

PELAGIC PROTISTS OF THE NORTH-WEST PART OF THE KARA SEA

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This work is based upon the plankton collections of the Expedition of the Institute for the Exploration of the North in 1925. The collections in the Kara Sea have been made between the 24 of August and the 4 of September 1925. There have been taken sixteen stations: three on the profile of the Whitney Cove (st. 23—25), five on the profile of the Bay of Felicity (st. 26—29), two in the Rusanov Bay (st. 30—31), one in the Neupokoev Bay (st. 32) and one in the Sedov Bay (st. 33), and, besides, collections in two lakes (future relict lakes) have been made: st. I—III out of the Deriuguin Lake situated at the end of the Rusanov Bay, and st. IV out of the Rylov Lake situated at the end of the Neupokoev Bay.

The table enclosed herewith gives the full list of all protists found by the expedition, with the indication of the stations and depths, at which they have been found.

I enumerate below only the most interesting species (zoogeographically and, partially, systematically).

Dictyophimus gracilipes Bailey. (Fig. 1, 2).

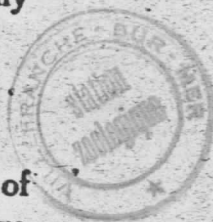
A few specimens of this radiolarian have been found on the profile of the Bay of Felicity at three stations, the most remote of the shore. In the Kara Sea it has been found for the first time.

Dictyophimus sp. (*tetracanthus*? Popovsky). (Fig. 4).

One specimen at st. 28. Differs from the preceding by its round, unusually long and fine spines.

Botryopyle setosa Cleve.

Only a fragment of this radiolarian has been found on the profile of the Whitney Cove at st. 24. But on the profile of the Bay of Felicity it has been met at all stations, except st. 26, which is lying in the bay itself. The more a station is removed from the shore, the more of this radiolarian can be found there. *Botryopyle setosa* is keeping here to the depth and does not come up above 50 m under the surface. The most vigorous development of *Botryopyle setosa* has been observed in a stratum of 200—100 m at st. 28 and 29. At st. 29 young specimens of this species have been met in the underlying stratum. *Botryopyle setosa* has been constantly met in strata with a low negative temperature between -1.68° and -1.29° C and salinity between 34.11‰ and 34.78‰ .



Plectacantha oikiskos Jörg.

This radiolarian has been met in deep strata, but much more seldom, than *Botryopyle setosa*. These small forms with thin, fragile skeletons are almost always covered with small pieces of detritus and entangled in algae. While being disentangled the spines of the skeleton are ordinarily broken. Fig. 5 and 6 represent young specimens.

Favella denticulata Jörg. = *Parafavella* Kofoid and Campbell.

Different varieties of this species have been met constantly. Together with *Ptychocyclus obtusa* this species appears as the predominating form in the northern part of the Kara Sea. On the profiles of the Whitney Cove and the Bay of Felicity there has been found a great quantity of varieties, in the bays and lakes to the South—only single specimens of neretic varieties (*gygantea*, *robusta*, *cylindrica*). Single specimens of *Favella denticulata* var. *hemifusus* Meunier and *Favella denticulata* var. *tenuis* Wulff have been met, besides, in the Neupokoev Bay—the most open towards the sea.

The parting of several varieties is sometimes rather difficult, as some specimens have an intermediate shape. That is why I cannot consider them as independent species, as Kofoid and Campbell do.

Coxiella pseudannulata Jörg. (Fig. 9).

The lorica has a „Cyttarocyclus-Structur“, without a point at the aboral end. Sizes: length 130—132 μ , width 66—82 μ ; has been met seldom and singly.

Amphorella ampla Jörg.

Has been often met, but always in little quantity and only in the northern part of the explored region (st. 23—29).

Sizes: 93—100 μ , for the greatest part — 100 μ . The wall of the bowl is structurless, hyaline. „Cyttarocyclus-Structur“ is wanting, why this species cannot be referred to the genus *Coxiella*.

In the bays the number of species of protists was considerably less, than in the open sea. Many species, especially oceanic species, have not been met at all in the bays.

On the contrary, there were comparatively many neretic species of the genus *Tintinnopsis*.

The Neupokoev Bay, the most open towards the sea, is richer in species (see the accompanying table).

The expedition explored two lakes as well future relict lakes: the Deriugin Lake, situated at the end of the Rusanov Bay, and the Rylov Lake,

lying at the end of the Neupokoev Bay. These lakes are joined to the sea by narrow sounds; the Rylov Lake, as the younger one, is joined to the sea by a wider one, than the Deriuguin Lake. The constitution of the plankton of these lakes is more uniform and poorer in species of protists, than that of the bays. In both these lakes a certain infusorian is developing more vigorously and becomes predominating. In the Deriuguin Lake it is the *Tintinnopsis lata* Meunier, and in the Rylov Lake—the *Tintinnopsis meunieri* Koffoid a. Campbell (*Tintinnopsis* sp. Bdt).

In the Deriuguin Lake, the more freshened, there has been found the *Didinium nasutum* O. F. Müll.—an infusorian, characteristical for strongly freshened waters. In the Rylov Lake this infusorian is not living, and the number of species of marine protists is greater here, than in the Deriuguin Lake, because the Rylov Lake has a higher salinity, and only on the surface there is a thin stratum of almost fresh water, brought by a small river flowing into the lake. (For the hydrological data of the Deriuguin Lake see p. 24, for the Rylov Lake—p. 27).

It is worth mentioning that the *Leprotintinnus pellucidus* of the Rylov Lake was of a very small and constant size—all specimens met had a length of 200 μ . Ordinarily the *Leprotintinnus pellucidus* met in the open sea is considerably longer: its average size is about 300 μ , and sometimes much more. At st. 29 a lorica had a length of 527 μ . Evidently *Leprotintinnus pellucidus* finds in the Rylov Lake sufficiently convenient conditions for its existence, but its growth is kept back and detained on a precisely small size. It may be the result of the insufficiency of nutrition in the lake, caused, perhaps, by the excessive development of *Tintinnopsis meunieri*.

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- Wulff, A. Über das Kleinplankton der Barentssee. — *Wissensch. Meeresuntersuch.*, XIII, 1919, H. 1.
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ОБЪЯСНЕНИЕ РИСУНКОВ

Таблица I.

1. *Dictyophimus gracilipes* Bailey. Молодой экземпляр.
2. *Dictyophimus gracilipes* Bailey. Более взрослый экземпляр. Иглы треножника поломаны.
3. *Botryopyle setosa* Cleve.

Таблица II.

4. *Dictyophimus* sp.
5. *Plectacantha oikiskos* Jörg. Вид спереди. Lr — правая латеральная игла; Ll — левая латеральная игла; D — дорзальная; A — апикальная; Bv — вентральная дужка.
6. *Plectacantha oikiskos* Jörg. Вид снизу.
7. *Sticholonche* sp.
8. *Tintinnopsis lata* Meunier.
9. *Coxiella pseudannulata* Jörga — аглютинированные частицы.

EXPLANATION OF THE FIGURES

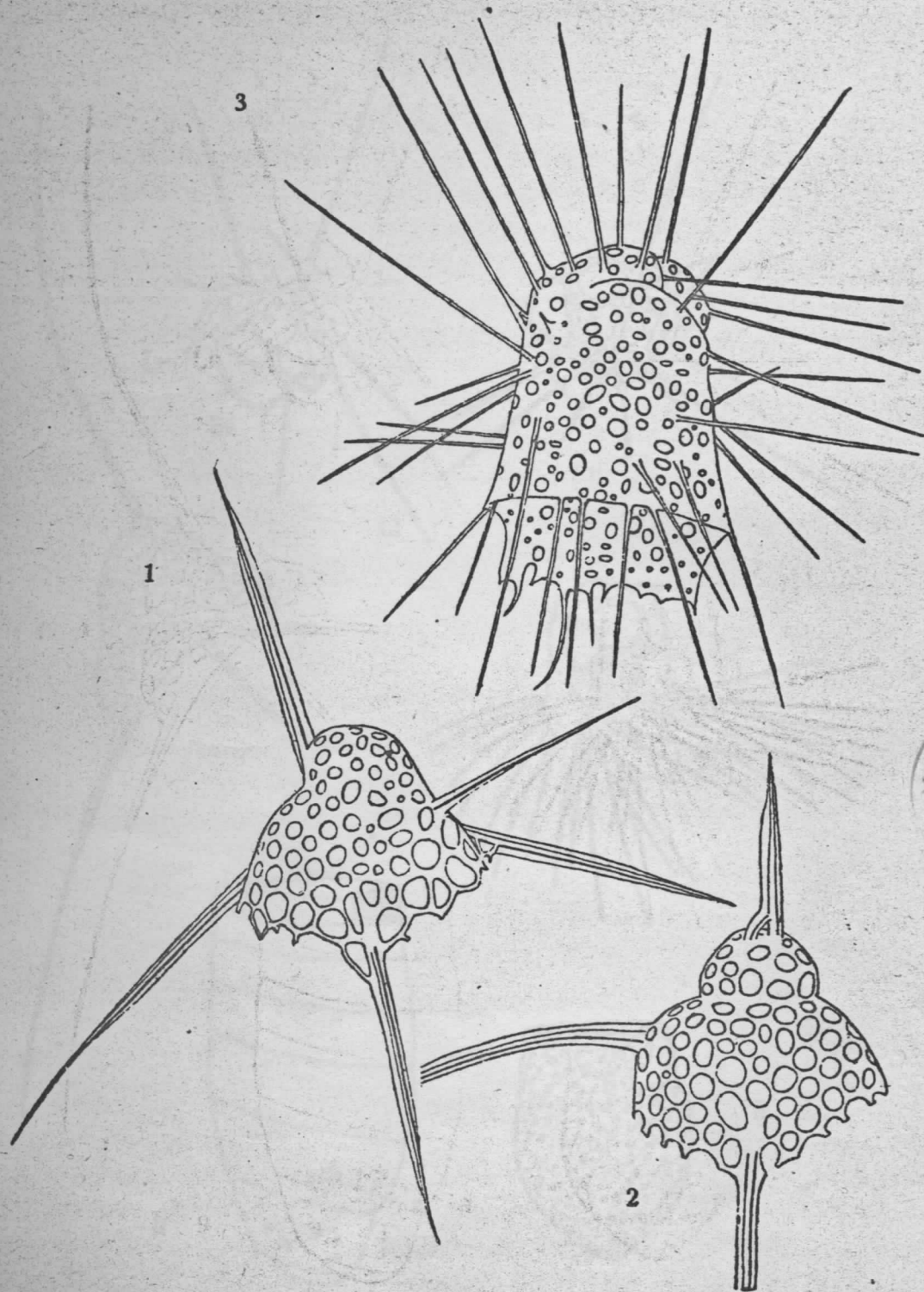
Plate I.

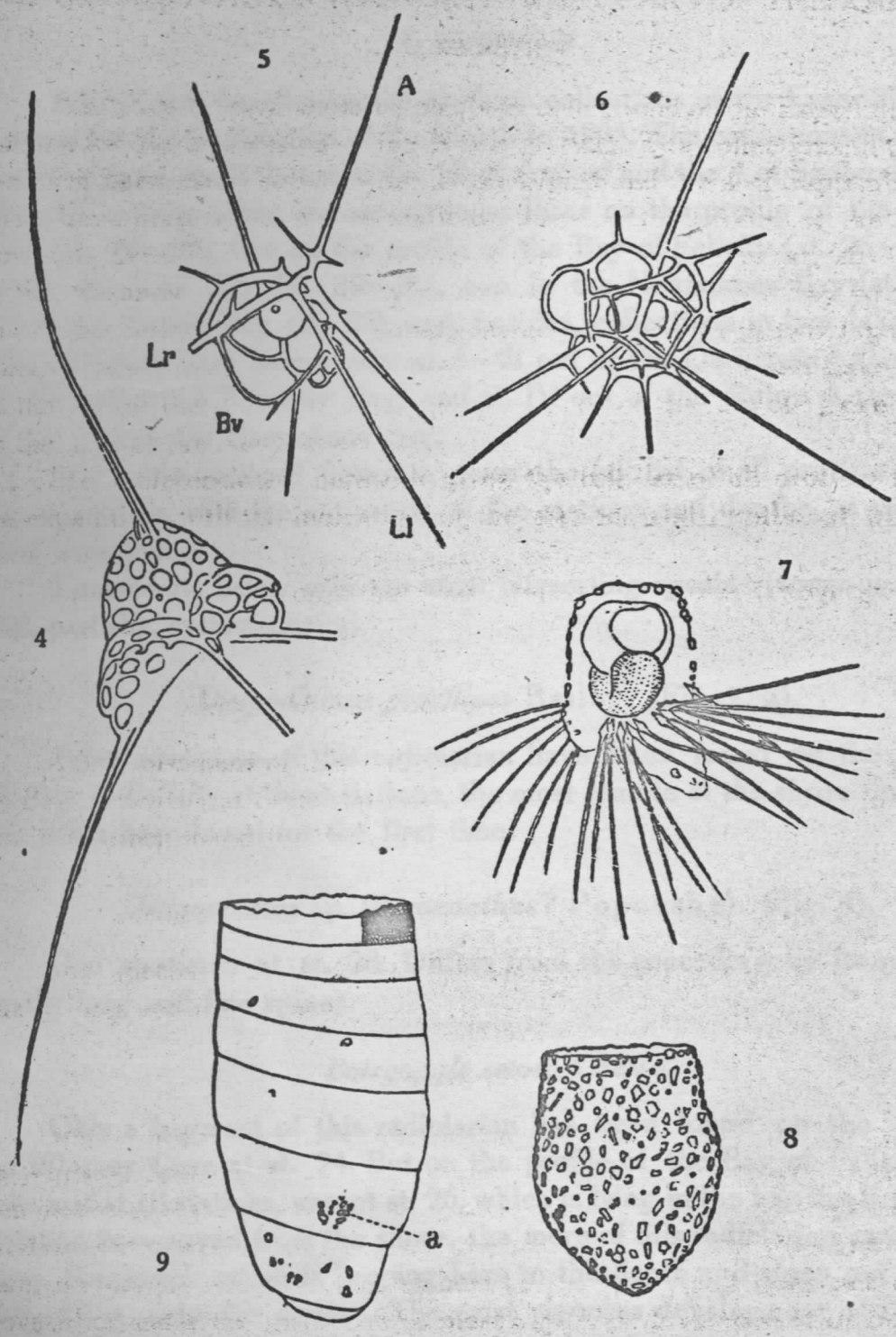
1. *Dictyophimus gracilipes* Bailey. A young specimen.
2. *Dictyophimus gracilipes* Bailey. A more adult specimen. The spines of the basal tripodium are broken.
3. *Botryopyle setosa* Cleve.

Plate II.

4. *Dictyophimus* sp.
5. *Plectacantha oikiskos* Jörg. Ventral view. Lr — right lateral spine; Ll — left lateral spine; D — dorsal spine; A — apical spine; Bv — ventral arch.
6. *Plectacantha oikiskos* Jörg. Antapical view.
7. *Sticholonche* sp.
8. *Tintinnopsis* Meunier.
9. *Coxiella pseudannulata* Jörg. a — adhered particles.

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Станция Stations	Разрез от бухты Витней Profile of the Whitney Cove			Разрез от залива Благополунья Profile of the Felicity Bay					Зал. Русанова (кут) Rusanov Bay (the end)		Серед. в. Русанова Rusanov Bay (the middle)			Озеро Дерюгина Deriugin Lake			Зал. Неупокоева Neupokoev Bay		Оз. Рылова Rylov Lake		Зал. Седова. Sedov Bay	
	Ст. 23	Ст. 24	Ст. 25	Ст. 26	Ст. 27	Ст. 27а	Ст. 28	Ст. 29	Ст. 30	Ст. 31	Ст. I	Ст. II	Ст. III	Ст. 32	Ст. IV	Ст. 33						
Местоположение Situation	76°13' N 68°16' E	76°12' N 68°51' E	76°12' N 69°09' E	75°43' N 63°50' E	75°30' N 63°45' E	75°35' N 64°26' E	75°24'30" N 63°59' E	75°09'20" N 64°14' E	74°59'30" N 60°11' E	74°59'30" N 60°51' E	74°60'30" N 60°07' E			74°42'30" N 59°32' E	74°43' N 59°23' E	74°36' N 59°17' E						
Дата Date	8 ^h -9 ^h 24 VIII	11 ^h -13 ^h 24 VIII	14 ^h -16 ^h 24 VIII	2 ^h 30 ^m 28 VIII	12 ^h -13 ^h 27 VIII	11 ^h 30 ^m -13 ^h 25 VIII	16 ^h -17 ^h 27 VIII	20 ^h -20 ^h 30 ^m 27 VIII	Прилив Tide 21 ^h 28 VIII	Отлив Ebb 1 ^h 30 VIII	2 ^h -3 ^h 2 IX			30 VIII	20 ^h -21 ^h 3 IX	4 IX	4 IX					
Горизонты в метрах Horizons in meters	19-14 19-11 13-0	97-50 30-20	150-60 50-15 13-0	23-13 13-0	110-50 50-25 25-13 13-0	150-100 100-50 50-25 25-13 13-0	335-200 200-100 100-50 50-25 25-13 13-0	305-200 200-100 100-50 50-25 25-13 13-0	35-13 13-0	35-25 25-13 13-0	115-50 50-25 25-13 13-0	29-0 13-0 81-0 13-0	75-0 13-0	82-50 50-25 25-13 13-0	14-0 10-0	48-25 25-13 13-0						
t° C	-0.10 - -0.37 -0.10 - -0.45 -0.45 - -0.54	-1.48 - -1.35 -1.44 - -0.22	-1.53 - -1.34 -1.52 - -1.23 -1.22 - -1.17		-1.52 - -1.27 -1.27 - -0.69 -0.69 - +0.72 +0.72 - +1.00	-1.52 - -1.50 -1.50 - -1.14 -1.14 - +0.31 +0.31 - +0.48 +0.48 - +0.70	-1.68 - -1.62 -1.62 - -1.49 -1.49 - -1.29 -1.29 - -0.99 -0.99 - +0.67 +0.67 - +1.10	-1.68 - -1.62 -1.62 - -1.49 -1.49 - -1.29 -1.29 - -0.99 -0.99 - +1.27 +1.27 - +1.36	?	?	-1.59 - -1.37 -1.37 - -0.49 -0.49 - +0.56 +0.56 - +1.81 -0.79 - +3.00 +1.63 - +3.00 -1.12 - +3.80 +1.63 - +3.80	3.70	-1.53 - -1.41 -1.41 - -0.57 -0.57 - +1.00 +1.00 - +2.09 +0.96 - +3.00 +1.07 - +3.00	3.00	-1.08 - -0.59 -0.59 - +1.20 +1.20 - +3.57							
S‰	33.18-32.78 33.18-32.87 32.87-	32.45-33.98 33.39-32.82	34.32-33.97 33.87-31.64 31.55-31.45		34.72-34.24 34.24-?	?	34.54-? ? - 34.11 34.11-33.12 33.12-33.06 33.06-?	(34.78)-34.76 34.76-34.51 34.51-34.40 34.40-? ? - 33.03 33.03-(32.87)	?	(32.30) (32.30)-(32.65) (32.65)-30.46	34.23-33.83 33.83-33.31 33.31-32.76 32.76-30.01 24.75-(13.10) 21.87-(13.10) 25.07-18.22 ?	18.22	25.05-(16.75) 21.76-(16.75)	34.56-34.23 34.26-33.82 33.82-32.94 32.94-27.76	34.83-1.00 34.77-1.00	1.00 33.97-33.83 33.83-33.10 33.10-(20.25)						

<i>Acanthometron pellucidum</i> J. Müller . . .																					
<i>Acantharia</i> sp.																					
<i>Botryopyle setosa</i> Cleve		X																			
<i>Dictyophimus gracilipes</i> Baiey																					
<i>Plectocantha oikiskos</i> (?) Jørgensen																					
<i>Sticholonche</i> sp.																					
<i>Tintinnopsis beroidea</i> Stein																					
<i>Tintinnopsis nitida</i> Bdt.																					
<i>Tintinnopsis meunieri</i> Kof. a. Campb.																					
<i>Tintinnopsis lata</i> Meunier																					
<i>Stenostomella ventricosa</i> (Cl. a. L.)																					
<i>Leptotintinnus pellucidus</i> (Cleve) Jørg.																					
<i>Favella denticulata typica</i> Jørg.																					
" " <i>var. acuta</i> Wulff																					
" " <i>var. hemifusus</i> Meunier																					
" " <i>var. tenuis</i> Wulff																					
" " <i>var. gigantea</i> Bdt.																					
" " <i>var. robusta</i> Jørg.												X									
" " <i>var. cylindrica</i> Jørg.												X									
" " <i>var. rotundata</i> Jørg.																					
" " <i>var. subrotundata</i> Jørg.																					
<i>Coxiella pseudannulata</i> Jørg.																					
<i>Amphorella ampla</i> Jørg.																					
<i>Ptychocyclus obtusa</i> Bdt.																					
<i>Salpingella secata</i> (Bdt.) Kof. a. Campb.																					
<i>Metacyclus vitreoides</i> (Bdt.) Kof. a. Campb.																					
<i>Acanthostomella norvegica</i> (Daday) Jørg.																					
<i>Strombidium striatum</i> Wulff																					
<i>Didinium nasutum</i> O. P. Müll.																					

Условные обозначения: — единично singly — мало few — порядочно pretty much — много much — очень много very much — массовое количество in profusion — X — отмершие экземпляры dead specimens

Примечание: В горизонте 25—0 м. планктон брался от 25—13 м и от 13—0 м. Гидрологические данные во всех случаях относятся к 25 м, 10 м, 0 м.
Remark: In the horizon 25—0 m plankton was taken from 25 to 13 m and from 13 to 0 m. Whereas all the hydrological data refer to 25 m, 10 m, 0 m.