

Fig. 1

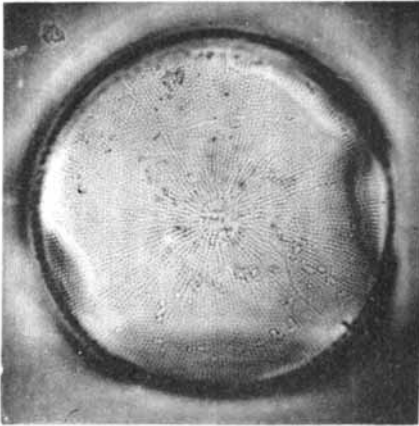


Fig. 2

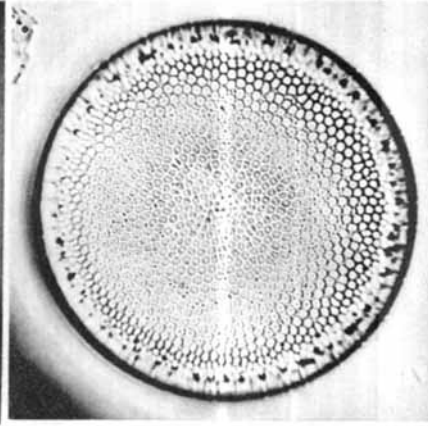


Fig. 3



Fig. 4

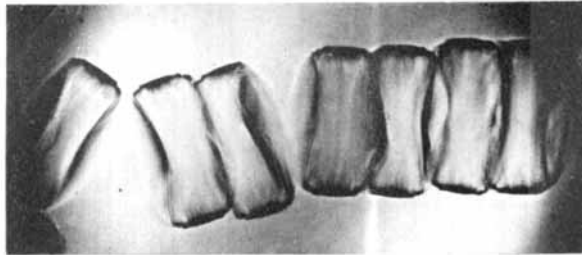


Fig. 5

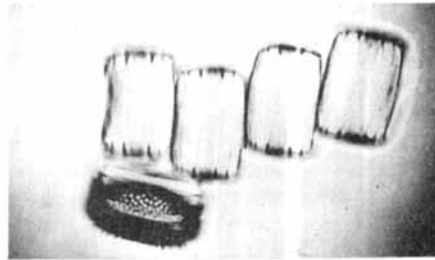


Fig. 7

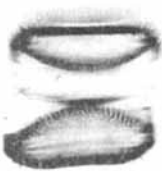
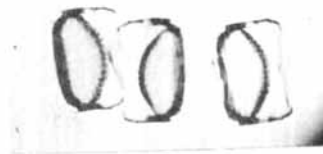


Fig. 6



T. Comber, Phot.

**THALASSIOSIRA.**

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TRANSACTIONS OF THE SOCIETY.

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IX.—*On the Occurrence of Endocysts in the Genus Thalassiosira.*

By THOMAS COMBER, F.R.M.S.

(Read 21st October, 1896.)

PLATE XI.

IN 1864 Mr. Lauder observed the formation, within the frustule of various species of *Bacteriastrum* and *Chætoceros*, of what he termed "a gonidium or sporangium, consisting of a cell with two rounded ends, and a connecting hoop, one end being smaller than the other." He supposed this to be a phase of a special method of reproduction; and described it as originating in the condensed endochrome of the frustule secreting a siliceous envelope, more or less spinous, within which highly refractive globules were formed. The frustules then break up, and set free the enclosed bodies. "The contents of the sporangium soon escape"; but he was not able to follow out the further processes they undergo towards the reproduction of the original form. He suggested that many, if not all, the species in the genera *Goniothecium*, *Omphalotheca*, and *Hercotheca*, and perhaps in *Dicladia*, *Periptera*, and *Syndendrium*, would "turn out to be sporangial bodies of species of *Chætoceros*."

To some extent this surmise has proved correct. In the 'Challenger' collections, for instance, Count Castracane found, within the frustules of a *Chætoceros*, the form *Dicladia capreolus* Ehr., well known from its frequent occurrence in guano. Other instances of the formation of these bodies have been recorded by Dr. Cleve, who, however, proposes for them the term "endocysts"; and this appears to be a better name, as their real function is still quite uncertain.

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EXPLANATION OF PLATE XI.

- Fig. 1.—Side view of valve  $\times 1000$ .  
" 2. " of endocyst  $\times 1000$ .  
" 3 and 4.—Filament without endocysts  $\times 500$ .  
" 5 and 6. " with endocysts  $\times 500$ .  
" 7.—Front view of endocyst  $\times 500$ .

The subsequent history of the endocysts has not since been traced. It remains, like so much of the life-history of diatoms, to be yet observed by those who have ready access to living specimens, or who possess facilities for cultivating them, that is, if such purely pelagic genera are capable of cultivation, by the methods adopted by Dr. Miquel, of Paris, and by our late member, Mr. Haughton Gill.

The object of the present paper is to place on record the occurrence of endocysts in a genus which, though it resembles the two above-named in being filamentous and pelagic, is otherwise quite distinct, viz. *Thalassiosira*.

This genus was constituted in 1873 by Dr. Cleve, for a single species, *T. Nordenskiöldii*, which occurs in the Arctic regions in immense masses, forming a large part of what is known to mariners as "whale's food." Its main distinction from the genera which most closely approach it, is that the frustules, of which the filament is formed, are at some distance from each other, and are connected together by a thread of mucus, which extends from the centre of the valve of one frustule to the centre of the valve of the next adjacent one.

A short time ago I received from a friend, a small tube of a surface gathering made near the South Shetland Islands in the Antarctic Ocean. It was composed principally of a *Thalassiosira*, which I propose to name *T. antarctica*, differing from the Arctic species in the characters detailed below. Fig. 3 represents the normal condition of the frustules forming the filament, except that as they have been burnt on the cover-glass to better exhibit their silicious covering, the thread of mucus connecting them together is not shown. The larger specimens evince a tendency to separate less widely from each other, and to form such a filament as is represented in fig. 4. The s.v. of the frustule is shown at fig. 1,  $\times 1000$ , in order to exhibit the minute structure. Within the frustules, and much more strongly silicious than they are, occur the endocysts, sometimes in every frustule of the filament, sometimes only in a few. The s.v., fig. 2, very closely resembles, if it be not identical with, a form from the Arctic regions described and figured by Prof. Grunow as *Coscinodiscus polyacanthus*. In f.v. (figs. 5, 6, and 7) the outlines of the two valves of the endocyst are different, one valve being always more convex than the other.

In this respect it agrees with the "endocysts" observed by Mr. Lauder. That gentleman remarked that "these bodies always lie with their similar ends towards each other throughout the filament"; and this peculiarity is observable also in the endocysts of *T. antarctica*. The convex valve of the endocyst is always turned to the convex valve of the next adjacent endocyst; and the flatter valve in like manner.

Although the endocysts are frequent in the material, I have observed no instance of their undergoing subdivision.

Dr. Cleve has, I believe, observed endocysts in a new species of *Thalassiosira* from Baffin's Bay, which he is about shortly to figure and describe. In that case the endocyst closely resembles *Coscinodiscus subglobosus*, a well-known Arctic form.

From Mr. Grove I have received specimens of the original species, *T. Nordenskiöldii*, in which endocysts are occasionally present within the frustules. Their s.v. approaches somewhat closely to that of the well-known *Coscinodiscus excentricus*.

*Description of Species.*

*Thalassiosira antarctica*.—Filament composed of 3–20 frustules. Diameter of valve 0·016–0·056 mm.; surface slightly convex. Puncta rounded, of equal size, 20 in 0·01 mm., arranged in radiating, frequently bifurcate rows, about 18 in 0·01 mm. Centre frequently with one or two large granules, or short spines. Marginal apiculi small, inconspicuous, numerous, about 8 in 0·01 mm., sometimes arranged in two rows. Endocyst lenticular. Areoles irregularly hexagonal, 7 in 0·01 mm., decreasing in size near centre and towards margin, arranged in radiating rows. Inter-areolar apiculi numerous, either singly or in groups of two or three. Marginal spines conspicuous, about 3 in 0·01 mm.

South Shetland Islands, Antarctic Ocean.

The ordinary valves resemble those of the Arctic species *Coscinodiscus hyalinus* Grun. and *C. bioculatus* Grun., although these are described as having fasciculate markings.