

The Pelagic Ciliata from Antarctic Waters

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南極海の浮游繊毛虫類

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宗谷第三次航海で、福島横浜市大助教授によってケープタン以南において航行中表面水を約70本のビール瓶に採水固定された材料の寄与を受けた。瓶中のミクロプランクトンを調べ今回はそのうちの浮游繊毛虫類について報告する。水温20°C以下を南極海域とみなしこの水域から採集されたプランクトンを研究の対象とした。この海域からは次の8種の繊毛虫が検出された。

Didinium gargantua MEUNIER, *Tiarina fusus* (CLAPARÈDE & LACHMANN), *Stenosemella nivalis* (MEUNIER), *S. avellana* (MEUNIER), *Helicostomella antarctica* n. sp., *Protocymatocylis pseudoconica* n. sp., *Cymatocylis parva* (LAACKMANN), *Metacylis corbula* KOFOID & CAMPBELL. このうちで最初の2種は全

毛虫類 *Holotricha* に属し、その他は有鐘繊毛虫類 *Tintinnoinea* の種である。 *Tintinnoinea* 中には北極系の *Parafavella*, *Ptycocyliis* 属、南極系の *Laackmanniella*, *Protocymatocylis*, *Cymatocylis* 属の如く南北両冷水域で各々独立した属がみられる。従ってこの繊毛虫類については分布に関する完全な両極性 *Bipolarity* は認められない。この事実をこの研究で確かめることができた。

なお20°C以上の暖水域の材料からは次の有鐘繊毛虫を見出した。 *Tintinnopsis gracilis* KOFOID & CAMPBELL, *Stenosemella nivalis* (MEUNIER), *Rhabdonella elegans* JÖRGENSEN, *R. quantula* KOFOID & CAMPBELL, *Tintinnulus-undae* ENTZ.

Introduction

The brief note on some ciliated organisms is the first report of the microplankton collected by the Soya from Antarctic waters. The materials examined have been obtained from surface sea-water of 600cc taken by H. FUKUSHIMA during the third voyage of the Soya for Syowa Station. Therefore, the amount of the plankton in each catch is generally poor, but the number of the collections is rather large (about 70). In the present investigation organisms collected from waters below 20°C have been treated as members of cold water plankton.

In the report are described two cosmopolitan forms of the Holotrich and six species of the Tintinnoinea, of which two are obviously Antarctic ones distributed only in cold waters connected with the Antarctic. Although most groups of the plankton usually occur in Arctic and Antarctic seas, in the Tintinnoinea are included some genera whose distribution is limited to Arctic or Antarctic waters. Genus *Parafavella* KOFOID & CAMPBELL and Genus *Ptychocyliis* BRANDT are the Arctic genera, while Genus *Laackmanniella* KOFOID & CAMPBELL, Genus *Protocymatocylis* KOFOID & CAMPBELL and Genus *Cymatocylis* BRANDT are the Antarctic ones. Therefore, it

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seems that the bipolarity related to the distribution of the living organisms is not acknowledged in the Tintinnoinea. Until now, the Tintinnines of the Antarctic regions have been studied only by LAACKMANN (1909) and BALECH (1947), and many forms of the Antarctic genera have been recorded by the former author from the area of the Kaiser Wilhelm II Land. However, in the present research no species of *Laackmanniella* has been found.

Furthermore, in the materials from warm water seas have been detected five species of the Tintinnoinea as follows: *Tintinnopsis gracilis* KOFOID & CAMPBELL, *Stenosemella nivalis* (MEUNIER), *Rhabdonella elegans* JÖRGENSEN *Rhabdonella quantula* KOFOID & CAMPBELL and *Tintinnus lusus-undae* ENTZ.

The author's sincere thanks are due to Assistant Professor H. FUKUSHIMA of Yokohama Municipal University for his kindness in collecting the valuable materials.

Descriptions of the species

Order Holotricha

Family Didiniidae

Didinium gargantua MEUNIER

Didinium gargantua: HADA, 1937, 148, fig. 3.

Length, 95 μ ; breadth, 72 μ .

Family Colepidae

Tiarina fusus (CLAPARÈDE & LACHMANN)

Tiarina fusus: HADA, 1937, 150, fig. 5.

Length, 92-105 μ ; breadth, 22-27 μ .

These two forms of the Holotricha have been reported by the author (1937) from Akkeshi Bay situated on the Pacific coast of Hokkaido. It seems that the former is distributed only in cold waters, while the latter is a cosmopolitan element occurring even in warm waters.

Order Spirotricha

Suborder Tintinnoinea

Family Codonellopsidae

Stenosemella nivalis (MEUNIER)

Stenosemella nivalis: HADA, 1932b, 561, text-fig. 11; 1937, 178, fig. 26; 1938, 105, fig. 20; GAARDER, 1946, 21; MARGALEF & DURÁN, 1953, 60, figs. 17 i-o.

Length, 55 μ ; breadth, 50 μ ; oral diameter, 25 μ .

The species is common in warm and cold neritic waters.

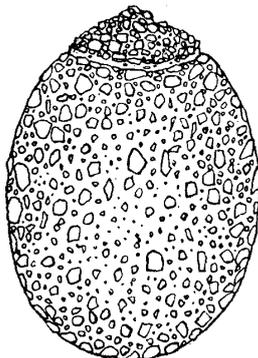


Fig. 1.

Stenosemella avellana
KOFROID & CAMPBELL
×850

Stenosemella avellana (MEUNIER)

Stenosemella avellana: KOFROID & CAMPBELL, 1929, p. 69, fig. 134; BALECH 1948, p. 17, pl. 7, figs. 94-97; MARGALEF & DURÁN, 1953, p. 61, fig. 17p.

Lorica ellipsoidal with a remarkably low collar and an rounded aboral end; wall thin and delicate.

Length, 45μ . breadth, 32μ ; oral diameter, 20μ .

The lorica of the species is similar to one of the other in size, but is distinguishable from the latter which is ovoidal with a square shoulder. The form has been recorded from European waters and the sea off Uruguay.



Fig. 2.

Helicostomella
antarctica n.
sp. ×500

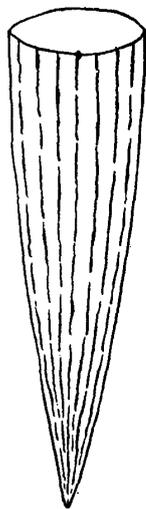


Fig. 3.

Protocymatocylis
pseudoconica n.
sp. ×700

Family Coxliellidae

Helicostomella antarctica n. sp.

Lorica elongate, bullet-shaped, consisting of the main cylindrical part having a minutely denticulated oral rim and several annular lines on the anterior region and of the conical aboral part with a bluntly pointed distal end; wall hyaline without any surface ornamentation.

Length, 112μ ; oral diameter, 20μ .

The new species is able to distinguish from *Helicostomella longa* (BRANDT) in larger size of the lorica and having an oral denticulation and a blunt aboral end instead of a pointed terminal.

Helicostomella is one of a common genera

in cold waters of the Northern Hemisphere. From the present study it becomes clear that the genus also appears in seas of the Southern Hemisphere.

Family Cyttarocylidae

Genus *Protocymatocylis* KOFROID & CAMPBELL

Lorica usually vase-shaped, composed of a single layer with a striated ornamentation on the surface; oral margin simple without any appendage and modification.

The genus is one of the plankton distributed only in Antarctic waters. In the investigation has been detected the common species which seems to be a new form.

Protocymatocylis pseudoconica n. sp.

Cymatocylis vanhoeffeni f. *conica*: LAACKMANN (pt.), 1909, pl. 38. fig. 5.

Protocymatocylis conides: KOFROID & CAMPBELL (pt.), 1929, p. 119.

Lorica elongate, conical, bluntly pointed at the distal end having no aboral horn; surface ornamented with a number of longitudinal striae

Length, 75-150 μ ; oral diameter, 30-40 μ .

The new species is different from *Protocymatocylis conicoides* KOFOID & CAMPBELL in having no oral rim and aboral horn and from *Cymatocylis conica* LAACKMANN in oral structure.

It has been already recorded by LAACKMANN (1909) from the sea off the Kaiser Wilhelm II Land.

Genus *Cymatocylis* LAACKMANN

Lorica various in form, stout or slender, typically composed of a single layer; oral margin usually provided with a channel and an overlapping rim, inner one often denticulate; wall rarely hyaline or generally ornamented with striae on the surface.

The genus is the most important one among ciliated organisms appearing in Antarctic waters, and has been quite studied by LAACKMANN (1909) and BALECH (1947). However, a single form has been secured in the investigation.

Cymatocylis parva (LAACKMANN)

Cymatocylis parva: LAACKMANN, 1909, p. 386, pl. 35, fig. 6; KOFOID & CAMPBELL, 1929, p. 142, fig. 256.

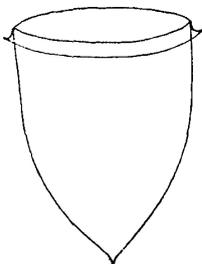


Fig. 4.
Cymatocylis parva
(LAACKMANN) $\times 500$

Lorica comparatively small in size, bell-shaped with a short aboral horn; oral margin having no distinct denticulation, provided with a channel between the inner and outer rims; wall thin and hyaline without any ornamentation on the surface.

Length, 75 μ , oral diameter, 53 μ .

The small species has been detected from the region near the Kaiser Wilhelm II Land by LAACKMANN (1909). In the study only one specimen has been observed and differs from those examined by LAACKMANN in having no distinct denticulated oral margin.

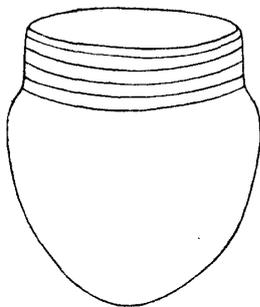


Fig. 5.
Metacylis corbula
KOFOID & CAMPBELL
 $\times 500$

Family Petalotrichidae

Metacylis corbula KOFOID & CAMPBELL

Metacylis corbula: KOFOID & CAMPBELL, 1929, p. 199, fig. 376; DURÁN, 1957, p. 112, fig. 12 (non HADA, 1938, p. 135, fig. 52 *M. tropica* DURÁN).

Lorica stout, consisting of a short collar with several annular lines and a cup-shaped bowl; wall hyaline, bilamellate.

Length, 65 μ ; breadth, 55 μ ; oral diameter, 50 μ .

The specimens secured by the author (1938) from the

Palao Islands and by MARSHALL (1934) from the Great Barrier Reef, have been included by DURÁN (1957) in the other new species, *Metacylis tropica*, therefore, the known localities of the species are Bay of Panama and Puerto Rico.

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