *Ulva*, with particles of silex in a finely divided state.

Some of those enumerated have a very extensive distribution : *Meloseira sulcata* has been found at Melville Island, and by Dr. Hooker at Victoria Barrier, where *Coscinodiscus eccentricus* and *C. lineatus* also occur. These and others are abundant in guano from Africa and Peru, and are now in myriads mixed with the soil of our fields, and their presence may perhaps at a future time be a puzzle to some assiduous Philomikros who may be ignorant of the history of British agriculture.

Although temperature may exercise little influence over the distribution of *Diatomaceæ*, it may not be irrelevant to record here that of the sea in the Aberdeen bay, as ascertained by Mr. James Stratton, whose observations were made occasionally from March 1845 to September 1846 inclusive. The mean temperature at a mean depth of 24·5 fathoms, four miles from land, is 47°·7 F., being nearly one degree higher than that of the air as observed in the vicinity of Aberdeen. The minimum took place in March, being 39°·5 F., exactly the mean temperature of the ocean according to Sir J. C. Ross.



The freshwater Mussel (*Mya margaritifera*, L.) is abundant in both the Dee and Don. The specimens in whose intestines the following *Diatomaceæ* occurred, were from the former river eighteen miles inland.

*Meridieæ.*

*Meridion circulare*, Ag.

*Fragilarieæ.*

*Fragilaria hyemalis*, Lyngb.

*Diatoma flocculosum*, Ag.

*D. tenue*, Ag.

*Meloseireæ.*

*Meloseira distans*, Kütz.?

*Surirelleæ.*

*Synedra capitata*, Ehr.

*S. tenuis*, Kütz.

*Cocconeideæ.*

*Cocconeis Pediculus*, Ehr.

*Achnantheæ.*

*Achnanthes minutissima*, Ehr.

*Cymbelleæ.*

*Cymbella flexella*, Kütz.

*C. leptoceras*, Kütz.?

*Cocconema cymbiforme*, Ehr.

*Gomphonemeæ.*

*Gomphonema geminatum*, Ag.

*G. pohliæforme*, Kütz.

*G. minutum*, Ag.

*Naviculeæ.*

*Navicula rhomboides*, Ehr.?

*N. cuspidata*, Kütz.

*N. viridis*, Kütz.

Intermixed with these were spiculæ of *Spongilla*. Generally speaking the individuals of each species were of the minimum size, certainly far less than that usually attained. Of those brought within the sphere of the currents produced by the cilia, the smaller alone were swallowed. Of the species enumerated I have found the following on our mountains at heights varying from 2800 to 3800 feet: viz. *Meridion circulare*, *Diatoma flocculosum*, *D. tenue*, *Meloseira distans*?, *Gomphonema pohliæforme*, *G. minutum*, *Navicula rhomboides*? and *N. viridis*. The *Meloseira* I have found to constitute a considerable proportion of the fine black mud found beneath patches of snow on Ben-na-Muich Dhu.

## XXXIV.—Notice of a new species of Spiridens.

By R. K. GREVILLE, LL.D. &c.\*

[With a Plate.]

THE genus *Spiridens*, established by Nees von Esenbeck in the 11th volume of the 'Nova Acta Acad. Cæs. Leopold. Car. Naturæ Curiosorum,' has hitherto contained the single species it was constituted to receive, viz. *Spiridens Reinwardtii*. This most noble of all mosses, as it is justly designated by Sir W. J. Hooker, is a native of the Molucca Isles; twelve inches or more in height, with a robust, *Bartramia*-like habit. It is figured in the Transactions above-mentioned; but the British botanist will also find a figure and description in the first volume of Sir W. J. Hooker's 'Botanical Miscellany,' published in 1830.

\* Read before the Botanical Society of Edinburgh, March 9, 1848.



Dickie, George. 1848. "XXXIII.—Notes of Diatomaceæ found in the stomachs of certain Mollusca." *The Annals and magazine of natural history; zoology, botany, and geology* 1, 322–325. <https://doi.org/10.1080/03745485809496113>.

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