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PLANKTON

COLLECTED BY

THE SWEDISH EXPEDITION TO SPITZBERGEN IN 1898

EXAMINED

BY

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WITH 4 PLATES

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The scientific Swedish expedition 1898 to Spitzbergen under the direction of Professor A. G. Nathorst paid a particular interest in exploring the plankton of the sea. A great number of samples were gathered, among which about 50 were collected by pumping the water through a silk-net. These gatherings were all small and have been completely examined by me both for animal and vegetable plankton. The other samples, about 100, were brought up by the tow-net, partly from the surface and partly from more or less considerable depths. As Dr. C. Aurivillius has charged himself with the examination of the animals in all the tow-net gatherings, I have examined them for vegetable plankton only, with the exception of the radiolarians, which offered a particular interest for my other plankton-researches.

Plankton-types.

I proposed in 1896[1] to class the plankton of the Atlantic and its tributaries in certain types or formations according to the association of species. For understanding the following it will be necessary first to characterize briefly these plankton-types.

I. **Desmo-plankton** (sign *D*). This formation rules in the warmest part of the Atlantic, in the Sargasso-sea and in the equatorial current.

The *temperature* of the water containing desmo-plankton varies usually between 20° and 28° and the *salinity* is about 36 p. m.

The organisms belong to a great number of species, many of which are identical with those of the Indian Ocean. Among the more characteristic species I can name the following:

Animals.	Plants.
Clausocalanus furcatus,	*Trichodesmium*,
Corycæus longicaudis,	*Pyrocystis pseudonoctiluca*,
C. speciosus,	*Ceratium fusus var. longiseta* (n. v.),
Euchæta marina,	*C. tripos var. flagellifera* (n. v.),
Miracia efferata,	*Ceratocorys horrida*,
Oncæa venusta,	*Goniodoma acuminatum*,
Setella gracilis,	*Ornithocercus magnificus*,
Radiolarians (many species).	*Chætoceros coarctatus*,
	C. tetrastichon,
	Climacodium biconcavum,
	C. Frauenfeldii (= *C. Jacobi* Cl.),
	Hemiaulus Hauckii.

[1] Bih. till K. Sv. Vet.-Akad. Handl. XXII, 3, N:o 5. — A treatise on the phyto-plankton. Upsala 1897.

II. **Styliplankton** (Sign *S*). The region of desmoplankton, which is subject to variation in extent according to the seasons, is surrounded by an irregular band of water containing styliplankton. In the west this plankton-type seems always to occur in mixture with desmoplankton, and such a mixture characterizes the Caribbean Sea, the Antilles-current to the region of Bermuda. About the 40° breadth the styliplankton becomes more differentiated and the region increases in breadth towards the European and African coasts. It forms a narrow band west of Africa from Cape Verde to Canaries and occupies the triangular space between the Azores, the English Channel and Bermuda. The extent of the region is subject to great variation according to the seasons. In the summer it approaches towards the Färöe Channel (probably also towards Iceland) in a mighty tongue, which sends branches through the English Channel into the German Ocean and around Scotland into the North Sea. When the water enters the North Sea its salinity becomes lowered by admixture of the continental coast-water and, consequently, the plankton becomes also modified. Some of the species die away, others multiply, and thus are originated in the North Sea two important *derived styli-planktontypes, the tripos-plankton in the north and the didymus-plankton in the south.* I have distinguished as a third type of North Sea plankton the *halosphæra-plankton.* This kind also originates from the styliplankton by an considerable increase of the green alga Halosphæra viridis, which seems to take place in the autumn around Färöe, from whence it descends to Scotland and enters the North Sea finally reaching Skagerack.

The styliplankton-water, which in the beginning of the summer reaches the Färöe Channel proceeds during the autumn towards Spitzbergen.

The *temperature* of this water varies usually between 10° and 20° and the *salinity* is about 35 p. m.

The number of *organisms* constituting the styliplankton is very considerable and the flora and fauna are subject to a great variability according to the breadth and the season. Some species appear simultaneously at the African and South American coasts, others occur in the whole region, others again seem to be limited to the eastern part. I name among the more common and characteristic forms the following, marking with *e* such forms, as occur in the eastern Atlantic. With *s* I denote forms, which as a rule do not pass over the Färöe Channel, and with *n* forms which enter the northern Atlantic.

Animals.	**Plants.**
Acartia Clausii (*e n*),	*Halosphæra viridis* (*n*),
Centropages typicus (*n*),	*Ceratium* (*trip. v.*) *auritum* (*e s*),
Clausocalanus arcuicornis (*s*),	*C. candelabrum* (*s*),
Corycæus rostratus (*e s*),	*C. furca* (*e n*),
Mecynocera Clausi (in the spring *s*),	*C. lineatum* (*n*),
Microsetella atlantica (*n*),	*C. reticulatum* (*s*),
Oithona plumifera (*s, n* rarely),	*Dinophysis homunculus* (*s*),
O. similis (*n*),	*Diplopsalis lenticula* (*n*),
Oncæa minuta (*e n*),	*Gonyaulax polygramma* (*n*),
Paracalanus parvus (*n*),	*Peridinium divergens* (*n*),

Temora stylifera (*s*),
Sagitta bipunctata (*n*),
Globigerina bulloides (*n*),
Codonella lagenula (*s*),
Cyttarocylis acuminata (*s*),
C. cassis (*s*),
C. ganymedes (*s*),
C. Treforti (*s*),
Dictyocysta elegans (*e n*),
D. mitra (*s*),
Tintinnus Fraknoi (*s*).

Peridinium oblongum[1] (*n*),
Chætoceros furca (*s*),
C. Lorenziana (*s*),
C. volans (*n*),
Corethron hystrix (*e n*),
Coscinodiscus sol (*e*),
Dactyliosolen antarcticus (*e n*),
Hemidiscus cuneiformis,
Rhizosolenia alata (*n*),
R. gracillima (*n*),
R. styliformis (*n*).

The derived stylitypes of the North Sea, the *didymus-* and *tripos-plankton*, are characterized as follows.

A. **Didymus-plankton** (Sign *Nm*). This plankton-type rules in the summer and autumn along the southern coasts of the German Ocean above the 50 metre-plateau of the bottom.

The *temperature* varies between 8° and 17° and the salinity is about 32 or 33 p. m.

The organisms are numerous and the diatoms constitute an important part of them. Among the animals many are common to didymus- and triposplankton and their names are in the following lists enclosed in parenthesis. As the more common species we note:

Animals.

(*Acartia Clausii*),
(*Centropages hamatus*),
(*C. typicus*),
Corycæus anglicus,
Isias clavipes,
Labidocera Wollastonii,
(*Oithona similis*),
(*Paracalanus parvus*),
Podon polyphemoides,
(*Sagitta bipunctata*),
Oikopleura dioica,
Noctiluca miliaris,
Tintinnopsis campanula.

Plants.

Bacteriastrum varians,
Biddulphia mobilensis,
Cerataulina Bergonii,
Chætoceros curvisetus,
C. danicus,
C. didymus,
C. Schüttii,
C. Weissflogii,
Ditylum Brightwellii,
Eucampia zodiacus,
Guinardia flaccida,
Rhizosolenia Shrubsolii,
R. Stolterfothii,
Streptotheca tamesis.

B. **Triposplankton** (Sign *Tp*) rules in the summer and autumn in the northern part of the North Sea above the 100 metre-plateau of the bottom and extends from Scotland to Scandinavia as far as Finmarken. In the spring it is replaced by water with chæto-plankton.

[1] *Perid. divergens v. oblonga* AURIV.

The *temperature* varies usually between about 5° in the winter and 14° in the summer, and the salinity is about 34 p. m., but these figures are subject to great variations according to relative abundance of oceanic or coast-water that enters in the composition of the triposplankton-water.

The triposplankton is chiefly constituted by cilioflagellates and entomostraca, the diatoms being almost absent. As stated above the animals are to a great extent of the same species as in the didymusplankton, which is easily explained as both types are derived from styliplankton.

Among the organisms we note the following:

Animals.	Plants.
(*Sagitta bipunctata*),	*Ceratium furca*,
(*Acartia Clausii*),	*C. fusus*,
Anomalocera Patersonii,	*C. tripos*,
Calanus finmarchicus,	*C. trip. v. macroceros*,
(*Centropages typicus*),	*Peridinium divergens*.
(*Oithona similis*),	
(*Paracalanus parvus*),	
Pseudocalanus elongatus,	
Temora longicornis,	
Evadne Nordmannii,	
E. spinifera,	
Podon intermedius.	

Many of the species of the styliplankton also enter into the triposplankton, as *Acanthometron quadrifolium*. *Plectophora arachnoides*, probably originally belonging to the chætoplankton and abundant around Scotland, enters also frequently into the triposplankton.

III. **Chætoplankton** (Sign *C*). This planktontype occurs in the western and northern parts of the Atlantic only and during the spring. From March to June or July it can be traced from about the 40° Lat. and 70° Long. to the Newfoundland Banks and to the south of Iceland; from whence it turns across the Färöe Channel and enters the North Sea, replacing its triposplankton, and reaches the coasts of Scandinavia. It disappears in the summer, becoming replaced by styliplankton, but rules in July and August around Spitzbergen. When the water with the chætoplankton touches the coasts, especially of Iceland, it sweeps away the neritic plankton there and spreads it along the coasts of Scotland and Scandinavia, where it enters into the fjords. Thus many species of northern origin may remain during the summer emprisoned in the fjords, especially in their deeper water.

The *temperature* of the chætoplankton-water varies usually between 5° and 9° and the *salinity* is about 35 p. m.

The organisms of the chætoplankton are chiefly diatoms, especially *Chætoceros decipiens* and *Ch. constrictus*. *C. borealis* and *C. criophilus* occur both in chæto- and trichoplankton so that it is difficult to decide whether they belong to one or the other type.

Another organism, the flagellate *Phæocystis Pouchetii*, appears in the same time as Chætoceros decipiens, frequently in great abundance, and has about the same distribution. I therefore include also that organism among the chæto-species.

IV. **Trichoplankton** (Sign *T*). This type rules in the western Atlantic and constitutes in the summer the plankton of the Irminger Sea. Its origin is doubtful. Typical trichoplankton was gathered in the Bering Sea during the expedition of the Vega and it is an open question whether it spreads from the northern Pacific to the northern Atlantic or vice versa. In the winter (1897—98) the characteristic species of the trichoplankton appeared as far down to the south as to the south of the Azores, which possibly may be owing to the plankton of the Labrador-current having been conveyed by the south-going branch of the Gulf-stream. In the summer it is confined to the western and arctic Atlantic, but in the winter it spreads to Scandinavia.

The *temperature* of the trichoplankton-water varies between 6° and 12° and the salinity amounts to about 34 p. m.

As the trichoplankton frequently becomes mixed with chætoplankton and with siraplankton it is a difficult matter to make out to what type a number of species really belong. I consider the following as chiefly tricho-organisms:

Animals.	Plants.
Calanus finmarchicus,	*Ceratium tripos v. arctica*,
Fritillaria borealis,	*Chætoceros atlanticus*,
Spadella hamata,	*Coscinodiscus oculus iridis*,
Cyttarocylis denticulata (with the varieties *edentula*, *media* and *gigantea*),	*Rhizosolenia obtusa*,
	R. semispina,
	Thalassiosira gravida,
Ptychocylis acuta,	*Thalassiothrix longissima*.
Tintinnus minutus.	

On the coasts, washed by the trichoplankton-water, there originates a peculiar kind of derived trichoplankton, which I have designated as

Northern neritic plankton (Sign *Ns*). This somewhat variable type occurs at the coast of Iceland, in Skagerack and in the fjords of Sweden during the winter, also in the fjords of Norway and on the Norwegian coast-banks, where it becomes in the summer slowly replaced by triposplankton. This kind of plankton seems to invade the coasts of Scotland and Scandinavia twice a year, viz. in the spring in company or in connection with the chætoplankton and in the autumn in connection with the trichoplankton. The detailed study of this kind of plankton will doubtless afford very interesting results as different species rule on different coasts. Thus for instance the *Asterionella spathulifera* abounds in the south coast of Iceland and becomes from thence transported to Scotland and as far southwards as to the coast of Holland. On the coast-banks of Norway *Ceratium tripos v. longipes* is the ruling species. The Limfjord of Denmark affords particular advantages for the development of some species, as *Skeletonema costatum* and *Chætoceros debilis*,[1] which remain there for the greater part of the year.

[1] C. G. T. PETERSEN. Beretning fra den danske biologiske Station 1898.

The *temperature* of the water with northern neritic plankton varies in Skagerak from about 4° to 7° and the *salinity* is about 32—33 p. m.

As species constituting the northern neritic plankton we name the following:

Animals.	Plants.
(*Acartia longiremis*),	*Asterionella spathulifera*,
(*Calanus finmarchicus*),	*Biddulphia aurita*,
(*Centropages hamatus*),	*Chætoceros debilis*,
(*Pseudocalanus elongatus*),	*C. diadema*,
(*Temora longicornis*),	*C. scolopendra*,
Tintinnopsis beroidea,	*C. teres*,
T. ventricosa.	*Coscinodiscus polychordus*,
	Leptocylindrus danicus,
	Skeletonema costatum,
	Thalassiosira gelatinosa,
	Thalassiothrix Frauenfeldii,
	Ceratium tripos v. longipes,
	Gonyaulax spinifera,
	Peridinium depressum.

V. **Sira-plankton** (Sign *Si*) rules along the coasts of Greenland and in Baffins Bay, or in the Arctic Ocean properly, where it constitutes the plankton of the water with melting drift-ice. As it touches the trichoplankton it becomes frequently mixed with it, so that the distinction of what species belong to one or the other is a matter of difficulty. The water with sira-plankton has lower temperature than the trichoplankton-water and less salinity, about 32—33. This type might be considered as a kind of neritic plankton, did not the most characteristic species, *Thalassiosira Nordenskiöldii*, at certain periods occur in wide areas north of the Kara Sea and between Spitzbergen and Finmarken. Typical sira-plankton is almost free from animals and contains as its most characteristic species *Thalassiosira Nordenskiöldii*, *Fragilaria oceanica*, *Lauderia fragilis*, *Chætoceros furcellatus* and *C. socialis*. It is frequently mixed with some northern neritic forms as *Chætoceros debilis*, *C. diadema*, *C. scolopendra*, *Coscinodiscus oculus iridis*, *Biddulphia aurita*, *Thalassiosira gravida* etc.

This kind of plankton appears in Skagerak usually in February and March.

Along the coast of Greenland the sira-plankton becomes mixed with a number of neritic forms and such a derived sira-plankton I have distinguished as

Arctic neritic plankton (sign *Ng*). This kind of plankton contains, besides the species of sira-plankton, the following:

Amphiprora hyperborea,	*Eucampia groenlandica*,
Achnanthes tæniata,	*Fragilaria cylindrus*,
Chætoceros septentrionalis,	*Navicula septentrionalis*,
Coscinodiscus bioculatus,	*Nitzschia frigida*,
C. hyalinus,	*Pleurosigma Stuxbergii*.

Surface-plankton.

In the following account of the plankton, gathered by the Swedish expedition to Spitzbergen in 1898, I distinguish, as usually, with *c* common, *cc* very common, *ccc* the principal mass, with + neither common nor rare, with *r* rare, and *rr* some few specimens only. In case of scarcity of the plankton I enclose the sign by one or two parentheses and where no plankton was found I use 0.

1. Lindesnäs—Lofoten.

May 27th to June 1th.

Temperature varying between 7° and 9°. Salinity 33—35 p. m.

The plankton is of great uniformity, being a mixture of tripos- and northern neritic plankton (*Tp, Ns*).

The most important species are the following:

Of triposplankton:

Acartia Clausii +,
Microsetella atlantica r,
Oithona similis +,
Evadne Nordmannii c,
E. spinifera c,
Podon intermedius r,
Halosphæra viridis r,
Ceratium furca +,
C. fusus +,
C. tripos r,
C. trip. v. macroceros c,
Rhizosolenia styliformis rr.

Of northern neritic plankton:

Acartia longiremis c,
Ceratium tripos var. longipes cc,
Peridinium depressum +,
Coscinodiscus oculus iridis rr.

Common to both:

Calanus finmarchicus +,
Temora longicornis +.

One sample only (63° 13′ N 5° 15′ E.) contained *Leptocylindrus danicus* in abundance.

The plankton of this region agrees completely with that of June 1896.[1] If compared with the plankton of May 1897 in the same region, we mark that the triposplankton occurred in 1898 in greater abundance. This corresponds with the lower temperature (5,45—9,72) and salinity (28,05 to 34,11) in the year 1897.

[1] Bih. till K. Sv. Vet.-Akad. Handl. XXIII, 2, N:o 4.

2. Lofoten—Beeren Eiland.

June 2d to June 12th.

Temperature 7,55 to 5,15; near Beeren Eiland 2,40. Salinity 34—35.

The ruling plankton is chætoplankton, mixed with variable amounts of tricho- and styliplankton.

In the chætoplankton:	In the trichoplankton:	In the styliplankton:
Plectophora arachnoides r,	*Calanus finmarchicus c,*	*Oithona plumifera rr,*
Chætoceros criophilus c,	*Chætoceros criophilus c,*	*Collozoum inerme* +,
C. decipiens c,	*Coscinodiscus oculus iridis r,*	*Chætoceros volans* +.
Phæocystis Pouchetii (*c* near Beeren Eiland).	*Rhizosolenia semispina* +,	
	Thalassiothrix longissima r.	

Interesting is the occurrence of the styliplanktonforms, of which *Oithona plumifera* and *Collozoum* indicate a far distant origin (probably the region of the Azores). *Plectophora arachnoides* indicates that the water has passed the Färöe Channel.

In June 1896 and May 1897 this region was almost sterile, containing traces only of northern neritic plankton.

3. Beeren Eiland—Hope Island.

June 20th to June 23d.

Temperature —0,35 to +0,97 and salinity 34,76 to 32,97.

The ruling plankton is chætoplankton with *Chætoceros decipiens* and *Phæocystis Pouchetii;* tricho-plankton is also represented by *Calanus finmarchicus, Cyttarocylis gigantea* and *Coscinodiscus oculus iridis,* and arctic neritic plankton by the rare occurrence of *Ptychocylis obtusa.*

4. Hope Island—Icefjord.

June 24th.

Temperature 0,6 to 3,0. Salinity 33,80 to 35,06.

An almost sterile region with some few specimens of *Phæocystis Pouchetii* (*C*) and *Thalassiosira Nordenskiöldii, Chætoceros furcellatus, Ptychocylis obtusa* and *Peridinium pellucidum* (*Ng*).

5. Icefjord—Swedish Depth—Süd Cape.

July 26th to August 2d.

The plankton is subject to great variation, occurs as a rule sparingly and belongs to chæto-, styli- and tricho-plankton. In August 1896 chæto-plankton chiefly ruled in this region.

Month	VII	VII	VII	VII	VIII
Day	26	26	30	31	1
Lat.	78° 13′	77° 53′	78° 12′	77° 14′	76° 36′
Long.	7° 30′ E.	5° 3′ E.	0° 17′ W.	6° 34′ E.	12° 8′ E.
Temp.	5,34	4,78	4,59	5,35	7,38
Sal.	34,89	34,57	34,53	34,77	35,12
Pl.-type	(*Ng S*)	(*T C*)	(*T C*)	*T S*	*T S*
Calanus finmarchicus	.	.	.	*r*	.
Oithona similis	*r*	.	+	.	+
Euthemisto libellula	*r*	.	.	.	.
Cyttarocylis edentulata	.	*r*	*c*	*cc*	.
C. media	*r*	*r*	+	.	.
Ptychocylis obtusa	*r*	.	.	.	.
Litholophus ligurinus	*r*	.	.	.	.
Ceratium (trip. v.) arcticum	*r*	*r*	*r*	.	+
C. (trip. v.) longipes	.	.	.	.	*r*
Peridinium pellucidum	*r*	+	*c*	.	.
Chætoceros borcalis	.	*r*	.	.	*r*
C. decipiens	.	+	*c*	.	.
C. volans	.	.	.	*c*	+
Rhizosolenia gracillima	.	.	.	*c*	.
R. obtusa	.	*r*	.	.	.
R. semispina	.	.	.	.	*c*

6. Süd Cape—King Charles Land.

August 3d to August 6th.

Much drift-ice. Temperature 1 to 3,94. Salinity 30,98 to 34,45.

The plankton consists chiefly of *chætoplankton,* mixed with *trichoplankton* and a little arctic neritic plankton. *Oithona similis* was also found.

The more important species were the following:

Chætopl.:

Chætoceros decipiens +,
Phæocystis Pouchetii r.

Trichopl.:

Calanus finmarchicus r,
Cyttarocylis denticulata r,
var. obtusa r,
var. gigantea c,
var. media r,
Tintinnus minutus r,
Ceratium (trip v.) arcticum c,
Coscinodiscus oculus iridis +,
Rhizosolenia semispina r.

Arctic neritic pl.:

Peridinium pellucidum +,
Ptychocylis obtusa +.

7. King Charles Land. Round Spitzbergen. North west of Spitzbergen.

August 13th. August 25th.

Temperature —0,58 to +3,44. Salinity about 33 p. m.
The plankton is constituted by chæto-, tricho- and arctic neritic plankton.
The following were the most important:

Chætopl.	Trichopl.	Arctic neritic plankton.
Chætoceros borealis +,	*Calanus finmarchicus r*,	*Cyttarocylis dentic. v. obtusa c*,
C. criophilus r,	*Fritillaria borealis r*,	*Fungella arctica r*,
C. decipiens +,	*Cyttarocylis denticulata r*,	*Ptychocylis obtusa c*,
Phæocystis Pouchetii r.	*v. gigantea c*,	*Dinobryum c*,
	v. media r,	*Peridinium pellucidum* +.
	Tintinnus borealis r,	
	Ceratium arcticum c,	
	Chætoceros atlanticus r,	
	C. boreal. v. Brightwellii r,	
	C. criophilus r,	
	Coscinodiscus oculus iridis rr,	
	Rhizosolenia obtusa r,	
	Thalassiosira gravida r.	

Besides these species were found *Oithona similis*, common in some gatherings, and the following of the northern neritic plankton: *Ceratium* (*tripos v.*) *longipes r*, *Chætoceros diadema r*, *Leptocylindrus danicus r.*

8. West of Spitzbergen—Beeren Eiland.

August 28th to September 4th.

Temperature 5,34 to 7,24. Salinity about 35.
The plankton is composed of styliplankton, usually predominant, and trichoplankton. The most important forms are:

Styliplankton.	Trichoplankton.
Microsetella atlantica r,	*Calanus finmarchicus*,
Oithona similis c,	*Fritillaria borealis*,
Oncæa minuta +,	*Cyttarocylis denticulata r*,
Globigerina bulloides r,	*var. media c*,
Challengeria tridens r,	*var. edentula* +,
Litholophus ligurinus r,	*var. gigantea r*,
Chætoceros borealis v. solitaria +,	*Ptychocylis acuta r*,
C. volans cc,	*Tintinnus secatus r*,
Corethron hystrix r,	*T. minutus r*,
Rhizosolenia alata r,	*Ceratium tripos v. arctica r*,

R. gracillima (in some spots),
R. hebetata +,
R. styliformis r to *c*.

Chætoceros atlanticus r,
C. criophilus +,
Rhizosolenia obtusa r to *c*,
Thalassiosira gravida r,
Thalassiothrix longissima rr.

Among these species some are of a particular interest, for instance *Challengeria tridens* and *Plectophora arachnoides*, radiolarians known from the Färöe Channel. *Litholophus ligurinus* and the still more interesting *Oncæa minuta* can be traced from the Mediterranean and the Azores to the mouth of the English Channel and Färöe Channel, thus indicating the course the styliplankton-water has taken.

In the year 1896 in August this region west of Spitzbergen was sterile, and north of Beeren Eiland there ruled typical trichoplankton. I July 1897 chætoplankton was preponderant west of Spitzbergen and was north of Beeren Eiland mixed with trichoplankton. Styliplankton appeared very sparingly at first south of Beeren Eiland.

9. Beeren Eiland—Fuglö.

September 4th to September 6th.

Temperature 8,8 to 9,40. Salinity about 35.

The plankton is constituted, as north of Beeren Eiland, of *styli-* and *trichoplankton*, but with an admixture of triposplankton and northern (Norwegian) neritic plankton.

Styli- and tripos-plankton.

Acartia Clausii r to +,
Microsetella atlantica r,
Oithona similis + to *cc*,
Oncæa minuta r,
Acanthometron quadrifolium c,
Acanthonia Mülleri r,
(*Plectophora arachnoides r*),
Globigerina bulloides r,
Halosphæra viridis c,
Ceratium furca r to *c*,
C. fusus r to +,
C. tripos +,
C. trip. v. macroceros cc,
Peridinium divergens +,
Corethron hystrix r,
Rhizosolenia alata r,
R. gracillima r to +,
R. hebetata r.

Tricho- and northern neritic plankton.

Calanus finmarchicus c,
Cyttarocylis denticulata r,
v. gigantea c,
v. media r,
Ptychocylis acuta r,
Ceratium tripos v. longipes c,
Peridinium depressum r.

It follows from the above analysis of the plankton-gatherings that in the year 1898 the styliplankton was by far more richly represented than in the two precedent years.

Deep-sea Plankton.

At some stations plankton was gathered by hauls from different depths. As Dr. AURIVILLIUS will describe the animals found in these samples, I have examined the vegetable plankton and the radiolarians only, and being thus unable to give a complete account of these gatherings I confine myself here to shortly characterizing them so far as regards the phytoplankton and the radiolarians.

1. **Station M.** 26 to 27 July. Lat. 77° 39′. Long. 1° 18′ E. 100—0 metres. Salinity at 100 m. 34,97, in the surface 32,22. Temp. 5,07.

This sample contained trichoplankton (*Chætoceros criophilus*, *Rhizosolenia obtusa*) and some arctic neritic plankton (*Dinobryum*), but the animals indicate the presence of an amount of styliplankton of the same kind as in the surface west and south of Spitzbergen in August and September.

2. **Station N.** 28 July. Lat. 77° 52′ N. Long. 3° 5′ W.

a. Haul 10—0 m. Temp. at 0 m. 3,63. Salinity 34,38. Chiefly chætoplankton (*Chætoceros decipiens*, *Phæocystis Pouchetii*) and arctic neritic plankton (*Dinobryum*).

b. Haul 25—0 m. Temp. at 25 m. 2,72. Salinity 34,74. The same kind of plankton.

c. Haul 100—0 m. Sal. at 100 m. 35,03. Plankton sparingly (*Phæocystis Pouchetii*).

d. Haul 500—0 m. Temp. at 100 m. +0,83. Sal. 35,03. Content the same as *a*, but, in addition, *Rhizosolenia gracillima* and some animals of the styliplankton-type.

The conclusion is, that the deeper strata contained styliplankton, the upper chætoplankton.

3. **Station O.** 29 to 30 July. Lat. 78° 13′ N. Long. 2° 58′ W.

a. Haul 100—0 m. Temp. at 0 m. 3,1, sal. 33,76; at 100 m. 1,17, sal. 35,03. Content: chiefly *Phæocystis Pouchetii*, thus chætoplankton.

b. Haul 500—0 m. Temp. at 500 m. 0,95, sal. 35,03. Content as *a*, and besides, rarely *Challengeria tridens* and some other styliplankton forms.

c. Haul 2,600—0 m. Temp. at 2,700 m. —1,48, sal. 34,96. Chiefly as *a* but with radiolarians of many species sparingly. Among the radiolarians were found a number of new forms which will be described further on. Among known forms *Aulacantha lævissima*, *Challengeria tridens* and *Trochodiscus echinidiscus* are known from the Färöe Channel, *Stichopilium Davisianum* from the bottom mud near Greenland, also *Artrostrobus annulatus*, which latter was first found near Kamtchatka. *Dictyophimus gracilipes* is known from Kamtchatka only. *Challengeria Harstoni* was dredged by the Challenger-expedition from the abysmal depths east of Japan. Among the new forms is *Polypetta holostoma*, allied to *P. tabulata* from the central Indian Ocean. *Aulodendron antarcticum*, *Auloscena spectabilis* and *Sagenoscena penicillata* are known from the Antarctic Ocean only.

4. **Station P.** August 1th. Lat. 76° 36′ N. Long. 12° 13′ E.

a. Haul 25—0 m. Temp. at 0 m. 7,1, at 25 m. 5,8. Sal. at 0 m. and at 25 m. 35,12. Styliplankton and trichoplankton as west of Spitzbergen.

b. Haul 50—0 m. Temp. at 50 m. 4,98. Sal. 35,13. Similar to *a*.

c. Haul 100—0 m. Temp. at 100 m. 3,75. Sal. 35,05. Similar to *a*.

d. Haul 500—0 m. Temp. at 500 m. 2,5. Sal. 35,10. As *a*, but contained some radiolarians, as *Artrotrobus annulatus, Dictyophimus gracilipes, Acanthocorys umbellifera.*

5. **Station S.** Aug. 20th. Lat. 81° 14′. Long. 22° 50′ E.

a. Haul 10—0 m. Temp. at 0 m. 0,38, sal. 32,49. Temp. at 10 m. 1,18, sal. 33,42. Plankton chiefly trichoplankton (most common: *Chætoceros borealis, C. bor. v. Brightwelli, C. criophilus, Rhizosolenia obtusa* and *Thalassiosira gravida*) and sparingly arctic neritic plankton (*Chætoceros diadema, Leptocylindrus danicus*).

b. Haul 25—0 m. Temp. at 30 m. 3,3. Sal. 34,41. The same as *a*.

c. Haul 130—0 m. Temp. at 100 m. 1,7, at 150 m. 1,98. Sal. at 100 m. 34,77, at 150 m. 34,83. Plankton as in *a*, but some animals indicate the presence of styliplankton.

6. **Station T.** August 27th. Lat. 79° 58′ N. Long. 9° 35′ E.

a. Haul 10—0 m. Temp. at 0 m. 4,58. S. 34,53. This gathering contained the following:

Chætoplankton.	Trichoplankton with northern and arctic neritic plankton.	Styliplankton.
Chætoceros borealis r,	*Chætoceros atlanticus r,*	*Rhizosolenia gracillima* +,
C. criophilus c,	*C. borealis r,*	*R. hebetata r,*
C. decipiens r,	*var. Brightwellii* +,	*R. styliformis r.*
Phæocystis Pouchetii +.	*C. criophilus c,*	
	C. diadema c,	
	C. teres r,	
	Leptocylindrus danicus r,	
	Thalassiosira gravida c,	
	Dinobryum r.	

The plankton is thus constituted principally of trichoplankton with some arctic or northern neritic plankton and contains a small amount of chæto- and styliplankton.

b. Haul 100—0 m. Temp. at 100 m. 3,7. Sal. 35,12. Plankton similar to *a*, but contained besides *Globigerina, Challengeria tridens, Plectophora arachnoides,* which indicate an increased amount of styliplankton.

c. Haul 400—0 m. Temp. at 430 m. 1,5. Sal. 35,06.

Similar to *b* but with some additional styliplankton-forms as *Diplopsalis lenticula* (*rr*), *Chæt. borealis var. solitaria* (*r*), *Chætos. volans* (*r*), *Oithona plumifera, Oncæa minuta,* indicating an increased amount of styliplankton. This sample was examined for radiolarians, of which several new forms were found. Among known species were found *Challengeria Harstoni* and *Dictyophimus gracilipes* as in the deep-sea haul at the station O

and besides *Acanthocorys umbellifera* (stylipl.) and *Theocalyptra cornuta*, the last named being known from Kamtchatka and Greenland and found by me this year (7. III) in the surface at 63° 1′ N. and 1° 36′ E.

The conclusion is that the water below 100 m. contains styliplankton and is covered with a sheet of trichoplankton-water.

7. **Station U.** September 1th. Lat. 75° 50′. Long. 15° 25′ E.

a. Haul 2—0 m. Temp. at 0 m. 5,73. Sal. 34,91. The plankton contained:

Chætoplankton.	Tricho- and northern neritic plankton.	Styliplankton.
Chætoceros criophilus cc,	*Chætoceros criophilus cc,*	*Rhizosolenia styliformis r.*
C. decipiens rr.	*C. diadema c,*	
	C. laciniosus r.	

Chiefly trichopl. with traces only of styli- and chætopl.

b. Haul 100—0 m. Similar to *a.*

c. Haul 320—0 m. Temp. at 350 m. 2,73. Sal. 35,13. Similar to *a*, but also with animals of the stylitype (*Oithona plumifera, Oncæa minuta, Challengeria tridens* etc.). This sample was examined for radiolarians, of which were found *Challengeria Harstoni, Acanthocorys umbellifera, Theocalyptra cornuta, Dictyophimus gracilipes* etc. indicating the same kind of water as in the deeper strata at St. O, T etc.

8. **Station X.** September 5th. Lat. 71° 50′. Long. 19° 2′ E.

a. Haul 25—0 m. Temp. at 0 m. 9,08. Sal. 34,96.

Northern neritic plankton.	Styli- and triposplankton.
Ceratium tripos v. longipes c,	*Halosphæra viridis* +,
Dinophysis acuta r,	*Ceratium furca* +,
Gonyaulax spinifera r,	*C. fusus r,*
Peridinium depressum r,	*C. lineatum rr,*
P. ovatum r,	*C. tripos* +,
P. pellucidum r,	*C. trip. v. macroceros c,*
Chætoceros borealis v. Brightwellii r,	*Rhizosolenia alata r,*
C. contortus r.	*R. gracillima cc,*
	R. hebetata rr,
	R. styliformis rr.

The plankton contained, besides, *Globigerina, Acanthometron quadrifolium* and other species of the stylitype. The constituent plankton was thus styliplankton mixed with some northern neritic plankton.

b. Haul 230—0 m. Temp. at 200 m. 5,5. Sal. 35,13.

The plankton was nearly the same as in *a* and was examined for radiolarians. Among known forms were noted *Challengeria tridens, Acanthocorys umbellifera, Lithomitra lineata* and *Cromyomma zonaster*, the last named known from Greenland (2,000 m.).

The general result of this examination of the deep-sea gatherings might be summarized as follows:

The deeper strata with the sal. 35 contain chiefly styliplankton (from the eastern temperate Atlantic and Färöe Channel). This water reaches the surface at St. X.

The upper strata with 32—34 sal. contain at the stations N and O *chætoplankton*, at the stations M, P, S, T, U *trichoplankton*. As the latter type has been found this spring ruling in the region east of Greenland and north of Iceland it may derive from that part of the Ocean.

Organisms, found in the plankton-gatherings of the »Antarctic» 1898.

In the following I give a list of all the organisms, found by me in the plankton-gathering, as well as the dates etc. for every form. By »Temp.» I denote the temperature of the water in centigrades, by »Sal.» the salinity pro mille, by »Fq.» the frequency, whether *rr*, very rare, *r* rare, + not rare, *c* common, *cc* very common, or *ccc* principal constituent of the plankton. The sign × denotes dead specimens. By »Pl.» I understand the ruling plankton-type viz.: *C* chætoplankton, *Ng* arctic neritic plankton, *Nm* southern neritic plankton, *Ns* northern neritic plankton, *S* styliplankton, *T* trichoplankton and *Tp* triposplankton.

Amphipoda.

Euthemisto libellula (Mandt).

Surface: 26. VII. 78° 13′ N. 7° 30′ E. Temp. 5,38. Sal. 34,89.

Cladocera.

Evadne Nordmanni Lovén.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	*c*	*Tp Ns*
28 V	58° 14′	4° 40′ E.	8,8	31,83	+	*Ns Tp*
28 V	58° 41′	4° 34′ E.	8,30	33,04	+	*Ns Tp*
29 V	60° 13′	4° 24′ E.	8,35	33,32	+	*Ns Tp*
5 IX	71° 57′	19° E.	9,08	34.96	+	*Tp* (*Ns*)

E. spinifera P. F. Müll.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	+	*Tp Ns*
29 V	60° 13′	4° 24′ E.	8,35	33,32	*r*	*Ns Tp*
30 V	63° 13′	5° 15′ E.	8,17	34,53	*c*	*Tp Ns*
30 V	63° 52′	6° 5′ E.	8	34,53	*c*	*Tp Ns*

Podon intermedius Lilljeb.

Surface: 27 V. Lat. N. 57° 50′. Long. 6° E. Temp. 8,70. Sal. 33,69. Fq. +. Pl. *Tp Ns.*

P. Leuckarti G. O. Sars.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	*r*	*Tp Ns*
29 V	60° 13′	4° 24′ E.	8,35	33,32	+	*Ns Tp*

Copepoda.

Acartia Clausii Giesbr.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	+	*Tp Ns*
28 V	58° 14′	4° 40′ E.	8,80	31,83	+	*Ns Tp*
28 V	58° 41′	4° 34′ E.	8,30	33,04	+	*Ns Tp*
30 V	63° 52′	6° 5′ E.	8	34,53	+	*Tp Ns*
1 VI	66° 42′	10° 30′ E.	8,53	34,69	*r*	*T S*
10 VI	71° 10′	21° 31′ E.	6,71	35,20	+	*C S*
5 IX	71° 57′	19° E.	9,08	34,96	+	*Tp (Ns)*
5 IX	71° 14′	19° 38′ E.	9,40	34,92	*r*	*Tp Ns*

A. longiremis (Lilljeb.).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	+	*Tp Ns*
28 V	58° 14′	4° 40′ E.	8,8	31,83	+	*Ns Tp*
28 V	58° 41′	4° 34′ E.	8,30	33,04	*c*	*Ns Tp*
29 V	60° 13′	4° 24′ E.	8,35	33,32	*c*	*Ns Tp*
30 V	63° 52′	6° 5′ E.	8	34,53	*r*	*Tp Ns*

Calanus finmarchicus (GUNN.).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	+	*Tp Ns*	21 VI	76° 27′	25° 55′ E.	0,24	33,68	*c*	(*C*)
28 V	58° 14′	4° 40′ E.	8,8	31,83	+	*Ns Tp*	23 VI	77° 15′	27° 10′ E.	0,97	33,15	*c*	(*C*)
28 V	58° 41′	4° 34′ E.	8,30	33,04	+	*Ns Tp*	25 VI	76° 34′	17° 24′ E.	0,6	33,80	+	
29 V	60° 13′	4° 24′ E.	8,35	33,32	+	*Ns Tp*	28 VIII	78° 23′	10° 23′ E.	6,06	34,94	*cc*	*T*
31 V	65° 34′	8° 45′ E.	8,83	35,00	*c*	*Ns T*	29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*r*	*T S*
31 V	65° 47′	9° 10′ E.	9,01	34,67	+	*Ns Tp*	2 IX	75° 24′	16° 47′ E.	5,64	35,12	+	*T* (*S*)
1 VI	66° 42′	10° 30′ E.	8,53	34,69	*c*	*T Tp Ns*	3 IX	74° 16′	19° 10′ E.	2,83	34,36	*ccc*	*T*
2 VI	69° 15′	15° 25′ E.	7,35	34,23	*ccc*	*T*	4 IX	72° 43′	18° 43′ E.	8,8	35,01	*c*	*Tp Ns*
10 VI	71° 42′	22° 35′ E.	6,40	35,15	*cc*	*T C S*	4 IX	72° 29′	18° 48′ E.	8,87	35,04	*c*	*Tp Ns*
12 VI	73° 40′	22° 40′ E.	2,40	35,05	*c*	*C*	5 IX	71° 14′	19° 38′ E.	9,40	34,92	+	*Tp Ns*

Microsetella atlantica (BRADY & ROB.).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
29 V	60° 13′	4° 24′ E.	8,35	33,32	*r*	*Ns Tp*
29 V	61° 40′	4° 20′ E.	7,05	33,47	*r*	*Ns Tp*
30 V	63° 52′	6° 5′ E.	8	34,53	*r*	*Tp Ns*
31 VIII	76° 12′	12° 18′ E.	6,26	35,15	*r*	*S*
3 IX	74° 42′	16° 42′ E.	7,24	35,17	*r*	*T* (*S*)
4 IX	72° 43′	18° 43′ E.	8,8	35,01	+	*Tp Ns*
4 IX	72° 29′	18° 48′ E.	8,87	35,04	*r*	*Tp Ns*
5 IX	71° 14′	19° 38′ E.	9,40	34,92	*r*	*Tp Ns*
6 IX	70° 33′	20° 32′ E.	9,37	34,41	*r*	*Tp Ns*

Oithona plumifera BAIRD.

Surface: 9 VI. Lat. N. 70° 59′. Long. E. 20° 43′. Temp. 7,15. Sal. 34,83. Fq. *rr*. Pl. *C* (*S*).

O. similis CLAUS.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	*c*	*Tp Ns*	25 VIII	79° 53′	11° 22′ E.	2,77	33,75	+	*C* (*S*) *Ng*
30 VII	78° 12′	0° 17′ W.	4,59	34,53	+	*C*	28 VIII	78° 23′	10° 23′ E.	6,06	34,94	+	*T*
1 VIII	76° 36′	12° 8′ E.	7,38	35,12	+	*C T*	29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*T S*
3 VIII	77° 46′	26° 18′ E.	1,23	30,98	+	*C* (*Ng*)	29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*r*	*T S*
16 VIII	78° 27′	32° 30′ E.	1,52	33,46	+	(*C*) *Ng*	30 VIII	76° 45′	8° 45′ E.	5,34	34,92	*c*	*S*
19 VIII	80° 27′	30° 15′ E.	—0,90	32,03	*r*	(*Ng*)	31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*r*	*S*
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	*r*	*Ng T*	31 VIII	76° 12′	12° 18′ E.	6,26	35,15	*c*	*S*
24 VIII	80° 8′	16° 32′ E.	3,44	33,59	*r*	(*Ng*)	1 IX	76° 2′	13° 8′ E.	6,61	35,13	*c*	*S T*

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
2 IX	75° 50′	15° 32′ E.	5,52	35,01	*c*	*S T*
2 IX	75° 24′	16° 47′ E.	5,64	35,12	+	*T (S)*
3 IX	74° 42′	16° 42′ E.	7.24	35,17	*c*	*T (S)*
4 IX	73° 36′	18° 50′ E.	7,06	35,03	*c*	*S (Ns)*
4 IX	72° 43′	18° 43′ E.	8,8	35,01	+	*Tp Ns*
4 IX	72° 29′	18° 48′ E.	8,87	35,04	+	*Tp Ns*
5 IX	71° 57′	19° E.	9,08	34,96	*cc*	*Tp (Ns)*
5 IX	71° 14′	19° 38′ E.	9,40	34,92	*cc*	*Tp (Ns)*

Oncæa minuta Giesbr.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
29 VIII	77° 38′	11° 40′ E.	6	34,89	+	*T S*
29 VIII	77° 23	10° 53′ E.	5,55	35,03	+	*T S*
31 VIII	76° 12′	12° 18′ E.	6,26	35,15	*r*	*S*
4 IX	72° 43′	18° 43′ E.	8,8	35,01	*r*	*Tp Ns*
5 IX	71° 57′	19° E.	9,08	34,96	*r*	*Tp (Ns)*

Habitat: Mediterranean (Giesbr.). Eastern Atlantic: in 1898 March to May the Azores to Bretagne, west of Bergen and Lofoten; in July: Lat. N. 65°. Long. E. 1°—6°.

Pseudocalanus elongatus (Boeck).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
29 V	61° 40′	4° 20′ E.	7,05	33,47	+	*Ns Tp*
25 VIII	79° 53′	11° 22′ E.	2,77	33,75	*r*	*C (S) Ng*

Temora longicornis (O. F. Müll.).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	*r*	*Tp Ns*
28 V	58° 41′	4° 34′ E.	8,30	33,04	+	*Ns Tp*
29 V	60° 13′	4° 24′ E.	8,35	33,32	*c*	*Ns Tp*
29 V	61° 40′	4° 20′ E.	7,05	33,47	*r*	*Ns Tp*
30 V	62° 41′	5° E.	7,47	33,12	*r*	*Ns Tp*
30 V	63° 52′	6° 5′ E.	8	34,53	*r*	*Tp Ns*

Ciliata.

Cyttarocylis denticulata (Ehb.). Brandt (Bibl. Zool. 1896) has some years ago split the *Tintinnus denticulatus* of Ehrenberg in several new species, which, however, seem to me to be mere varieties. But as it is of a certain importance for hydrography to distinguish also races I have tried to keep the forms separate. Around Spitzbergen was found, besides, a new variety *obtusa* (Aurivillius), which differs from var. *gigantea* by the apical end being rounded.

a. *typical C. denticulata.*

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
28 V	58° 14′	4° 40′ E.	8,8	31,83	*r*	*Ns Tp*
30 V	63° 52′	6° 5′ E.	8	34,53	+	*Tp Ns*
31 V	65° 47′	9° 10′ E.	9,01	34,67	*r*	*Ns Tp*
3 VIII	77° 46′	26° 18′ E.	1,23	30,98	*r*	(*Ng*)
15 VIII	77° 48′	32° 53′ E.	1,55	33,20	*r*	(*C*)
15 VIII	78° 38′	34° 30′ E.	1,52	34,30	*r*	*c*
16 VIII	78° 27′	32° 30′ E.	1,52	33,46	*r*	*Ng* (*C*)
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*T S*
31 VIII	76° 12′	12° 18′ E.	6,26	35,15	*r*	*S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*T S*
2 IX	75° 24′	16° 47′ E.	5,64	35,12	*c*	*T* (*S*)
4 IX	73° 36′	18° 50′ E.	7,06	35,03	*r*	*S* (*Ns*)

b. *Var. edentula* (C. edentula Brandt).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
26 VII	77° 53′	5° 3′ E.	4,78	34,57	*r*	(*C*)
30 VII	78° 12′	0° 17′ W.	4,59	34,53	*c*	(*C*)
31 VII	77° 14′	6° 34′ E.	5,35	34,77	*cc*	*S*
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*S T*
29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*c*	*S T*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*c*	*S T*

c. *Var. gigantea* (C. gigantea Brandt).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
29 V	61° 40′	4° 20′ E.	7,05	33,47	*r* ×	*Ns Tp*
30 V	62° 41′	5° E.	7,17	33,12	*r* ×	*Ns Tp*
30 V	63° 13′	5° 15′ E.	8,17	34,53	*r* ×	*Tp Ns*
31 V	65° 19′	8° 20′ E.	8,35	35,34	*r* ×	?

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
31 V	65° 34′	8° 45′ E.	8,83	35,00	*r*	*Ns T*	20 VIII	80° 45′	26° 40′ E.	0,13	32,20	*r*	(*Ng*)
1 VI	66° 42′	10° 30′ E.	8,53	34,69	*r* ×	*T Tp Ns*	28 VIII	78° 23′	10′ 23′ E.	6,06	34,94	*r*	*T* (*Ng*)
2 VI	68° 30′	13° 10′ E.	7,55	34,33	*r*	*Ns C*	29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*T S*
11 VI	72° 10′	21° 46′ E.	5,53	35,25	*r* ×	(*C T*)	31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*r* ×	*S*
12 VI	73° 40′	22° 40′ E.	2,40	35,05	*r*	*C*	1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*T S*
23 VI	77° 15′	27° 10° E.	0,97	33,15	*r*	(*C*)	2 IX	75° 50′	15° 32′ E.	5,52	35,01	*r* ×	*S T*
28 VII	77° 52′	3° 5′ W.	3,63	34,38	+	*C*	2 IX	75° 24′	16° 47′ E.	5,64	35,12	*c*	*T* (*S*)
3 VIII	77° 46′	26° 18′ E.	1,23	30,98	*c*	—	5 IX	71° 14′	19° 38′ E.	9,40	34,92	*c*	*Tp Ns*

d. *Var. media* (C. media Brandt).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
30 V	62° 41′	5° E.	7,47	33,12	*rr*	*Ns Tp*	29 VIII	77° 38′	11° 40′ E.	6	34,89	*c*	*T S*
26 VII	78° 13′	7° 30′ E.	5,34	34,89	*r*	—	29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*r*	*T S*
26 VII	77° 53′	5° 3′ E.	4,78	34,57	*r*	(*C*)	30 VIII	77°	8° 3′ E.	5,65	35,03	*r*	*T S*
30 VII	78° 12′	0° 17′ W.	4,59	34,53	+	*C*	30 VIII	76° 45′	8° 45′ E.	5,34	34,92	*r* ×	*S*
3 VIII	77° 3′	23° 35′ E.	3,94	34,45	*r*	(*C*)	31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*r*	*S*
15 VIII	77° 48′	32° 53′ E.	1,55	33,20	*r*	(*C*)	31 VIII	76° 12′	12° 18′ E.	6,26	35,15	+	*S*
16 VIII	78° 27′	32° 30′ E.	1,52	33,46	*r*	*Ng* (*C*)	2 IX	75° 50′	15° 32′ E.	5,52	35,01	*r*	*S T*
20 VIII	81° 8′	23° 35′ E.	0,71	32,84	*r*	*Ng*	2 IX	75° 24′	16° 47′ E.	5,64	35,12	*c*	*T* (*S*)
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	*r*	*Ng T*	3 IX	74° 42′	16° 42′ E.	7,24	35,17	*r*	*T* (*S*)
25 VIII	79° 53′	11° 22′ E.	2,77	33,75	+	*C* (*S*) *Ng*	4 IX	73° 36′	18° 50′ E.	7,06	35,03	*r*	*S* (*Ns*)
27 VIII	79° 58′	9° 35′ E.	4,53	34,53	*r*	*T*	4 IX	72° 43′	18° 43′ E.	8,8	35,01	*r*	*Tp Ns*
28 VIII	78° 23′	10° 23′ E.	6,06	34,94	*c*	*T*	5 IX	71° 57′	19′ E.	9,08	34,96	*r*	*Tp* (*Ns*)

e. *Var. obtusa* Auriv.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
21 VI	76° 27′	25° 55′ E.	0,24	33,68	*r*	(*C*)
3 VIII	77° 46′	26° 18′ E.	1,23	30,98	*r*	(*C*)
4 VIII	78° 18′	28° E.	2,12	33,01	*r*	*Ng C*
15 VIII	77° 48′	32° 53′ E	1,55	33,20	*r*	(*C*)
15 VIII	78° 38′	34° 30′ E.	1,52	33,21	+	*C*
16 VIII	78° 27′	32° 30′ R.	1,52	33,46	*c*	*Ng C*
18 VIII	79° 55′	32° 10′ E.	— 0,58	33,21	*r*	*Ng C*
19 VIII	80° 27′	30° 15′ E.	— 0,90	32,03	+	*Ng*

Fungella arctica Cl. N. Sp. By this name I propose to distinguish, provisionally, an organism, which, as I believe, belongs to the ciliate infusoria, but differs considerably from all known forms. Having had no opportunity of examining living specimens I am, at present, unable to characterize the new genus sufficiently. It seems to be nearest allied to the problematic Baltic form, designed by Hensen as »Sternhaarstatoblasten» and of which I have found some specimens in one of the hauls from Spitzbergen.

The Fig. 1, Pl. I represents on empty shell, which is very hyaline and structureless. The animal inhabits the central ovate cavity, which on alcohol-preserved specimens was quite filled by a granular mass.

Diam.: 0,18; height 0,096; diam. of the opening 0,028 mm.
Surface: 20. VIII. 80° 8′ N. 16° 32′ E. Temp. 3,44. Sal. 33,59.
Habitat: found recently on the coasts of Denmark, Holland and England.

Ptychocylis acuta Brandt.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
1 VI	66° 42′	10° 30′ E.	8,53	34,69	*r* ×	*T Tp Ns*
28 VIII	78° 23′	10° 23′ E.	6,06	34,94	+	*T (Ng)*
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*S T*
31 VIII	76° 12′	12° 18′ E.	6,26	35,15	*c*	*S*
1 IX	76° 2′	13° 8′ E.	6.61	35,13	*c*	*S T*
2 IX	75° 50′	15° 32′ E.	5,52	35,01	+	*S T*
2 IX	75° 24′	16° 47′ E.	5,64	35,12	+	*T (S)*
3 IX	74° 42′	16° 42′ E.	7,24	35,17	*c*	*T (S)*
4 IX	73° 36′	18° 50′ E.	7,06	35,03	*r*	*S (Ns)*
4 IX	72° 43′	18° 43′ E.	8,8	35,01	+	*Tp Ns*
5 IX	71° 57′	19° E.	9,08	34,96	*r*	*Tp (Ns)*
5 IX	71° 14′	19° 38′ E.	9,40	34,92	*r*	*Tp Ns*

As the planktontype *Ns* is derived from *T*, it is from the above dates evident that this species belongs to the trichotype.

P. obtusa Brandt. Being unable to distinguish between *P. obtusa* and *P. Drygalskii* Brandt, I believe that the above name comprises both.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
12 VI	73° 40′	22° 40′ E.	2,40	35,05	*r*	*C*	20 VIII	80° 45′	26° 40′ E.	0,13	32,20	*r*	*Ng*
20 VI	74° 53′	20° 17′ E.	0,16	34,76	*r*	*C (Ng)*	20 VIII	81° 8′	25° 35′ E.	0,71	32,84	*c*	*Ng*
21 VI	76° 27′	25° 55′ E.	0,24	33,68	*r*	*(C)*	21 VIII	80° 31′	18° 50′ E.	2,42	33,93	+	*Ng T*
23 VI	77° 15′	27° 10′ E.	0,97	33,15	+	*(C)*	24 VIII	80° 8′	16° 32′ E.	3,44	33,59	*r*	*(Ng)*
25 VI	76° 34′	17° 24′ E.	0,6	33,80	+	—	25 VIII	79° 53′	11° 22′ E.	2,77	33,75	+	*C (S) Ng*
26 VII	78° 13′	7° 30′ E.	5,34	34,89	*r*	—	27 VIII	79° 58′	9° 35° E.	4,58	34,53	*r*	*T*
3 VIII	77° 46′	26° 18′ E.	1,23	30,98	*r*	*(C Ng)*	28 VIII	78° 23′	10° 23′ E.	6,06	34,93	*r*	*T (Ng)*
4 VIII	78° 18′	28° E.	2,12	33,01	+	*Ng C*	29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*T C*
15 VIII	77° 48′	32° 53′ E.	1,55	33,20	+	*(C)*	29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*c*	*T S*
15 VIII	78° 38′	34° 30′ E.	1,52	33,21	+	*C*	30 VIII	77°	8° 3′ E.	5,65	35,03	*r*	*S*
16 VIII	78° 27′	32° 30′ E.	1,52	33,46	*c*	*Ng C*	30 VIII	76° 45′	8° 45′ E	5,34	34,92	*r*	*S*
18 VIII	79° 55′	32° 10′ E.	— 0,58	33,21	*r*	*Ng C*	31 VIII	76° 27′	10° 43′ E.	5,35	35,03	+ ×	*S*
19 VIII	80° 27′	30° 15′ E.	— 0,90	32,03	*c*	*Ng*	3 IX	74° 42′	16° 42′ E.	7,24	35,17	*r*	*T (S)*
20 VIII	81° 14′	22° 50′ E.	0,38	33,42	+	*T*							

This species is evidently an arctic neritic form, characterizing the type *Ng*.

Tintinnus? calyptra Cl. N. sp. Shell irregularly conical. Opening not denticulate. End closed. Some few, obliquely transverse lines are visible, especially towards the opening. Structure: small, rounded alveoli, arranged nearly quincuncially.

Diam.: 0,04; height 0,09 mm. Pl. I, fig. 2.
Very rare: 31. VIII. 76° 27′ N. 10° 43′ E. Temp. 5,35. Sal. 35,03. Pl. *S*.

T. minutus Brandt. As I have seen no figure of this species I am somewhat uncertain about the identification. The form which I suppose to be *T. minutus* is figured in the Pl. I, fig. 3 and differs from *T. gracilis* Brandt in the less close teeth only, so that the above name probably comprises both. Diam. 0,03; height 0,05 mm.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
3 VIII	77° 46′	26° 18′ E.	1,23	30,98	*r*	(*C Ng*)
15 VIII	78° 38′	34° 30′ E.	1,52	33,21	+	*C*
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	*r*	*Ng T*
25 VIII	79° 53′	11° 22′ E.	2,77	33,75	*r*	*C* (*S*) *Ng*
28 VIII	78° 23′	10° 23′ E.	6,06	34,94	*r*	*T* (*Ng*)
29 VIII	77° 38′	11° 40′ E.	6	34,89	+	*T S*
29 VIII	77° 23′	10° 53′ E.	5,55	35,03	+	*T S*
31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*r*	*S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	+	*S T*
3 IX	75° 50′	15° 32′ E.	5,52	35,01	*r* ×	*S T*

T.? pellucidus Cl. N. sp. Shell a thin, structureless, irregular tube, which towards the wider opening has a number of close and fine, transverse lines. No foreign agglutinated bodies.

Diam. 0,04; height 0,24 mm. Pl. 1, fig. 4.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
20 VIII	81° 14′	22° 50′ E.	1,18	33,42	*r*	*T*
20 VIII	81° 8′	23° 35′ E.	0,71	32,84	*r*	(*Ng*)
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	*r*	*Ng T*
27 VIII	79° 58′	9° 35′ E.	4,58	34,53	*r*	*T*

T. secatus Brandt.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp	Sal.	Fq.	Pl.
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	*r*	*Ng T*	30 VIII	77°	8° 3′ E.	5,65	35,03	*r*	*S*
25 VIII	79° 53′	11° 22′ E.	2,77	33,75	*r*	*C* (*S*) *Ng*	31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*r*	*S*
29 VIII	77° 38′	11° 40′ E.	6	34,89	*rr*	*S T*	1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*S T*
29 VIII	77° 23′	10° 53′ E.	5,55	35,03	+	*T S*							

Cystoflagellata.

Noctiluca miliaris Suriray.

28. V. Lat. N. 58° 41′. Long E. 4° 34′. Temp. 8,30. Sal. 33,04. Fq. *rr*. Pl. *Tp*.

Silicoflagellata.

Dictyocha speculum Ehb.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*r*	*S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*rr*	*S T*

Radiolaria.

Acanthochiasma Krohnii Hkl.

5. IX. Lat. N. 71° 50′. Long E. 19° 2′. Haul 250—0 m. Fq. *rr*. Pl. *S*.

Acanthocorys umbellifera Hkl.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
1 VIII	76° 36′	12° 13′ E.	500—0 m.	*r*	*T S*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*C S*
1 IX	75° 50′	15° 25′ E.	325—0 »	*r*	*S*
5 IX	71° 50′	19° 2′ E.	230—0 »	*r*	*S*

Habitat Mediterranean (Hkl.). Styliplankton of the warmer Atlantic. Färöe Channel (Cl.).

Acanthometron elasticum Hkl.

Surface: 31. VIII. Lat. N 76° 27′. Long E. 10° 43′. Temp. 5,35. Sal. 35,03. Fq. *rr*. Pl. *S*.

A. quadrifolium (Hkl.). — As I am unable to distinguish between *Acanthonia quadrifolia* and *Acanthometron catervatum* Hkl. the above name may comprise both. Also *Acanthometron siculum* does not seem to be anything but a larger and stouter form of the same species. In most samples with *A. quadrifol.* I have seen *Acanthostauros pallidus* (Clap. & Lachm.), which seems to me not to be anything but a younger form of

Acanthometron quadrifolium, as transitional forms exist. I therefore include this form in *A. quadrifolium*.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
4 IX	72° 43′	18° 43′ E.	8,8	35,01	*r*	*Tp Ns*
5 IX	71° 57′	19° E.	9,08	34,96	*c*	*Tp* (*Ns*)
5 IX	71° 14′	19° 38′ E.	9,40	34,92	*c*	*Tp Ns*
6 IX	70° 23′	20° 32′ E.	9,37	34,41	+	*Tp Ns*

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
26–27 VII	77° 39′	1° 18′ E.	500—0 m.	*r*	*T S*
1 IX	75° 50′	15° 25′ E.	325—0 »	*r*	*S*

Acanthonia Mülleri Hkl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
2 IX	75° 50′	15° 32 E.	5,52	35,01	*r*	*S T*
5 IX	71° 57′	19° E.	9,08	34,96	+	*Tp* (*Ns*)

Habitat: Mediterranean (Hkl.). — Styliplankton of the warmer Atlantic (Cl.).

Actinomma boreale Cl. N. sp.

a. *Primordial shell.* Thick walled, 0,06 mm. in diameter, with rounded, regular pores (0,003 to 0,005 mm. in diameter), two to three times broader than the bars, four on the radius. Spines in variable number, with triangular and forked apophyses half way to the apex. — Pl. I, fig. 5 *a*.

b. *Secundary* (*Haliomma-*)*shell.* Thick walled, 0,08 mm. in diameter, with rounded pores of unequal size (0,01 to 0,02 mm. in diameter), three to four on the radius. Bars 0,002 to 0,003 mm. thick. Spines in variable number, stout shorter than the radius, scattered at intervals. — Resembles *Haliomma beroes*. — Fig.: Pl. I, f. 5 *b*.

c. *Tertiary* (*Actinomma-*)*shell.* Thin walled, 0,1 to 0,12 mm. in diameter, with numerous, small (0,002 to 0,007 mm. in diameter), irregular rounded pores. Bars as broad as the pores. Spines numerous, scattered, half as long as the radius. — Fig.: Pl. I, f. 5 *c; d* structure.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
29—30 VII	78° 13′	2° 58′ W.	2,600—0 m.	*r*	*S C*
1 VIII	76° 36′	12° 13′ E.	500—0 »	*r*	*T S*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*S C*
1 IX	75° 50′	15° 25′ E.	325—0 »	*r*	*S*
5 IX	71° 50′	19° 2′ E.	230—0 »	*r*	*S*

Artrostrobus annulatus (Bail.) Hkl. Pl. 1. f. 6.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
29—30 VII	78° 13′	2° 58′ W.	2,600—0 m.	*r*	*C S*
1 VIII	76° 36′	12° 13′ E.	500—0 »	*r*	*T S*

Habitat: Kamtschatka, Greenland.

Aulacantha lævissima Hkl. As there exists no figure of this species in Haeckel's monograph, I am somewhat uncertain about the identification. Length of radial tubes about 1 mm. breadth 0,0012—0,0015 mm.; length of tangential tubes about 0,18 mm. — Pl. I, fig. 7 *a* radial *b* tangential tubes.

Deep-sea haul: 29—30 VIII. Lat. N. 78° 13′. Long W. 2° 58′. 2,600—0 m. Fq. + — (Fragments).
Habitat: Färöe Channel.

Aulodendron antarcticum Hkl. Detached spines perfectly agreeing with the figures in Haeckel's monograph.

Deep-sea haul: 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. Fq. *r*.
Habitat: Kerguelen.

Auloscena spectabilis Hkl. Fragments exactly agreeing with the figures in Haeckel's monograph.

Deep-sea haul: 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. Fq. +.
Habitat: Antarctic Ocean (surface).

Beroetta melo Cl. N. Sp. *Gen. char.* Family *Challengerida.* Shell without inner prominent tube of the mouth, with apical thoot but without marginal spines. Mouth simple, without peristome. Shell longitudinally furrowed. — *Sp. char.* Shell ovate. Length 0,09 mm. Breadth 0,05 mm. Longitudinal furrows 3 in 0,01 mm. Mouth 0,02 mm. in diameter.

Very rare in the deep-sea gathering: 29 – 30 VII. Lat. N. 78° 13′. Long. W. 2° 58. 2,600—0 m. Pl. I, f. 8.

Botryopyle setosa Cl. N. S. Length 0,065 mm. Breadth 0,05 mm. Cephalis trilobate, with rounded, irregular pores and some scattered setæ. Thorax twice as long as the cephalis, with very irregular pores of different size.

Pl. I, f. 10 *a; b* Cephalis from below, showing the septum.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
29—30 VII	78° 13′	2° 58′ W.	500—0 m.	*r*	*S C*
1 VIII	76° 36′	12° 13′ E.	500—0 »	*r*	*T S*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*C S*
1 IX	75° 50′	15° 25′ E.	325—0 »	*r*	*S*

Challengeria Harstonii J. MURRAY.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
29—30 VII	78° 13′	2° 58′ W.	2,600—0 m.	*r*	*S C*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*S C*
1 IX	75° 50′	15° 25′ E.	325—0 »	*r*	*S*

Habitat: The abysmal depths east of Japan.

C. tridens HKL.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*T S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*T S*

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
29—30 VII	78° 13′	2° 58′ W.	2,600—0 m.	*r*	*C S*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*C S*
1 IX	75° 50′	15° 25′ E.	325—0 »	*r*	*S*
5 IX	71° 50′	19° 2′ E.	230—0 »	*r*	*S*

Habitat: Färöe Channel.

Challengeron Nathorstii CL. N. sp. Shell ovate to subspherical, with a single spine at the apical pole, as long as the radius of the shell or longer. Diameter of the mouth half as long as the diameter of the shell. Structure: regular hexagonal alveoli, quincuncially arranged in obliquely decussating rows (3 in 0,01 mm.). Peristome finely punctate, with two long and pointed, hollow, almost parallel horns, and below each of them a triangular or ovate hole.

Diameter of the shell 0,06 to 0,08 mm. Pl. I, f. 9 *a*. Fig. 9 *b* structure.
The nearest relative is *C. diodon* from the south-eastern Pacific Ocean.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
27 VIII	79° 58′	9° 35′ E.	400—0 m.	*rr*	*S C*
5 IX	71° 50′	19° 2′ E.	230—0 »	*rr*	*S*

Habitat: Surface, 64° 25′ N.; 11° 50′ W. 10th March 1899.

Collozoum inerme (J. MÜLL.).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
9 VI	70° 54′	20° 43′ E.	7,15	34,83	*r*	*C (S)*
10 VI	71° 10′	21° 31′ E.	6,71	35,20	*c*	*C S*
10 VI	71° 42′	22° 35′ E.	6,40	35,15	*r*	*T C*

Habitat: Cosmopolitan, common in all warmer seas (Mediterranean, Atlantic, Indian and Pacific) HÆCKEL. — Not rare in the styliplankton of the eastern Atlantic (CL.).

Cromyomma zonaster (Ehb). Thick walled and obscure, 0,11 mm. in diameter, densely covered with thin, flexible, radial spines, as long as the radius. Pores rounded 0,005 to 0,007 mm. in diameter; bars 0,003 to 0,005 mm. broad.

Deep-sea haul: 5. IX. Lat. N. 71° 50′. Long. E. 19° 2′. Fq. *rr*. Pl. *S*.

Habitat: Greenland, abysmal.

Dictyocephalus sp. In one of the deep-sea hauls was found one specimen (Pl. II, fig. 1) which perhaps may be *D. obtusus* or *Lophophæna obtusa* Ehb. Micrg. XXII, f. 40.

Dictyophimus gracilipes Bail. *Cephalis* hemispherical, with a single stout horn of variable length. Pores rounded. *Thorax* a three-sided smooth pyramide, with three decurrent ribs, prolonged in long, smooth three-sided feet. Pores rounded, irregular, decreasing in size towards the cephalis.

Cephalis 0,02 mm. long; horn 0,04—0,05 mm. Thorax 0,05 mm. long and 0,07 mm. broad. Pl. II, fig. 2.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
29—30 VII	78° 13′	2° 58′ W.	2,600—0 m.	*r*	*C S*
1 VIII	76° 36′	12° 13′ E.	500—0 »	*r*	*T S*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*C S*
1 IX	75° 50′	15° 25′ E.	325—0 »	*r*	*S*

Habitat: Kamtschatka and the north Pacific Ocean.

Euphysetta Nathorstii Cl. N. sp. Shell ovate, with a single spine on the apical pole. Structure double: coarser longitudinal (9 in 0,01 mm.) and transverse (8 to 9 in 0,01 mm.) faint ribs crossing each other at right angles and, besides, very small puncta arranged in obliquely decussating rows (17 in 0,01 mm.). Peristome short and wide, with four slender articulate teeth, three of the same length but the fourth much longer. From the middle of the fourth tooht there issues in the middle a small spine.

Length 0,06 mm. Breadth 0,04 mm. Pl. II, fig. 3.

Deep-sea haul: 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. Fq. *rr*. Depth 2,600—0 m.

Of the genus Euphysetta three species only are known, all from the tropical and southern Atlantic.

Euscenium tricolpium Hkl.

Deep-sea haul: 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. Fq. *rr*. Depth 2,600—0 m.

Habitat: Central Pacific Ocean, abysmal (Hkl.). — Northern Atlantic, between Shetlands and Norway, surface (March 1898 Cl.).

Gazelletta sp.

Fragments of the feet (smooth) were found in the deep-sea haul: 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. Depth 2,600—0 m.

Heliosphæra actinota Hkl.

One small specimen (Diam. 0,06 mm. Pores three on the radius, 0,013 mm. broad) in the deep-sea haul 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. 2,600—0 m.

Habitat: Mediterranean, Canaries, Azores (Hkl.).

Hexadoras borealis Cl. N. sp.

Primordial shell: irregularly spherical, 0,03 to 0,04 mm. in diameter, with irregular, rounded or polygonal pores, 2 to 3 on the radius, and thin bars. Spines six, exceptionally more, strong, with triangular apophyses in the middle. Pl. II, fig. 4 *a*.

Outer shell: a rounded or octahedric, more or less intricate net-work of anastomosing, silicious threads, issuing from the proximal edges of the spines. Spines usually six (rarely as in *Rhizoplegma* 8 to 10) strong, three-sided slightly spirally twisted, with elegantly aculeate, winged edges.

Diam. 0,12 to 0,16 mm. Spines 0,1 mm. Pl. II, fig. 4 *b*, *c*.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
1 VIII	76° 36′	12° 13′ E.	500—0 m.	*r*	*T S*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*C S*
5 IX	71° 50′	19° 2′ E.	230—0 »	*r*	*S*

Habitat: North Atlantic, between Shetlands and Norway, surface, March 1898 (Cl.).

Litholophus ligurinus Hkl. (*L. arcticus* Auriv.).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
26 VII	78° 13′	7° 30′ E.	5,34	34,89	*r*	—
27 VIII	79° 58′	9° 35′ E.	4,58	34,53	*r*	*T*
29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*r*	*S T*
31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*r*	*S*
31 VIII	76° 12′	12° 18′ E.	6,26	35,15	*r*	*S*

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
26—27 VII	77° 39′	1° 18′ E.	100—0 m.	+	*T S*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*C S*

Habitat: Mediterranean, central Pacific Ocean (Hkl.).

Lithomitra australis (Ehb.)? The shell Pl. II, fig. 5 seems to be the upper joints of Eucyrtidium australe Ehb. from the South Polar ice (Microg. 35 A XXI, f. 18). It was found very rarely in the haul 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. 2,600—0 m. Fig. 6, Pl. II represents a nearly related form from the same gathering.

L. lineata (Ehb.). Pl. II, fig. 7.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
29—30 VII	78° 13′	2° 58′ W.	2,600—0 m.	*r*	*C S*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*C S*
5 IX	71° 50′	19° 2′ E.	230—0 »	*r*	*S*

Habitat: Mediterranean, Atlantic, Indian and Pacific Oceans (Hkl.).

Peridium (?) intricatum Cl. N. sp. Shell irregularly polyhedral, of a very loose and irregular frame-work with large, polygonal meshes, the apical being the largest. Basal plate with three large meshes of about the same size. Horn short.

Pl. II, fig. 8 *a* and *b* in different foci.
Diameter of the shell 0,08 mm.
Deep-sea haul: 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. 2,600—0 m. One single specimen.

P. (?) laxum Cl. N. sp. Shell irregularly polyhedral of a very loose frame-work, with large polygonal and irregular meshes, the apical being the largest. Basal plate with two cardinal and two jugular meshes of about the same size. Horn a fine bristle, half as long as the shell.

Pl. II, fig. 9 *a*, *b* (in different foci).
Diam. of the shell 0,05 mm.
Deep-sea haul: 5. IX. Lat. N. 71° 50′. Long. E. 19° 2′. 230—0 m. One single specimen.

P. (?) minutum Cl. N. sp. By this name I denote provisionally a very small shell, which perhaps might be the primordial shell of *Dictyophimus gracilipes* or *Acanthocorys umbellifera*, to which I have not yet succeeded in finding transitional forms. It is represented on the Pl. III, fig. 1 *a*, *b*, *c*, the two latter being the same shell in different foci. — The diameter of the shell 0,03 to 0,04 mm.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
23—30 VII	78° 13′	2° 58′ W.	2,600—2 m.	*r*	*C S*
27 VIII	71° 50′	9° 35′ E.	400—0 »	*r*	*C S*

Phorticium pylonium Hkl. To this variable and cosmopolitan species I refer the shell figured on the Pl. III, fig. 2 *a*, *b*, *c*. The fig. *d* represents the *primordial shell*, which occurs isolated in the deep-sea gatherings and bears a strong resemblance to *Haliomma æquorea* Ehb. (Microg. XIX, 51 from Aegina).

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
29—30 VII	78° 13′	2° 58′ W.	2,600—0 m.	*r*	*S C*
1 VIII	76° 36′	12° 13′ E.	500—0 »	*r*	*T S*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*C S*
1 IX	75° 50′	15° 25′ E.	325—0 »	*r*	*S*
5 IX	71° 50′	19° 2′ E.	230—0 »	*r*	*S*

Plectophora arachnoides (Clap. & Lachm.) Hkl. In this species I include also *Plagiacantha arachnoides* (Clap. & Lachm.) Hkl., which represents the young state. The net-work combining the spines is subject to great variation.

Surface:

Date.	Lat. N.	Long.	Temp	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
10 VI	71° 10′	21°31′ E.	6,71	35,20	*r*	*C S*	1 IX	76° 2°	13° 8′ E.	6,61	35,13	*r*	*S T*
28 VIII	78° 23′	10°23′ E.	6,06	34,94	*r*	*T*	2 IX	75° 50′	15°32′ E.	5,52	35,01	+	*S T*
29 VIII	77° 38′	11°40′ E.	6	34,89	*r*	*T S*	2 IX	75° 24′	16°47′ E.	5,64	35,12	*r*	*T* (*S*)
30 VIII	77°	8° 3′ E.	5,65	35,03	*r*	*S*	3 IX	74° 42′	16°42′ E.	7,24	35,17	*r*	*T* (*S*)
30 VIII	76° 45′	8°45′ E.	5,34	34,92	*r*	*S*	4 IX	73° 36′	18°50′ E.	7,06	35,03	*r*	*S* (*Ns*)
31 VIII	76° 27′	10°43′ E	5,35	35,03	*r*	*S*	6 IX	70° 23′	20°32′ E.	9,37	34,41	*r*	*Tp* (*Ns*)
31 VIII	76° 12′	12°18′ E.	6,26	35,15	*r*	*S*							

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
1 VIII	76° 36′	12° 13′ E.	500—0 m.	*r*	*T S*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*C S*
1 IX	75° 50′	15° 25′ E.	325—0 »	*r*	*S*

Habitat: Coasts of Scotland and Norway. Newfoundland Banks (CL.).

Plectanium (?) simplex CL. N. sp. — Bars thin, cylindrical, each divided at the distal end into three branches, connected by thin threads into a delicate polyhedral network (Diam. 0,06 mm.).

Pl. III, fig. 3.
One single specimen in the haul 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. — 2,600—0 m.

Polypetta holostoma CL. N. sp. — Shell spherical. Structure: triangular alveoli (1,5 in 0,01 mm.) separated by prominent fine crests. At each point, where these crests cross each other, a short, small thorn arises. On the surface of the shell are scattered without order a number of narrow, structure-less, straight or slightly curved tubes, longer around the proboscis, where they are three to four times as long as the diameter of the shell. Proboscis a cylindrical tube, somewhat shorter than the diameter of the shell. The mouth with a narrow, undivided rim.

Diam. 0,09 to 0,1 mm.
Pl. III, fig. 4 *a*; *b* structure.
Deep-sea haul: 29—30 VII. Lat. N. 78° 13′. Lat. W. 2° 58′. — 2,600—0 m. *r*.
This species agrees in all respects, except the mouth, with *Polypetta tabulata* HKL. from the abysmal depth of the Indian Ocean.

Pterocorys irregularis CL. N. sp. — Cephalis nearly spherical, with one apical and one lateral horn. Its pores small and indistinct. Thorax with three strong, downwards directed horns, as long as the breadth of the thorax. Pores rounded, as broad as the bars, variable in size (0,002 to 0,006 mm. in diameter) and scattered without order. The upper part of the thorax provided with some few spines. Abdomen not distinctly separated from the thorax. Its pores similar to those of the thorax.

Length of cephalis 0,03, of thorax 0,07 mm., of abdomen 0,04 mm. Breadth of thorax 0,07 mm., of abdomen 0,08 mm.

Pl. IV, fig. 1.

The nearest allied form seems to be *P. columba*.

One specimen in the haul 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. — 2,600—0 m.

Habitat: Between Shetlands and Norway, surface, March 1898.

Sagenoscena penicillata Hkl. — Agrees with the description and figures in Hæckel's monograph with the exception that the radial rods have the same thickness as the tangential bars and are shorter than these, characteristics so trifling that I do not consider them sufficient for the distinction of a variety.

This species, known from the abysmal depths of the Antarctic Ocean, was found in fragments in the haul 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. — 2,600—0 m.

Sethoconus galea Cl. N. sp. — Shell campanulate or hemispherical, as long as broad (0,12 mm.), with rudimentary cephalis, not distinctly separated from the thorax. One apical spine and several small spines on the thorax. Pores irregularly polygonal, increasing in size from the apex, the largest 0,02 mm. in diameter.

Pl. IV, fig. 3.

Some few specimens in the haul 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. — 2,600—0 m.

Sethoconus tabulatus (Ehb.) Hkl.

Cephalis 0,013 mm. long. Thorax in length 0,06 mm., in breadth 0,045 mm. Largest pores 0,008 mm. in diameter. Cephalis with one delicate horn and several small bristles.

Pl. IV, fig. 2.

This species found by Ehrenberg in the abysmal depths of the Caribbean sea and by the Challenger Expedition in the abysmal depths between Ascension and Sierra Leone was found in the haul the 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. — 2,600—0 m.

Sethophormis sp.

A fragment of a species resembling *S. rotula* Hkl. was found in the haul 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. — 2,600—0 m.

Stichopilium davisianum (Ehb.). — Pl. IV, fig. 6.

Several specimens in the deep-sea hauls 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. — 2,600—0 m. and 1 IX. Lat. N. 75° 50′. Long. E. 15° 25′. — 325—0 m.

Habitat: Greenland, abysmal.

Theocalyptra cornuta Bail.

Length of cephalis 0,02, of thorax 0,08, of abdomen 0,01 mm. Diameter of the opening 0,14 mm. Diam. of the largest pores 0,014 mm.

Deep-sea hauls:

29—30 VII.	Lat. N.	78° 13′.	Long. W.	2° 58′.	Depth	2,600—0 m.	Fq. *r.*
27 VIII.	» »	79° 58′.	» E.	9° 35′.	»	400—0 »	» *r.*
1 IX	» »	75° 50′.	» »	15° 25′.	»	325—0 »	» *r.*

Habitat: Kamtschatka (Bail.), Greenland (Ehb.).

Theocorys borealis Cl. N. sp. — Cephalis hemisperical, with a short triangular horn and large, irregular, rounded pores. Thorax pear-shaped, with regular, circular

pores, as broad as the bars, quincuncially arranged (4 in 0,01 mm.). Abdomen short, narrower than the thorax, with some few, irregular and scattered pores. Mouth somewhat constricted, sometimes with a hyaline peristome.

Length of cephalis 0,015 mm., of thorax 0,03 mm., of abdomen 0,01 to 0,015 mm. Breadth of thorax 0,045 mm. Diameter of the mouth 0,027 mm.

Pl. III, fig. 5.

Resembles *Sethocorys odysseus* HKL. as to the shape and arrangement of the pores.

Deep-sea hauls:

Date.	Lat. N.	Long.	Depth.	Fq.	Pl.
29—30 VII	78° 13′	2° 58′ W.	2,600—0 m.	*r*	*S C*
27 VIII	79° 58′	9° 35′ E.	400—0 »	*r*	*C S*
1 IX	75° 50′	15° 25′ E.	325—0 »	*r*	*S*

Trochodiscus echinidiscus HKL.

Diam. of the shell 0,38 mm., of the pores 0,005 to 0,01 mm. Length of spines about a third of the radius.

Pl. IV, fig. 4.

One specimen in the deep-sea haul 29—30 VII. Lat. N. 78° 13′. Long. W. 2° 58′. — 2,600—0 m. *Habitat:* Färöe Channel (HKL.).

T. helioides CL. N. sp. — Shell 0,24 mm. in diameter, with rounded pores (0,005 to 0,007 mm. in diameter), twice as broad as the bars. Margin with numerous, about 20, spines, as long as the diameter.

Pl. IV, fig. 5.

Haul 27 VII. Lat. N. 78° 58′. Long. E. 9° 35′. — 400—0 m.

Rhizopoda.

Globigerina bulloides D'ORB.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*T S*
30 VIII	77°	8° 3′ E.	5,65	35,03	*r*	(*S*)
30 VIII	76° 45′	8° 45′ E.	5,34	34,92	*r*	*S*
31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*r*	*S*
31 VIII	76° 12′	12° 18′ E.	6,26	35,15	*r*	*S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*S T*
2 IX	75° 50′	15° 32′ E.	5,52	35,01	*r*	*S T*
3 IX	74° 42′	16° 42′ E.	7,24	35,17	*r*	*T* (*S*)
4 IX	72° 43′	18° 43′ E.	8,8	35,01	*r*	*Tp Ns*
5 IX	71° 57′	19° E.	9,08	34,96	*r*	*Tp* (*Ns*)
5 IX	71° 14′	19° 38′ E.	9,40	34,92	*r*	*Tp Ns*
6 IX	70° 23′	20° 30′ E.	9,37	34,41	*r*	*Tp Ns*

Chlorophyllaceæ.

Halosphæra viridis SCHMITZ.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	+	*Tp Ns*
30 V	63° 13′	5° 15′ E.	8,17	34,53	*r*	*Tp Ns*
4 IX	72° 43′	18° 43′ E.	8,8	35,01	*c*	*Tp Ns*
4 IX	72° 29′	18° 48′ E.	8,87	35,04	+	*Tp Ns*
5 IX	71° 57′	19° E.	9,08	34,96	*c*	*Tp (Ns)*
5 IX	71° 14′	19° 38′ E.	9,40	34,92	+	*Tp Ns*
6 IX	70° 23′	20° 32′ E.	9,37	34,41	*r*	*Tp Ns*

Flagellatæ.

Dinobryum pellucidum LEVANDER.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
26 VII	77° 39′	1° 18′ E.	5,07	32,22	*r*	—
28 VII	77° 52′	3° 5′ W.	3,63	34,38	*c*	—
15 VIII	77° 48′	32° 53′ E.	1,55	33,20	*r*	*(C)*
15 VIII	78° 38′	34° 30′ E.	1,52	33,21	+	*C*
16 VIII	78° 27′	32° 30′ E.	1,52	33,46	+	*Ng C*
18 VIII	79° 55′	32° 10′ E.	—0,58	33,21	*r*	*Ng (C)*
20 VIII	80° 45′	26° 40′ E.	0,13	32,20	*r*	*Ng*
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	*r*	*Ng T*
24 VIII	80° 8′	16° 32′ E.	3,44	33,59	+	*Ng*
25 VIII	79° 53′	11° 22′ E.	2,77	33,75	*r*	*C S Ng*
27 VIII	79° 58′	9° 35′ E.	4,58	34,53	*r*	*T*

Phæocystis Pouchetii LAGERH.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
11 VI	73° 3′	23° 28′ E.	5,15	35,37	*c*	*C*
12 VI	73° 40′	22° 40′ E.	2,40	35,05	*cc*	*C*
20 VI	74° 53′	20° 17′ E.	0,16	34,76	+	*C*
21 VI	76° 27′	25° 55′ E.	0,24	33,68	+	*(C)*
22 VI	76° 45′	26° E.	0,80	34,07	+	*(C)*
25 VI	76° 34′	17° 24′ E.	0,60	33,80	+	*((C))*
28 VII	77° 52′	3° 5′ W.	3,63	34,38	*c*	*C*
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	+	*Ng T*
27 VIII	79° 58′	9° 35′ E.	4,58	34,53	+	*T*

Dinoflagellatæ.

Ceratium furca Duj

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	+	*Tp Ns*	31 V	65° 47′	9° 10′ E.	9,01	34,67	*r*	*Ns Tp*
28 V	58° 14′	4° 40′ E.	8,8	31,83	+	*Ns Tp*	1 VI	66° 42′	10° 30′ E.	8,53	34,69	*c*	*T Tp Ns*
29 V	60° 13′	4° 24′ E.	8,35	33,32	+	*Ns Tp*	2 VI	68° 30′	13° 10′ E.	7,55	34,33	+	*Ns C*
30 V	62° 41′	5° E.	7,47	33,12	*r*	*Ns Tp*	2 VI	68° 49′	13° 50′ E.	7,70	34,16	+	*C Ns*
30 V	63° 13′	5° 15′ E.	8,17	34,53	+	*Tp Ns*	4 IX	72° 43′	18° 43′ E.	8,8	35,01	*c*	*Tp Ns*
30 V	63° 52′	6° 5′ E.	8	34,53	*c*	*Tp Ns*	5 IX	71° 57′	19° E.	9,08	34,96	*r*	*Tp (Ns)*
31 V	65° 19′	8° 20′ E.	8,35	35,34	*r*	—	5 IX	71° 14′	19° 38′ E.	9,40	34,92	*c*	*Tp Ns*
31 V	65° 34′	8° 45′ E.	8,83	35,00	+	*Ns T*	6 IX	70° 23′	20° 32′ E.	9,37	34,41	*c*	*Tp Ns*

C. fusus Duj.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	+	*Tp Ns*	31 V	65° 47′	9° 10′ E.	9,01	34,67	*r*	*Ns Tp*
28 V	58° 14′	4° 40′ E.	8,8	31,83	*r*	*Ns Tp*	2 VI	68° 49′	13° 50′ E.	7,70	34,16	+	*C Ns*
28 V	58° 41′	4° 34′ E.	8,30	33,04	*r*	*Ns Tp*	4 IX	73° 36′	18° 50′ E.	7,06	35,03	*r*	*S (Ns)*
29 V	60° 13′	4° 24′ E.	8,35	33,32	*r*	*Ns Tp*	4 IX	72° 43′	18° 43′ E.	8,8	35,01	*r*	*Tp Ns*
30 V	62° 41′	5° E.	7,47	33,12	*r*	*Ns Tp*	5 IX	71° 14′	19° 38′ E.	9,40	34,92	+	*Tp Ns*
30 V	65° 13′	5° 15′ E.	8,17	34,53	+	*Tp Ns*	6 IX	70° 23′	20° 32′ E.	9,37	34,41	*r*	*Tp Ns*
31 V	65° 34′	8° 45′ E.	8,83	35,00	*r*	*Ns T*							

C. lineatum Ehb. (= *C. furca v. baltica* Moebius).

This form cannot be considered as a mere variety of *C. furca*, and is always easy to reeognize. It belongs to the styliplankton of the warmer Atlantic, both in the East and the West. *C. furca* seems on the contrary to be confined to the east Atlantic.

Surface: 5 IX. Lat. N. 71° 50′. Long. E. 19° 2′. Fq. *rr.*

C. tripos Nitzsch.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	+	*Tp Ns*	31 V	65° 34′	8° 45′ E.	8,83	35,00	*r*	*Ns T*
28 V	58° 14′	4° 40′ E.	8,8	31,83	*c*	*Ns Tp*	31 V	65° 47′	9° 10′ E.	9,01	34,67	+	*Ns Tp*
28 V	58° 41′	4° 34′ E.	8,30	33,04	*c*	*Ns Tp*	1 VI	66° 42′	10° 30′ E.	8,53	34,69	*c*	*T Tp Ns*
29 V	60° 13′	4° 24′ E.	8,35	33,32	*c*	*Ns Tp*	4 IX	72° 43′	18° 43′ E.	8,8	35,01	+	*Tp Ns*
29 V	61° 40′	4° 20′ E.	7,05	33,47	+	*Ns Tp*	4 IX	72° 29	18° 48′ E.	8,87	35,04	+	*Tp Ns*
30 V	62° 41′	5° E.	7,47	33,12	*c*	*Ns Tp*	5 IX	71° 57′	19° E.	9,08	34,96	+	*Tp (Ns)*
30 V	63° 13′	5° 15′ E.	8,17	34,53	*cc*	*Tp Ns*	5 IX	71° 14′	19° 38′ E.	9,40	34,92	*c*	*Tp Ns*
30 V	63° 52′	6° 5′ E.	8	34,53	*c*	*Tp Ns*	6 IX	70° 23′	20° 32′ E.	9,37	34,41	+	*Tp Ns*
31 V	65° 19′	8° 20′ E.	8,35	35,34	+	?							

C. tripos var. arctica Ehb. — I do not, as Dr. Aurivillius, include under this name also the *var. longipes*, which I find always easy to distinguish from the original form, figured in the Microgeologie and by Claparède and Lachmann. The var. *arctica* occurs frequently, sometimes in immense number, in the Labrador current, in Davis strait and around Spitzbergen (optimum salinity 34 p. m.). It belongs thus to the tricho-plankton chiefly, but occurs also in the sira-plankton. The var. *longipes*, on the contrary, is a more neritic form, which occurs in the spring along the whole Norwegian coast-line, around Scotland and in Skagerak. It belongs to the northern neritic plankton.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
10 VI	71° 10′	21°31′ E.	6,71	35,20	*r*	*C S*	20 VIII	81° 8′	23°35′ E.	0,71	32,84	*r*	*Ng*
10 VI	71° 42′	22°35′ E.	6,40	35,15	*r*	*T C S*	21 VIII	80° 31′	18°50′ E.	2,42	33,93	*c*	*Ng T*
26 VII	78° 13′	7° 30′ E.	5,34	34,89	*r*	—	24 VIII	80° 8′	16°32′ E	3,44	33,59	*r*	*Ng*
26 VII	77° 53′	5° 3′ E.	4,78	34,57	*r*	((*C*))	25 VIII	79° 53′	11°22′ E.	2,77	33,75	*r*	*C (S) Ng*
30 VII	78° 12′	0° 17′ W.	4,59	34,53	+	(*C*)	29 VIII	77° 38′	11°40′ E.	6	34,89	*r*	*S T*
1 VIII	76° 36′	12° 8′ E.	7,38	35,12	+	*S T*	29 VIII	77° 23′	10°53′ E.	5,55	35,03	*r*	*S T*
3 VIII	77° 46′	26°18′ E.	1,23	30,98	*c*	(*C Ng*)	31 VIII	76° 12′	12°18′ E.	6,26	35,15	*r*	*S*
4 VIII	78° 18′	28° E.	2,12	33,01	*r*	*Ng C*	1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*S T*
15 VIII	78° 38′	34°30′ E.	1,52	33,21	+	*C*	2 IX	75° 50′	15°32′ E.	5,52	35,01	*r*	*S T*
16 VIII	78° 27′	32°30′ E.	1,52	33,46	+	*Ng C*	2 IX	75° 24′	16°47′ E.	5,64	35,12	*r*	*T (S)*
18 VIII	79° 55′	32°10′ E.	— 0,58	33,21	+	*Ng C*	3 IX	74° 42′	16°42′ E.	7,24	35,17	+	*T (S)*
20 VIII	81° 14′	22°50′ E.	1,18	33,42	*r*	*T*	4 IX	73° 36′	18°50′ E.	7,06	35,03	*c*	*S (Ns)*
20 VIII	80° 45′	26°40′ E.	0,13	32,20	*r*	(*Ng*)							

C. tripos var. bucephala Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	*r*	*Tp Ns*
5 IX	71° 57′	19° E.	9,08	34,96	*r*	*Tp (Ns)*

C. tripos var. horrida Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
31 V	65° 19′	8°20′ E.	8,35	35,34	*cc*	—
31 V	65° 34′	8°45′ E.	8,83	35,00	+	*Ns T*
2 VI	68° 30	13°10′ E.	7,55	34,33	*c*	*Ns C*
2 VI	68° 49′	13°50′ E.	7,70	34,16	*c*	*C Ns*
10 VI	71° 10′	21°31′ E.	6,71	35,20	*r*	*C S*
6 IX	70° 23′	20°32′ E.	9,37	34,41	*c*	*Tp Ns*

C. tripos var. longipes Bail.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	*cc*	*Tp Ns*	10 VI	71° 42′	22° 35′ E.	6,40	35,15	*r*	*T C S*
28 V	58° 14′	4° 40′ E.	8,8	31,83	*cc*	*Ns Tp*	15 VIII	77° 48′	32° 53′ E.	1,55	33,20	*r*	*(C)*
28 V	58° 41′	4° 34′ E.	8,30	33,04	*cc*	*Ns Tp*	20 VIII	81° 14′	22° 50′ E.	1,18	33,42	*r*	*T*
29 V	60° 13′	4° 24′ E.	8,35	33,32	*c*	*Ns Tp*	20 VIII	81° 8′	23° 35′ E.	0,71	32,84	*r*	*Ng*
29 V	61° 40′	4° 21′ E.	7,05	33,47	*cc*	*Ns Tp*	31 VIII	76° 12′	12° 18′ E	6,26	35,15	*r*	*S*
30 V	62° 41′	5° E.	7,47	33,12	*cc*	*Ns Tp*	1 IX	76° 2′	13° 8° E.	6,61	35,13	*r*	*S T*
30 V	63° 13′	5° 15′ E.	8,17	34,53	*cc*	*Tp Ns*	2 IX	75° 50′	15° 32′ E.	5,52	35,01	*r*	*S T*
30 V	63° 52′	6° 5′ E.	8	34,53	*cc*	*Tp Ns*	3 IX	74° 42′	16° 42′ E.	7,24	35,17	+	*T (S)*
31 V	65° 34′	8° 45′ E.	8,83	35,00	*cc*	*Ns T*	4 IX	73° 36′	18° 50′ E.	7,06	35,03	*c*	*S (Ns)*
31 V	65° 47′	9° 10′ E.	9,01	34,67	*c*	*Ns Tp*	4 IX	72° 43′	18° 43′ E.	8,8	35,01	*c*	*Tp Ns*
1 VI	66° 42′	10° 30′ E.	8,53	34,69	*c*	*T Tp Ns*	4 IX	72° 29′	18° 48′ E	8,87	35,04	*c*	*Tp Ns*
2 VI	68° 30′	13° 10′ E.	7,55	34,33	*c*	*Ns C*	5 IX	71° 57′	19° E.	9,08	34,96	*c*	*Tp (Ns)*
2 VI	68° 49′	13° 50′ E.	7,70	34,16	*c*	*C Ns*	5 IX	71° 14′	19° 38′ E.	9,40	34,92	*c*	*Tp (Ns)*
10 VI	71° 10′	21° 31′ E.	6,71	35,20	*r*	*C S*	6 IX	70° 23′	20° 32′ E.	9,37	34,41	*c*	*Tp (Ns)*

C. tripos var. macroceros Ehb.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	*c*	*Tp Ns*
28 V	58° 14′	4° 40′ E.	8,8	31,83	*r*	*Ns Tp*
28 V	58° 41′	4° 34′ E.	8,30	33,04	+	*Ns Tp*
29 V	60° 13′	4° 24′ E.	8,35	33,32	+	*Ns Tp*
29 V	61° 40′	4° 20′ E.	7,05	33,47	*r*	*Ns Tp*
30 V	63° 13′	5° 15′ E.	8,17	34,53	*r*	*Tp Ns*
30 V	63° 52′	6° 5′ E.	8	34,53	*r*	*Tp Ns*
31 V	65° 47′	9° 10′ E.	9,01	34,67	*r*	*Ns Tp*
29 VIII	77° 38′	11° 40′ E.	6	34,89	*rr*	*T S*
4 IX	72° 43′	18° 43′ E.	8,8	35,01	*c*	*Tp Ns*
4 IX	72° 29′	18° 48′ E.	8,87	35,04	*c*	*Tp Ns*
5 IX	71° 57′	19° E.	9,08	34,96	*ccc*	*Tp (Ns)*
5 IX	71° 14′	19° 38′ E.	9,40	34,92	*c*	*Tp Ns*
6 IX	70° 23′	20° 32′ E.	9,37	34,41	*c*	*Tp Ns*

Dinophysis acuta Ehb.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
28 V	58° 14′	4° 40′ E.	8,8	31,83	*r*	*Ns Tp*
29 V	60° 13′	4° 24′ E.	8,35	33,32	*r*	*Ns Tp*
30 V	62° 41′	5° E.	7,47	33,12	*r*	*Ns Tp*
30 V	63° 52′	6° 5′ E.	8	34,53	*r*	*Tp Ns*
25 VIII	79° 53′	11° 22′ E.	2,77	33,75	*r*	*C (S) Ng*
6 IX	70° 23′	20° 32′ E	9,37	34,41	*rr*	*Tp Ns*

D. granulata Cl. — Under this name I distinguish a very small form (Pl. IV, fig. 7) remarkable for its coarse structure. It seems to belong to the arctic neritic plankton.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
26 VII	77° 53′	5° 3′ E.	4,78	34,57	*r*	((*C*))
30 VII	78° 12′	0° 17′ W.	4,59	34,53	+	(*C*)
19 VIII	80° 27′	30° 15′ E.	—0,90	32,03	*r*	*Ng*
20 VIII	80° 45′	26° 40′ E.	0,13	32,20	*r*	*Ng*
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	*r*	*Ng*

D. rotundata. In several gatherings were found specimens, which could be considered as *D. rotundata*, but as I believe that several different forms have been confounded under this name, I leave them out.

Diplopsalis lenticula Bergh.

Deep-sea haul: 27 VII. Lat. N. 79° 58′. Long. E. 9° 35′. — 400—0 m. Rare.

Gonyaulax spinifera Clap. & Lachm.

Haul: 5 IX. Lat. N. 71° 50′. Long. E. 19° 2′. — 25—0 m. Rare.

Gymnaster pentasterias (Ehb.).

Haul: 27 VIII. Lat. N. 79° 58′. Long. E. 9° 35′. — 400—0 m. Rare.

Peridinium depressum (Bail.). — This form ought to be considered as a distinct species and not as a mere variety of *P. divergens*. The latter belongs to the tropical and temperate Atlantic (desmo-, styli- and triposplankton), the former to the northern and western Atlantic (tricho-, tripos- and northern neritic plankton).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	*c*	*Tp Ns*	1 VI	66° 42′	10° 30′ E.	8,53	34,69	*cc*	*T Tp Ns*
28 V	58° 14′	4° 40′ E.	8,8	31,83	+	*Ns Tp*	2 VI	68° 30′	13° 10′ E.	7,55	34,33	+	*Ns C*
29 V	60° 13′	4° 24′ E.	8,35	33,32	*r*	*Ns Tp*	2 VI	68° 49′	13° 50′ E.	7,70	34,16	*r*	*C Ns*
30 V	62° 41′	5° E.	7,47	33,12	+	*Ns Tp*	2 IX	75° 50′	15° 32′ E.	5,52	35,01	+	*S T*
30 V	63° 13′	5° 15′ E.	8,14	34,53	+	*Tp Ns*	4 IX	73° 36′	18° 50′ E.	7,06	35,03	+	*S (Ns)*
30 V	63° 52′	6° 5′ E.	8,00	34,53	+	*Tp Ns*	4 IX	72° 43′	18° 43′ E.	8,80	35,01	*r*	*Tp Ns*
31 V	65° 19′	8° 20′ E.	8,35	35,34	+	—	6 IX	70° 23′	20° 32′ E.	9,37	34,41	+	*Tp Ns*
31 V	65° 47′	9° 10′ E.	9,01	34,67	+	*Ns Tp*							

P. divergens Ehb.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*S T*
4 IX	72° 43′	18° 43′ E.	8,8	35,01	*c*	*Tp Ns*
5 IX	71° 14′	19° 38′ E.	9,40	34,92	+	*Tp Ns*

P. ovatum Pouchet.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
29 V	61° 40′	4° 20′ E.	7,05	33,47	*r*	*Ns Tp*
30 V	63° 52′	6° 5′ E.	8	34,53	*r*	*Tp Ns*
31 V	65° 34′	8° 45′ E.	8,83	35,00	*r*	*Ns T*
31 V	65° 47′	9° 10′ E.	9,01	34,67	*r*	*Ns (Tp)*
1 VI	66° 42′	10° 30′ E.	8,53	34,69	+	*T Tp Ns*
2 VI	68° 30′	13° 10′ E.	7,55	34,33	*r*	*Ns C*
21 VI	76° 27′	25° 55′ E.	0,24	33,68	*r*	*(C)*
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	*r*	*Ng*
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*T S*
31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*r*	*S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*S T*
2 IX	75° 50′	15° 32′ E.	5,52	35,01	*r*	*S T*
4 IX	72° 43′	18° 43′ E.	8,8	35,01	*r*	*Tp Ns*

P. pellucidum Bergh.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
21 VI	76° 27′	25° 55′ E.	0,24	33,68	+	*(C)*	18 VIII	79° 55′	32° 10′ E.	— 0,58	33,21	+	*Ng C*
25 VI	76° 34′	17° 24′ E.	0,6	33,80	+	—	19 VIII	80° 27′	30° 15′ E.	— 0,90	32,03	+	*Ng*
26 VI	76° 46′	15° 22′ E.	0,95	34,04	*r*	—	20 VIII	81° 14′	22° 50′ E.	1,18	33,42	*r*	*T*
26 VII	78° 13′	7° 30′ E.	5,34	34,89	*r*	—	20 VIII	80° 45′	26° 40′ E.	0,13	32,20	+	*(Ng)*
26 VII	77° 53′	5° 3′ E	4,78	34,57	+	*((C))*	20 VIII	81° 8′	23° 35′ E.	0,71	32,84	*c*	*(Ng)*
30 VII	78° 12′	0° 17′ W.	4,59	34,53	*c*	*(C)*	21 VIII	80° 31′	18° 50′ E.	2,42	33,93	*c*	*Ng T*
3 VIII	77° 3′	23° 35′ E.	3,94	34,45	*r*	*(C)*	25 VIII	79° 53′	11° 22′ E.	2,77	33,75	+	*C (S) Ng*
3 VIII	77° 46′	26° 18′ E.	1,23	30,98	+	*C (Ng)*	29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*c*	*T S*
4 VIII	78° 18′	28° E.	2,12	33,01	*c*	*Ng C*	31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*c*	*S*
16 VIII	78° 27′	32° 30′ E.	1,52	33,46	+	*Ng C*	1 IX	76° 2′	13° 8′ E.	6,61	35,13	*c*	*S T*

Phalacroma operculoides Schütt.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*T S*
29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*r*	*T S*
31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*r*	*S*

Diatomaceæ.

Asteromphalus atlanticus Cl.

Deep-sea haul: 29—30 VII. Lat. N. 78′ 13°. Long. W. 2′ 58°. Depth. 500—0 m. Fq. *rr.*

Chætoceros atlanticus Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
2 VI	68° 30′	13°10′ E.	7,55	34,33	*r*	*Ns S*
12 VI	73° 40′	22° 40′ E.	2,40	35,05	*r*	*C*
15 VIII	78° 38′	34°30′ E.	1,52	33,21	*r*	*C*
27 VIII	79° 58′	9°35′ E.	4,58	34,53	*rr*	*T*
29 VIII	77° 38′	11°40′ E.	6	34,89	*r*	*S T*
29 VIII	77° 23′	10°53′ E.	5,55	35,03	*rr*	*S T*
30 VIII	76° 45′	8°45′ E.	5,34	34,92	*rr*	*S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*S T*
3 IX	74° 42′	16° 42′ E.	7,24	35,17	*r*	*T (S)*

C. borealis Btw.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
30 V	63° 13′	5°15′ E.	8,17	34,53	*r*	*Tp Ns*
10 VI	71° 10′	21°31′ E.	6,71	35,20	+	*C S*
12 VI	73° 40′	22° 40′ E.	2,40	35,05	*r*	*C*
23 VI	77° 15′	27°10′ E.	0,97	33.15	*r*	*(C)*
3 VIII	77° 46′	26°18′ E.	1,23	30,98	*r*	*(C)*
15 VIII	77° 48′	32°53′ E.	1,55	33,20	*r*	*(C)*
15 VIII	78° 38′	34°30′ E.	1,52	33,21	*c*	*C*
20 VIII	81° 14′	22°50′ E.	1,18	33,42	*c*	*T*
20 VIII	81° 8′	23°35′ E.	0,71	32,84	+	*Ng*
21 VIII	80° 31′	18°50′ E.	2,42	33,93	+	*Ng*
25 VIII	79° 53′	11°22′ E.	2 77	33,75	*r*	*C (S) Ng*
27 VIII	79° 58′	9°35′ E.	4,58	34,53	*r*	*T*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*S T*
2 IX	75° 24′	16°47′ E.	5,64	35,12	*r*	*T (S)*
4 IX	73° 36′	18°50′ E.	7,06	35,03	+	*S (Ns)*

C. borealis var. Brightwellii Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp	Sal.	Fq.	Pl.
2 VI	68° 30′	13°10′ E.	7,55	34,33	*rr*	*Ns C*	1 IX	76° 2′	13° 8′ E.	6,61	35,13	+	*S T*
10 VI	71° 42′	22°35′ E.	6,40	35,15	+	*T C S*	2 IX	75° 24′	16°47′ E.	5,64	35,12	*r*	*T (S)*
20 VIII	81° 14′	22°50′ E.	1,18	33,42	*c*	*T*	3 IX	74° 42′	16° 42′ E.	7,24	35,17	*c*	*T (S)*
24 VIII	80° 8′	16°32′ E.	3,44	33,59	*r*	*Ng*	4 IX	73° 36′	18°50′ E.	7,06	35,03	*r*	*S (Ns)*
27 VIII	79° 58′	9°35′ E.	4,58	34,53	+	*T*	4 IX	72° 43′	18°43′ E.	8,8	35,01	*r*	*Tp Ns*
31 VIII	76° 12′	12°18′ E.	6,26	35,15	*r*	*S*							

C. borealis var. solitaria Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
9 VI	70° 54′	20° 43′ E.	7,15	34,83	+	*C S*
10 VI	71° 42′	22° 35′ E.	6,40	35,15	+	*T C S*
29 VIII	77° 23′	10° 53′ E.	5,55	35,03	+	*S T*
30 VIII	76° 45′	8° 43′ E.	5,34	34,92	*c*	*S*
31 VIII	76° 27′	10° 43′ E.	5,35	35,03	+	*S*
2 IX	75° 24′	16° 47′ E.	5,64	35,12	*r*	*T (S)*

C. contortus Schütt.

Deep-sea haul: 27 VIII. Lat. N. 79° 58′. Long E. 9° 35′. Depth 400—0 m. Fq. *r.*
5 IX. » » 71° 50′. » » 18° 2′. » 20—0 » » *r.*

C. criophilus Castr.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
2 VI	68° 30′	13° 10′ E.	7,55	34,33	*r*	*Ns C*	27 VIII	79° 58′	9° 35′ E.	4,58	34,53	*c*	*T*
2 VI	68° 49′	13° 50′ E.	7,70	34,16	*c*	*C Ns*	29 VIII	77° 38′	11° 40′ E.	6	34,89	+	*S T*
9 VI	70° 54′	20° 43′ E.	7,15	34,83	+	*C S*	29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*c*	*S T*
10 VI	71° 10′	21° 31′ E.	6,71	35,20	*r*	*C S*	31 VIII	76° 12′	12° 18′ E.	6,26	35,15	+	*S*
10 VI	71° 42′	22° 35′ E.	6,40	35,15	*c*	*T C S*	1 IX	76° 2′	13° 8′ E.	6,61	35,13	*c*	*S T*
20 VIII	81° 14′	22° 50′ E.	1,18	33,42	*c*	*T*	2 IX	75° 24′	16° 47′ E.	5,64	35,12	*c*	*T (S)*
20 VIII	81° 8′	23° 35′ E.	0,71	32,84	+	*Ng*	3 IX	74° 42′	16° 42′ E.	7,24	35,17	+	*T (S)*
24 VIII	80° 8′	16° 32′ E.	3,44	33,59	*r*	*Ng*	4 IX	73° 36′	18° 50′ E.	7,06	35,03	*r*	*S (Ns)*
25 VIII	79° 53	11° 22′ E.	2,77	33,75	*r*	*C (S) Ng*							

C. debilis Cl.

Haul: 27 VIII. Lat. N. 79° 58′. Long E. 9° 35′. Depth 400—0 m. Fq. *r.*

C. decipiens Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fp.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
2 VI	68° 30′	13° 10′ E.	7,55	34,33	+	*Ns C*	30 VII	78° 12′	0° 17 W.	4,59	34,53	+	*(C)*
2 VI	68° 49′	13° 50′ E.	7,70	34,16	*c*	*C Ns*	3 VIII	77° 3′	23° 35′ E.	3,94	34,45	*r*	*(C)*
9 VI	70° 54′	20° 43′ E.	7,15	34,83	*c*	*C S*	3 VIII	77° 46′	26° 18′ E.	1,23	30,98	*c*	*C Ng*
10 VI	71° 10′	21° 31′ E.	6,71	35,20	+	*C S*	4 VIII	78° 18′	28° E.	2,12	33,01	*r*	*Ng C*
10 VI	71° 42′	22° 35′ E.	6,40	35,15	*c*	*C T S*	15 VIII	77° 48′	32° 53′ E.	1,55	33,20	+	*(C)*
11 VI	72° 10′	21° 46′ E.	5,53	35,25	+	*(C T)*	15 VIII	78° 38′	34° 30′ E.	1,52	33,21	*cc*	*C*
11 VI	73° 3′	23° 28′ E.	5,15	35,37	*c*	*C*	16 VIII	78° 27′	32° 30′ E.	1,52	33,46	*r*	*Ng C*
12 VI	73° 40′	22° 40′ E.	2,40	35,05	*cc*	*C*	18 VIII	79° 55′	32° 10′ E.	—0,58	33,21	*r*	*Ng C*
23 VI	77 15′	27° 10′ E.	0,97	33,15	+	*(C)*	25 VIII	79° 53′	11° 22′ E.	2,77	33,75	+	*C (S) Ng*
26 VII	77° 53′	5° 3′ E.	4,78	34,57	+	*(C)*	27 VIII	79° 58′	9° 35′ E.	4,58	34,53	*r*	*T*
28 VII	77° 52′	3° 5′ W.	3,63	34,38	+	*C*	4 IX	72° 43′	18° 43′ E.	8,8	35,01	*r*	*Tp Ns*

C. diadema (Ehb.).

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
28 VII	77° 52′	3° 5′ W.	3,63	34,38	*r*	*C Ng*
20 VIII	81° 14′	22° 50′ E.	1,18	33,42	*r*	*T*
25 VIII	79° 53′	11° 22′ E.	2,77	33,75	+	*C (S) Ng*
27 VIII	79° 58′	9° 35′ E.	4,58	34,53	*c*	*T*
29 VIII	77° 38′	11° 40′ E.	6	34,89	+	*T S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*T S*

C. furcellatus Bail.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
12 VI	73° 40′	22° 40′ E.	2,40	35.05	+	*C (Ng)*
26 VI	76° 46′	15° 22′ E.	0,95	34,04	*r*	—
28 VII	77° 52′	3° 5′ W.	3,63	34,38	*r*	*C Ng*
25 VIII	79° 53′	11° 22′ E.	2,77	33,75	+	*C (S) Ng*

C. hiemalis Cl. — The *C. didymus* var. *hiemalis* Cl. (Phytoplakton of the Atlantic 21, Pl. I, fig. 18) cannot be considered as a mere variety of *C. didymus*. Perhaps identical with *C. brevis* Schütt.

Surfaee: 1 IX. Lat. N. 76° 2′. Long. E. 13° 8′. Temp. 6,61. Sal. 35,13. Fq. *r*. Pl. *S T*.

C. laciniosus Schütt.

Deep-sea haul: 1 IX. Lat. N. 75° 50′. Long. E. 15° 25′. Depth. 325—0 m. Fq. *r*.

C. teres Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
12 VI	73° 40′	22° 40′ E.	2,40	35.05	*r*	*C*
25 VIII	79° 53′	11° 22′ E.	2,77	33,75	+	*C (S) Ng*
27 VIII	79° 58′	9° 35′ E.	4,58	34,53	*r*	*T*
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*S T*

C. volans Schütt. — Having had an opportunity of examining original specimens of C. volans I have been convinced of its identity with *C. currens* Cl., which latter name must be abolishd.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
9 VI	70° 54′	20° 43′ E.	7,15	34,83	*c*	*C S*
31 VII	77° 14′	6° 34′ E.	5,35	34,77	*c*	*S*
1 VIII	76° 36′	12° 8′ E.	7,38	35,12	+	*S T*
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*T S*
29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*c*	*T S*
30 VIII	77	8° 3′ E.	5,65	35,03	*c*	*S*
30 VIII	76° 45′	8° 45′ E.	5,34	34,92	*c*	*S*
31 VIII	76° 27′	10° 43′ E.	5,35	35,03	*cc*	*S*
2 IX	75° 24′	16° 47′ E.	5,64	35,12	+	*T (S)*

Corethron hystrix Hensen. — This species is probably identical with *C. criophilum* Castr. from the Antarctic Ocean. According to a recent publication of Dr. Leuduger Fortmorel * this species occurs West of Africa in the region of Cape Verde together with *Chætoceros scolopendra* Cl. (= *C. spinosum* Leud.). Both are found also by me in a gathering (March 1898) from the same region. In March and April 1898 this species was found, besides, in the region of the Canaries and from the Azores to the mouth of the English Channel, in June and July around the Shetlands. In case C. hystrix be identical with C. criophilum this form goes thus, following the western coast of Africa, from the Antarctic to the Arctic region. It has also (once in March 1898) been seen North of the South American coast, but not in the intermediate region of the Sargasso Sea. The *Corethron hystrix*, although in general of rare occurrence, is a species of considerable interest and belongs evidently to the styliplankton.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
29 VIII	77° 38′	11° 40′ E.	6	34,89	*rr*	*T S*
29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*r*	*T S*
31 VIII	76° 26′	10° 43′ E.	5,35	35,03	*r*	*S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*c*	*S T*
2 IX	75° 24′	16° 47′ E.	5,64	35,12	*r*	*T (S)*
6 IX	70° 23′	20° 32′ E.	9,37	34,41	*r*	*Tp Ns*

Coscinodiscus oculus iridis Ehb.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
30 V	63° 13′	5° 15′ E.	8,17	34,53	*r*	*Tp Ns*	23 VI	77° 15′	27° 10′ E.	0,97	33,15	*c*	*C T*
10 VI	71° 10′	21° 31′ E.	6,71	35,20	+	*C S*	3 VIII	77° 46′	26° 18′ E.	1,23	30,98	+	*C (Ng)*
12 VI	73° 40′	22° 40′ E.	2,40	35,05	*r*	*C*	15 VIII	78° 38′	34° 30′ E.	1,52	32,21	*r*	*C*
23 VI	77° 25′	27° 30′ E.	—0,35	32,97	+	—	16 VIII	78° 27′	32° 30′ E.	1,52	33,46	*r*	*C Ng*
23 VI	77° 15′	27° 10′ E.	0,97	33,15	+	—	2 IX	75° 50′	15° 32′ E.	5,52	35,01	*r*	*T S*

* Diatomées marines de la côte occidentale d'Afrique. S:t Brieux 1898. 4:o.

Leptocylindrus danicus Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
30 V	63° 13′	5°15′ E.	8,17	34,53	*c*	*Tp Ns*
20 VIII	81° 14′	22°50′ E.	1,18	33,42	*r*	*T*
20 VIII	81° 8′	23°35′ E.	0,71	32,84	*r*	*Ng*
21 VIII	80° 31′	18°50′ E.	2,42	33,93	*r*	*Ng T*
27 VIII	79° 58′	9°35′ E.	4,58	34,53	*r*	*T*

Rhizosolenia alata Btw.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
30 VIII	76° 45′	8°45′ E.	5,34	34,92	+	*S*
4 IX	72° 43′	18°43′ E.	8,8	35,01	*r*	*Tp Ns*
5 IX	71° 57′	19° E.	9,08	34,96	*r*	*Tp (Ns)*

R(alata var.) gracillima Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
31 VII	77° 14′	6°34′ E.	5,35	34,77	*c*	*S*
25 VIII	79° 53′	11°22′ E.	2,77	33,75	*r*	*C (S) Ng*
27 VIII	79° 58′	9°35′ E	4,58	34,53	+	*T*
30 VIII	76° 45′	8°45′ E.	5,34	34,92	*c*	*S*
31 VIII	76° 27′	10°43′ R.	5,35	35,03	*r*	*S*
31 VIII	76° 12′	12°18′ E.	6,26	35,15	+	*S*
4 IX	72° 43′	18°43′ E.	8,8	35,01	*r*	*Tp Ns*
5 IX	71° 57′	19° E.	9,08	34,96	*c*	*Tp (Ns)*

R. hebetata Bail.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 VIII	79° 58′	9°35′ E.	4,58	34,53	*r*	*T (S)*
29 VIII	77° 38′	11°40′ E.	6	34,89	+	*T S*
29 VIII	77° 23′	10°53′ E.	5,55	35,03	*r*	*T S*
30 VIII	77°	8° 3′ E.	5,65	35,03	*c*	*S*
30 VIII	76° 45′	8°45′ E.	5,34	34,92	*c*	*S*
31 VIII	76° 27′	10°43′ E.	5,35	35,03	*r*	*S*
31 VIII	76° 12′	12°18′ E.	6,26	35,15	*r*	*S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	+	*S T*
2 IX	75° 24′	16°47′ E.	5,64	35,12	+	*T (S)*
3 IX	74° 42′	16°42′ E.	7,24	35,17	+	*T (S)*
5 IX	71° 57′	19° E.	9,08	34,96	*r*	*Tp (Ns)*

R. obtusa Hensen.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
12 VI	73° 40′	22° 40′ E.	2,40	35,05	*r*	*C*
20 VIII	81° 14′	22° 50′ E.	1,18	33,42	+	*T*
20 VIII	81° 8′	23° 35′ E.	0,71	32,84	+	*Ng*
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	+	*Ng T*
29 VIII	77° 38′	11° 40′ E	6	34,89	*r*	*T S*
29 VIII	77° 23′	10° 53′ E.	5,55	35,03	*c*	*T S*
31 VIII	76° 12′	12° 18′ E.	6,26	35,15	*r*	*S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*S T*

R. semispina Hensen.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
30 V	63° 13′	5° 15′ E.	8,17	34,53	*rr*	*Tp Ns*
9 VI	70° 54′	20° 43′ E.	7,15	34,83	+	*C S*
10 VI	71° 10′	21° 31′ E.	6,71	35,20	+	*C S*
10 VI	71° 42′	22° 35′ E.	6,40	35,15	*cc*	*T C S*
20 VIII	81° 14′	22° 50′ E.	1,18	33,42	*r*	*T*
30 VIII	77°	8° 3′ E.	5,65	35,03	*r*	*S*

R. styliformis Btw.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
27 V	57° 50′	6° E.	8,70	33,69	*r*	*Tp Ns*
30 V	63° 13′	5° 15′ E.	8,17	34,53	*rr*	*Tp Ns*
27 VIII	79° 58′	9° 35′ E.	4.58	34,53	*r*	*T (C)*
29 VIII	77° 38′	11° 40′ E.	6	34,89	*r*	*S T*
30 VIII	76° 45′	8° 45′ E.	5,34	34,92	+	*S*
2 IX	75° 50′	15° 32′ E.	5,52	35,01	*r*	*S T*
2 IX	75° 24′	16° 47′ E.	5,64	35,12	*r*	*T (S)*
3 IX	74° 42′	16° 42′ E.	7,24	35,17	*r*	*T (S)*
4 IX	73° 36′	18° 50′ E.	7,06	35,03	*c*	*S (Ns)*

Thalassiosira gravida Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.	Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
12 VI	73° 40′	22° 40′ E.	2.40	35,05	*r*	*C (Ng)*	25 VIII	79° 53′	11° 22′ E.	2,77	33,75	+	*C (S) Ng*
20 VIII	81° 14′	22° 50′ E.	1,18	33,42	+	*T*	27 VIII	79° 58′	9° 35′ E.	4,58	34,53	*c*	*T (S)*
20 VIII	81° 8′	23° 35′ E.	0,71	32,84	+	*Ng*	29 VIII	77° 38′	11° 40′ E	6	34,89	*r*	*T S*
21 VIII	80° 31′	18° 50′ E.	2,42	33,93	+	*Ng T*							

T. Nordenskiöldii Cl.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
25 VI	76° 34′	17° 24′ E.	0,6	33,80	+	((*C*))
28 VII	77° 52	3° 5′ E.	3,63	34,38	*r*	*C* (*Ng*)

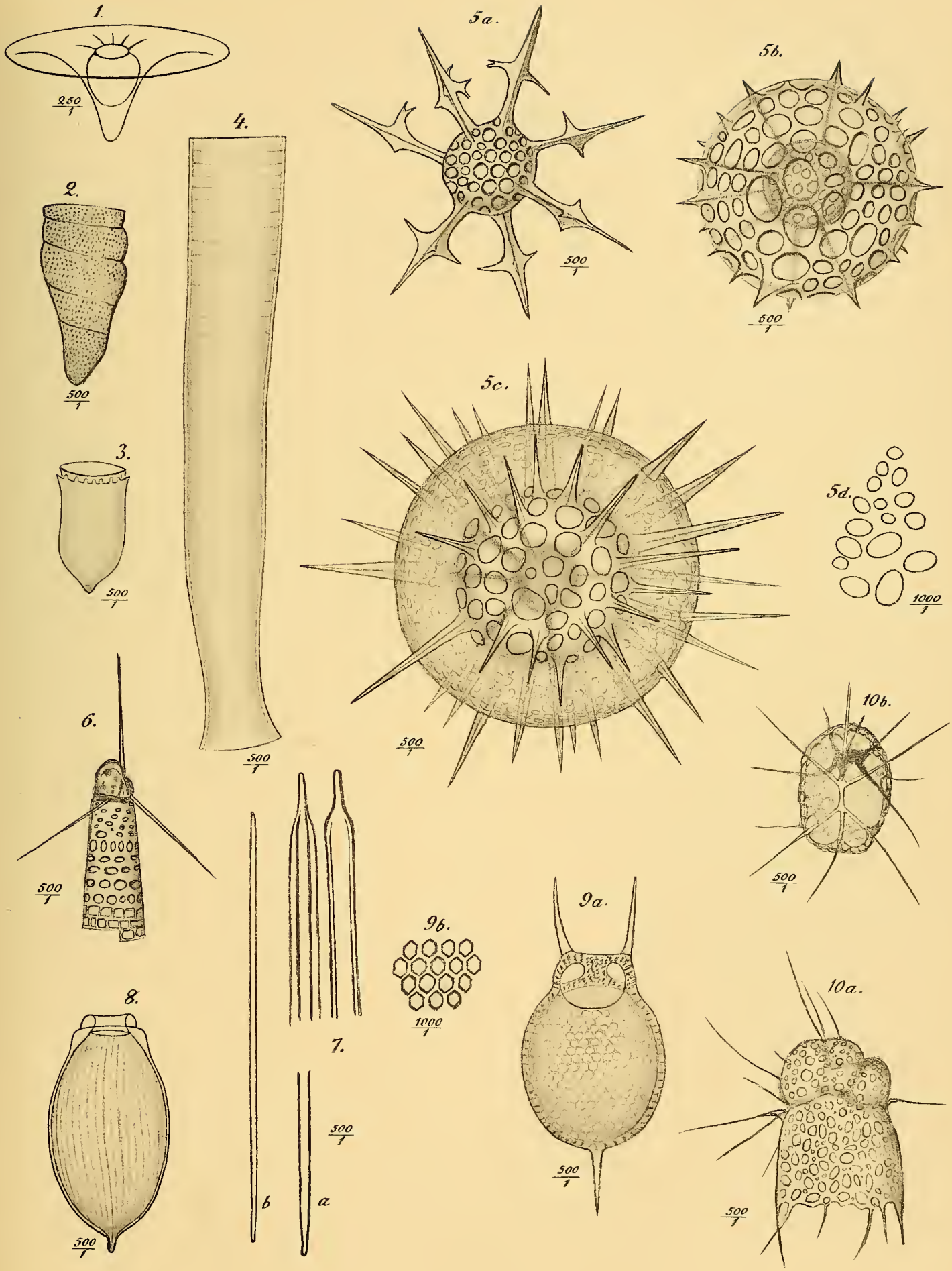
Thalassiothrix longissima Cl. & Grun.

Surface:

Date.	Lat. N.	Long.	Temp.	Sal.	Fq.	Pl.
10 VI	71° 10′	21° 31′ E.	6,71	35,20	*r*	*C S*
31 VIII	76° 12′	12° 18′ E.	6,26	35,15	*r*	*S*
1 IX	76° 2′	13° 8′ E.	6,61	35,13	*r*	*S T*
3 IX	74° 42′	16° 42′ E.	7.24	35,17	+	*T* (*S*)

The scarcity in 1898 of this and the precedent species, in other years usually very abundant in the Arctic Ocean and the Northern Atlantic, is really striking.

Plate I.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2.
500/1
3.
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4.
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500/1
5b.
500/1
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5d.
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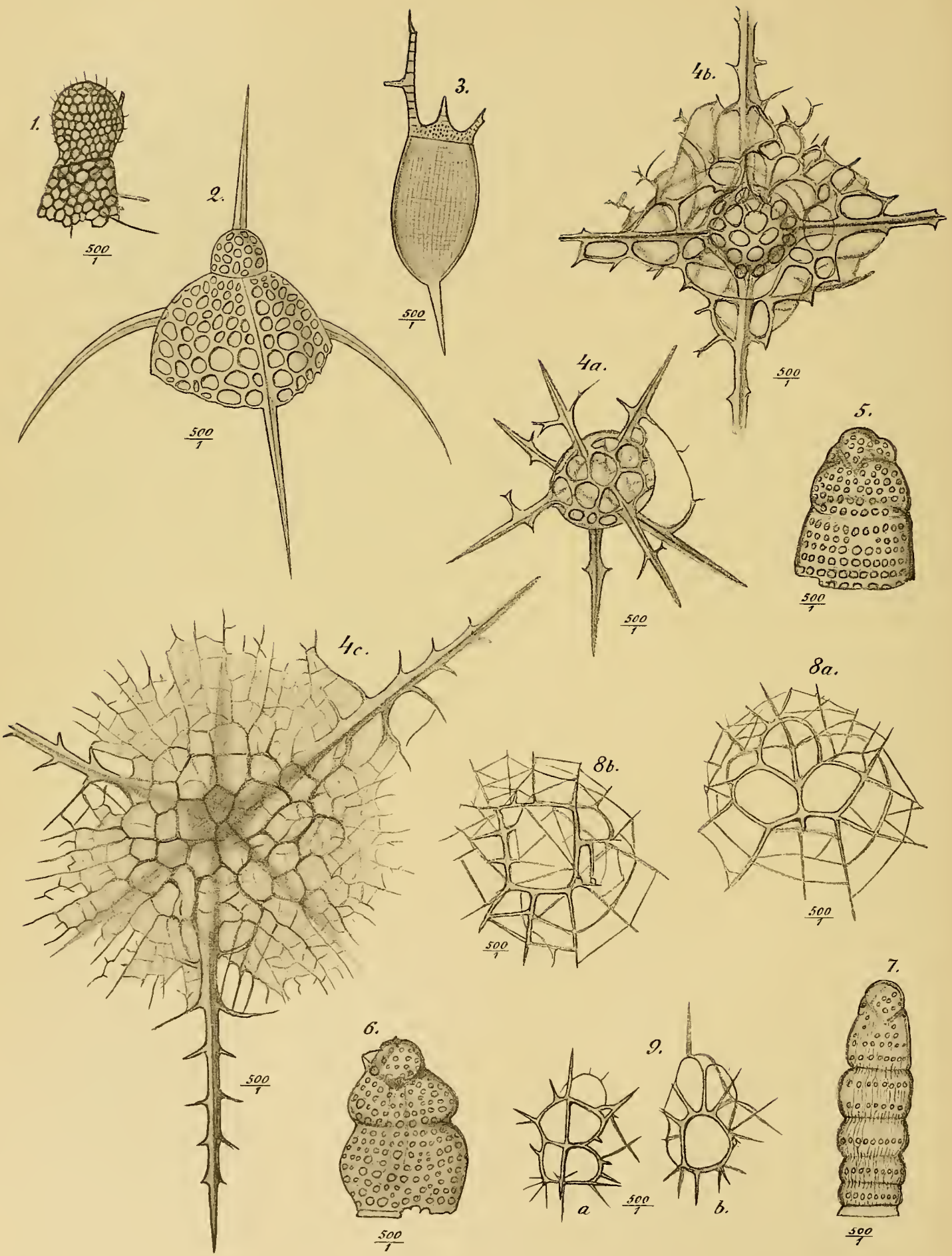
10b.
500/1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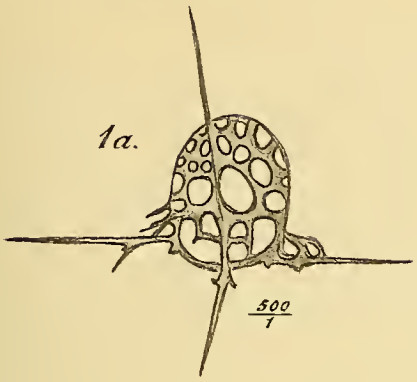
6.
500/1
7.
500/1
8a.
500/1
8b.
500/1
9.
a
500/1
b.

Plate II.

Plate III.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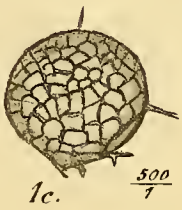
1b. 500/1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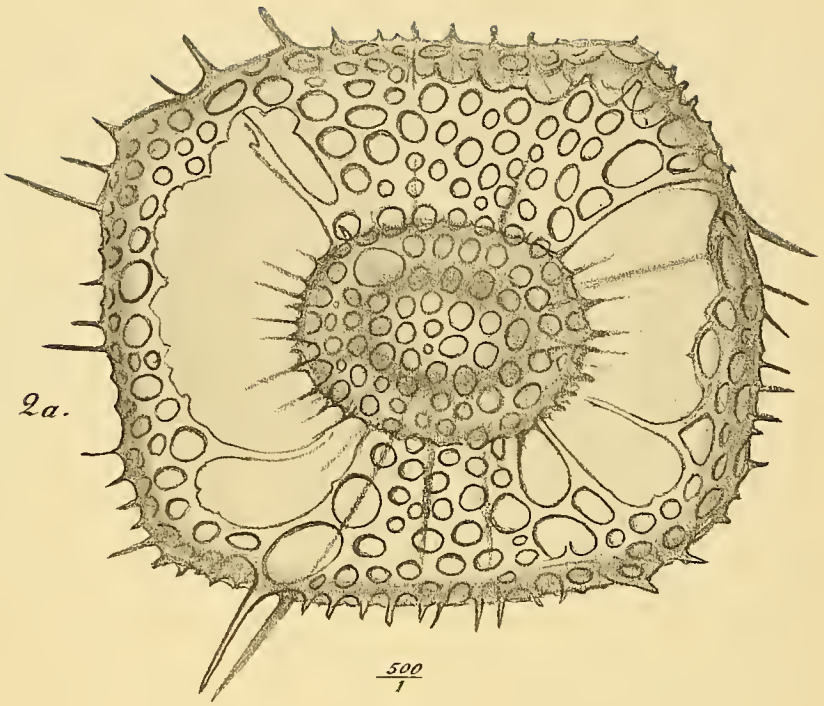
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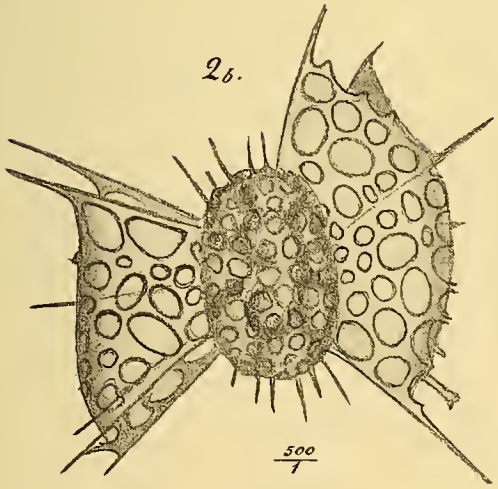
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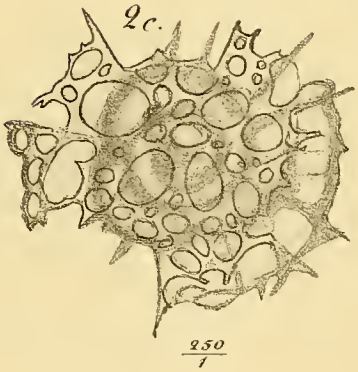
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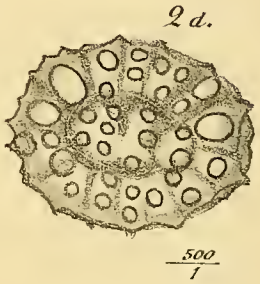
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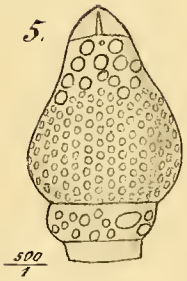
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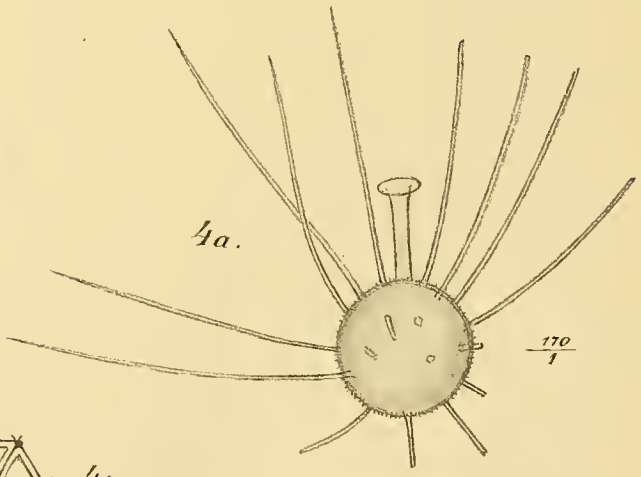
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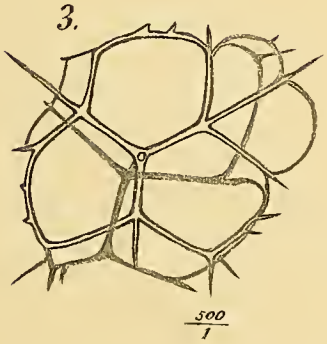
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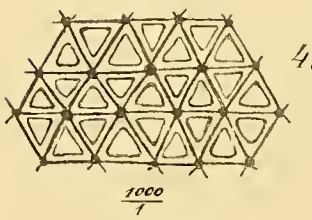
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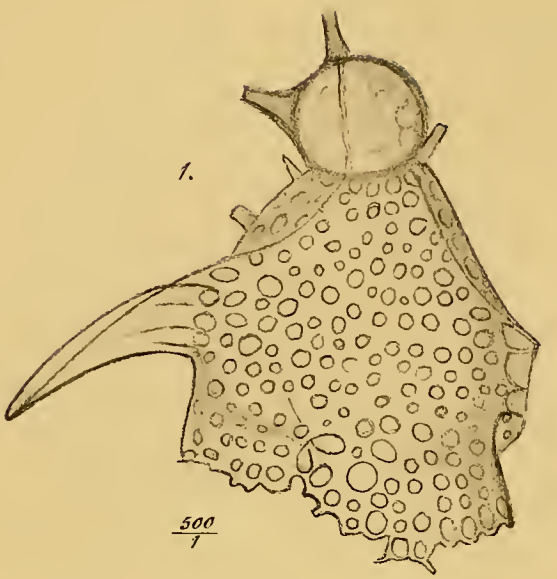
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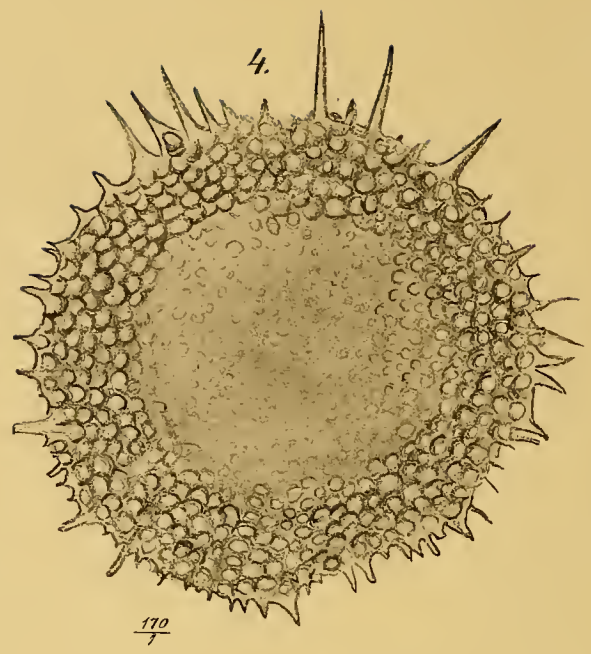
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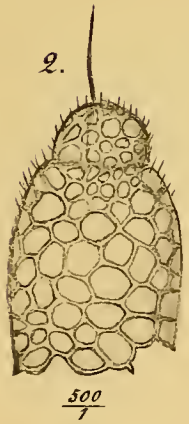
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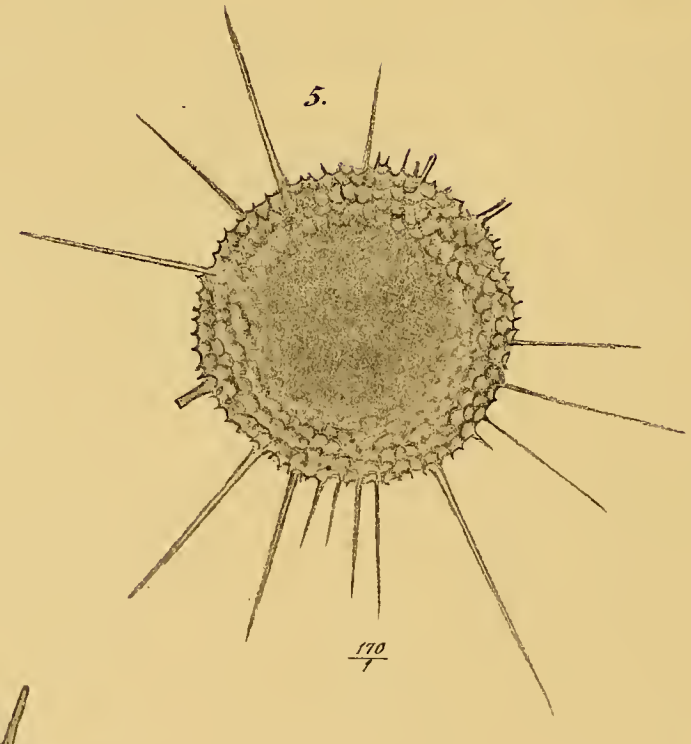
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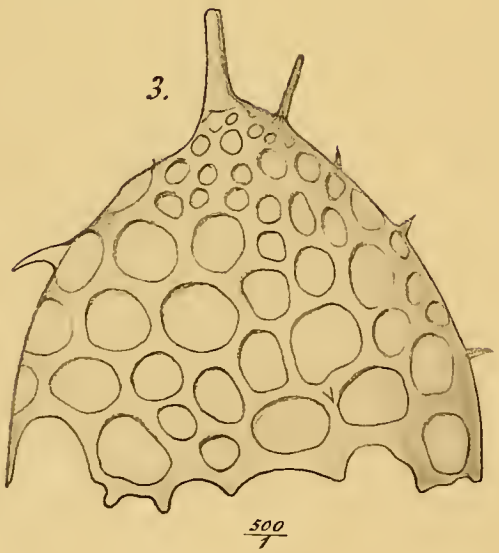
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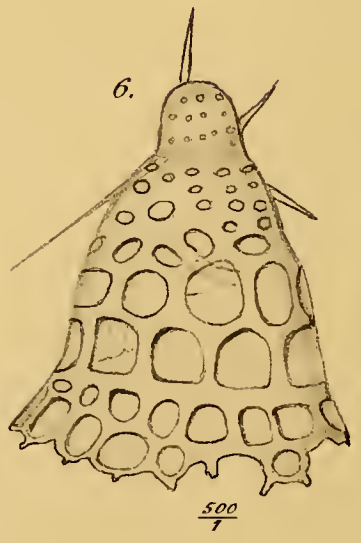
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Plate IV.