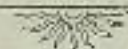


*Dr A Borger
Kochstrasse
1001
P. T. Cleve*

THE SEASONAL DISTRIBUTION
OF
ATLANTIC PLANKTON
ORGANISMS

BY
P. T. CLEVE

1901



GÖTEBORG
BOKFÖRLAGS FÖRETAG
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David M. Damkaer



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O. F. BONNERS BOKTRYCKERI ABTULLOAG
1910

INTRODUCTION

The distribution of the Atlantic plankton organisms has hitherto been examined by some expeditions, such as the Challenger and National Expeditions and others. These however, only crossed the Atlantic during certain seasons for a relatively short time, and in different years. As the plankton follows the ocean currents and its distribution is subject to continual changes, it is evident that the knowledge thus obtained must be very fragmentary. In order to get more complete information about this matter Professor O. PERSSON, Mr GUSTAF EKMAN and the present author planned a systematical investigation of the waters of the Atlantic during the space of at least one year, as far as temperature, salinity and surface-plankton were concerned. To assist us in carrying out this programme, we communicated with a number of ocean-liners and other vessels and it affords us pleasure to state that the officers were very willing to assist us in procuring samples for scientific examination. Samples were taken once a day at least, in some cases several times, with simultaneous observation of the temperature of the water. The plankton was obtained by pouring water for 10 to 15 minutes at a time through a fine silk net, the small residuum being then transferred to a bottle containing alcohol. The samples thus obtained were in most cases very small, but usually sufficiently large to characterize the water. In some cases the number of different species was astonishingly large.

Furthermore we tried to get samples collected regularly at certain fixed stations, as at Westmannaö (S. Iceland), the Färöes and the Azores.

To defray the expenses connected with these researches the sum of 7,000 kronor was obtained from the fund «Lars Hiertas minne», and for the publishing of the results by the »Göteborgs Vetenskaps- och Vitterhets-samfund» Mr Accuer Rönss contributed the sum of 3,000 kronor, which we here thankfully acknowledge.

All the samples of plankton have been examined by me, both for animals and plants. The observations were registered month by month, and the results brought together so as to show for each month the area of distribution for all Atlantic plankton organisms.

In order to render these observations more complete I also made use of a number of data published by OSTENFELD, by GRONER MURRAY & F. G. WHITTING and by AURIVILLIUS*.

For every species I have calculated the mean temperature and salinity and indicated the maxima and minima. In calculating these averages for species that occur gregariously I have only used, as a rule, such samples as contained the species in question abundantly.

In spite of the great number of observations obtained, the survey of the plankton of the Atlantic is by no means to be considered as a complete one, as samples were not collected from all parts of the ocean every month. In order to show to what extent the survey has been carried out it will be necessary to state what parts of the ocean have been examined each month. I therefore prepared the following

List of routes and stations, where samples have been collected:

- 1897 *December*: Dutch Steamer »Prins Frederik Hendrik»: 19th to 31st, from 45° N. 13° W. to 12° N, 50° W. — Number of samples 13.
- 1898 *January*: Dutch Steamer »Prins Willem Vs»: 17th to 30th, from 48° N. 6° W. to 11° N. 52° W. Dutch Steamer »Prins Frederik Hendrik»: 1st to 30th, from 7° N. 53° W. to 37° N. 73° W. French Steamer »Les Alpes»: 15th to 28th, from 34° N. 14° W. to 17° S. 38° W. — Number of samples 41.
- February*: Swedish Corvette »Fregat»: 22^d to 28th, from 6° S. 12° E. to 5° S. 0° W. French Steamers »La Gascogne»: 27th and 28th, from 50° N. 7° W. to 49° N. 17° W. and »La Chan-

* OSTENFELD: Iagttagelser over overfladvandets temperatur, saltindholdighed og plankton paa islandske og grønlandske skibeconter i 1898, foretagne under ledelse af C. F. WANDER, Copenh. 1899.

G. MURRAY & WHITTING: New Peridinacea from the Atlantic. Trans. Linn. Soc. of London 2nd Ser. Botany. Vol. V. Part. 3. 1899.

AURIVILLIUS: Kongl. Svenska Vetenskaps-Akademiens Handlingar. Vol. XXXII, No 8, 1899.

pagne: 12th to 17th, from 50° N. 10° W. to 45° N. 49° W. Dutch Steamers *Prins Frederik Hendrik*: 6th to 20th, from 38° N. 74° W. to 13° N. 70° W. and *Prins Willem V*: 19th to 26th, from 15° N. 71° W. to 34° N. 74° W. — Number of samples 22.

March: British Steamer *Lake Huron*: 28th to 31st, from 55° N. 12° W. to 49° N. 33° W. Dutch Steamers *Oranje Nassau*: 5th to 24th, from 46° N. 12° W. to 9° N. 59° W., *Prins Willem V*: 8th to 16th, from 28° N. 74° W. to 32° N. 74° W., *Prins Frederik Hendrik*: 7th to 23^d, from 7° N. 55° W. to 48° N. 6° W. French Steamers *Les alpes*: 3^d to 12th, from 0° S. to 30° N. 13° W., *La Bourgogne*: 20th to 26th, from 50° N. 11° W. to 41° N. 66° W., *La Gascogne*: 1th to 6th, from 48° N. 27° W. to 40° N. 72° W. and 10th to 18th from 40° N. 68° W. to 49° N. 3° W., *La Navarre*: 13th to 20th, from 49° N. 9° W. to 40° N. 68° W., and 24th to 31st, from 40° N. 64° W. to 50° N. 9° W. — Swedish Corvette *Freja*: 1st to 30th, from 6° S. 4° W. to 41° N. 23° W. The vessels *Capella*: 5th to 10th, from 60° N. 4° E. to 71° N. 1° W., *Gimle*: 23^d to 28th, from 58° N. 6° E. to 62° N. 11° W. — Station: Nalsöfjord (Färöes) the 22^d. — Number of samples 120.

April: British Steamer *Lake Huron*: 1st to 3^d, from 47° N. 40° W. to 43° N. 50° W. Dutch Steamers *Oranje Nassau*: 3^d to 26th, from 14° N. 70° W. to 23° N. 72° W., *Prins Willem V*: 5th to 19th, from 7° N. 54° W. to 47° N. 10° W. French Steamers *La Bourgogne*: 1st to 5th, from 41° N. 57° W. to 50° N. 9° W. and 25th to 29th, from 49° N. 23° W. to 42° N. 61° W., *La Gascogne*: 3^d to 10th, from 50° N. 10° W. to 40° N. 60° W. and 17th to 24th, from 40° N. 67° W. to 50° N. 3° W. Swedish Corvette *Freja*: 1th to 13th, from 41° N. 19° W. to 48° N. 5° W. The vessels *Capella*: 26th to 28th, from 73° N. 5° W. to 75° N. 9° W., *Gimle*: 6th to 24th, from 63° N. 18° W., to 58° N. 2° W., *Victoria*: 26th to 27th, 62° N. 2° E. to 60° N. 1° W. Stations: Vestmannaö, one sample; Färöes, one sample. — Number of samples 72.

May: Dutch Steamer *Oranje Nassau*: 5th to 31st, from 16° N. 71° W. to 6° N. 55° W. and from 7° N. 54° W. to 32° N. 36° W. French Steamers *La Bourgogne*: 9th to 14th, from 41° N. 59° W. to 50° N. 12° W. and 23^d to 27th from 49° N. 23° W. to 42° N. 61° W., *La Gascogne*: 8th to 15th, from 50° N. 11° W. to 40° N. 72° W. and 22^d to 29th, from 40° N. 68° W. to 50° N. 7° W.,

>St Simon>: 21st to 31st, from 43° N. 11° W. to 29° N. 60° W. *Swedish Expedition to Spitzbergen under A. G. Nathorst.* — The vessels *>Capella>*: 7th to 31st, from 77° N. 2° W. to 67° N. 25° W., *>Söderjälland>*: 19th to 22^d, from 61° N. 1° W. to 58° N. 4° E., *>Victoria>*: 2^d to 7th, from 62° N. 2° E. to 60° N. 5° E. Stations: Vestmannaö, 3 samples, Färöes, 6 samples. — Number of samples 106.

June: Dutch Steamers *>Oranje Nassau>*: 1st to 6th, from 34° N. 33° W. to 46° N. 11° W., *>Prins Willem II>*: 24th to 30th, from 29° N. 36° W. to 16° N. 53° W. — French Steamers *>La Bourgogne>*: 6th to 11th, from 41° N. 59° W. to 50° N. 12° W., *>St Simon>*: 20th to 30th, from 19° N. 63° W. to 48° N. 17° W. — Collection of Mr K. BOULIX: 13th to 24th, from 48° N. 0° W. to 35° N. 21° W. — *The Swedish Expedition to Spitzbergen under A. G. Nathorst.* — *>Capella>*: 1st to 30th, from 66° N. 26° W. to 68° N. 13° W., *>Victoria>*: 9th to 16th, at 62° N. 2° E. Fishing yacht: 2^d to 26^d, from 58° N. 2° W. to 61° N. 1° W. Stations: Vestmannaö, 2 samples, Färöes, 3 samples, Azores, 3 samples (collected by Mr K. BOULIX). — Number of samples 99.

July: Dutch Steamer *>Prins Willem II>*: 19th to 27th, from 15° N. 71° W. to 38° N. 74° W. — French Steamers *>La Gascogne>*: 17th to 23rd, from 50° N. 10° W. to 40° N. 66° W. and 31st, 40th N. 67° W., *>St Simon>*: 1st and 2^d, 48° N. 14° W. to 50° N. 8° W., *>La Touraine>*: 24th to 30th, from 50° N. 11° W. to 40° N. 69° W., *>La Ville de Marseille>*: 22^d to 30th, from 41° N. 17° W. to 21° N. 58° W. — *The Swedish Expedition to Spitzbergen under A. G. Nathorst.* — The vessels *>Capella>*: 1th to 7th, from 68° N. 8° W. to 60° N. 0° E., *>Göta>*: 10th to 27th, from 67° N. 22° W. to 59° N. 2° W., *>Söderjälland>*: 1th to 8th, from 59° N. 2° E. to 61° N. 4° W., *>Victoria>*: 17th and 25th, at 62° N. 0° W. Stations: Vestmannaö, 2 samples, Färöes, 2 samples, Azores 4 samples. — Number of samples 68.

August: British Steamer *>Lake Superior>*: 22^d to 28th, from 56° N. 13° W. to 52° N. 55° W. — Dutch Steamer *Prins Willem II>*: 6th to 19th, from 38° N. 74° W. to 14° N. 70° W. — French Steamers *>La Gascogne>*: 1th to 6th, from 40° N. 59° W. to 49° N. 14° W., 14th to 20th, from 50° N. 10° W. to 40° N. 66° W., 28th to 31st, from 40° N. 67° W. to 44° N. 42° W., *>La Touraine>*: 7th to 12th, from 42° N. 65° W. to 49° N. 20° W., 21st to 27th, from 50° N.

13° W. to 41° N. 72° W. — *Swedish Expedition to Spitzbergen under A. G. Nathorst.* The vessels *»Söderjälland»*: 11th at 59° N. 2° W., *»Gimle»*: 11th to 14th, from 60° N. 3° W. to 66° N. 18° W., *»Victoria»*: 19th to 21th, at 61° N. 4° E. Stations: Vestmannaö, 2 samples, Färöes, 1 sample, Azores 4 samples. — Number of samples 100.

September: British Steamer *»Lake Superior»*: 11th to 16th, from 53° N. 50° W. to 56° N. 12° W. and 26th to 30th, from 57° N. 14° W. to 55° N. 43° W. — Dutch Steamers *»Prins Frederik Hendrik»*: 18th to 27th, from 15° N. 71° W. to 38° N. 74° W., *»Prins Willem II.»*: 6th to 21th, from 9° N. 53° W. to 49° N. 3° W. — French Steamers *»La Gascogne»*: 1st to 3^d, from 47° N. 33° W. to 50° N. 14° W. and 18th to 24th, from 50° N. 11° W. to 41° N. 65° W., *»La Touraine»*: 4th to 10th, from 41° N. 66° W. to 50° N. 9° W. *Swedish Expedition to Spitzbergen.* The vessels *»Sigyn»*: 2^d to 19th, from 33° N. 16° W. to 8° N. 25° W., *»Gimle»*: 14th to 17th, from 66° N. 18° W. to 61° N. 2° W., *»Söderjälland»*: 4th to 7th, from 62° N. 6° W. to 60° N. 2° W. Stations: Vestmannaö, 3 samples, Färöes, 1 sample, Azores, 5 samples. — Number of samples 99.

October: British Steamer *»Lake Superior»*: 1st 53° N. 51° W. and 16th to 31st, from 53° N. 52° W. to 56° N. 12° W. — Dutch Steamer *»Prins Frederik Hendrik»*: 6th to 19th, from 38° N. 74° W. to 16° N. 70° W. — French Steamers *»Canada»*: 29th to 31st, from 42° N. 15° W. to 37° N. 27° W., *»La Gascogne»*: 3^d to 8th, from 40° N. 59° W. to 50° N. 14° W., 30th and 31st, from 50° N. 10° W. to 50° N. 20° W., *»La Touraine»*: 23^d to 29th, from 50° N. 10° W. to 41° N. 67° W. Swedish vessel *»Sigyn»*: 5th, at 21° S. 36° W. Stations: Vestmannaö, 2 samples, Färöes, 3 samples, Azores, 5 samples. — Number of samples 44.

November: British Steamers *»Lake Superior»*: 1st to 7th, from 56° N. 17° W. to 53° N. 50° W. and 21st to 27th, from 48° N. 49° W. to 55° N. 14° W., *»Tacoman»*: 15th to 29th, from 45° N. 7° W. to 9° S. 34° W. French Steamers *»Canada»*: 1st to 6th, from 34° N. 33° W. to 19° N. 58° W., *»La Gascogne»*: 1st to 6th, from 49° N. 28° W. to 42° N. 64° W., 13th to 19th, from 40° N. 67° W. to 49° N. 12° W. and 27th to 30th, from 50° N. 10° W. to 48° N. 41° W., *»La Touraine»*: 6th to 12th, from 41° N. 66° W. to 50° N. 11° W. and 20th to 26th, from 50° N. 10° W. to 41° N. 69° W. — The Swedish Corvette *»Fregat»*: 14th, at 31° N. 18° W. — The Swedish

vessel *Sigyn*: 5th to 18th, from Rio Janeiro to 18° S. 31° W. Stations: Vestmannaö, 2 samples, Färöes, 2 samples, Azores, 4 samples. — Number of samples 78.

December: British Steamer *Tucuman*: 1st to 15th, from 14° S. 36° W. to 29° S. 49° W. — French Steamers *Canada*: 2^d to 12th, from 19° N. 58° W. to 44° N. 10° W., *La Gascogne*: 1st to 3^d, from 46° N. 50° W. to 42° N. 63° W., 11th to 17th, from 31° N. 66° W. to 50° N. 9° W. and 25th to 31st, from 50° N. 12° W. to 43° N. 61° W., *La Touraine*: 4th to 10th, from 41° N. 66° W. to 50° N. 18° W. — The Swedish Corvette *Freya*: 21st to 31st, from 28° N. 17° W. to 29° N. 14° W. — The vessel *Sigyn*: 20th, at 18° N. 67° W. Stations: Vestmannaö, 2 samples, Färöes, 2 samples, Azores, 3 samples. — Number of samples 55.

1899 *January*: French Steamer *La Gascogne*: 1st to 13th, from 41° N. 69° W. to 50° N. 20° W. Swedish Corvette *Freya*: 2^d to 10th, from 31° N. 16° W. to 29° N. 16° W. Stations: Vestmannaö, 5 samples, Färöes, 2 samples. — Number of samples 22.

February: Swedish vessel *Sigyn*: 19th to 22^d, from 32° N. 47° W. to 34° N. 40° W. — Stations: Färöes, 2 samples. — Number of samples 5.

March: Dutch steamer *Oranje Nassau*: 18th to 29th, from 48° N. 6° W. to 18° N. 45° W. — The Swedish Corvette *Freya*: 12th, at 35° N. 16° W. The vessels *Sigyn*: 11th to 13th, from 47° N. 8° W. to 49° N. 9° W., *Thyra*: 9th to 29th, from 62° N. 7° W. to 65° N. 24° W., *Capella*: 8th to 12th, from 62° N. 1° E. to 71° N. 4° W. — Stations: Färöes, 1 sample. — Number of samples 36.

April: Dutch Steamer *Oranje Nassau*: 8th to 27th, from 9° N. 59° W. to 36° N. 74° W. — The Swedish Corvette *Freya*: 1st to 11th, from 37° N. 9° W. to 50° N. 6° W. — The vessel *Capella*: 27th to 29th, from 73° N. 9° E. to 74° N. 8° E. — Stations: Vestmannaö, 2 samples, Färöes, 2 samples. — Number of samples 25.

May: British Steamer *Lake Superior*: 30th to 27th, from 47° N. 57° W. to 51° N. 14° W. — Dutch Frigate *Ajsh*: 24th to 31st, from 33° S. 16° E. to 24° S. 7° E., Steamer *Oranje Nassau*: 6th to 7th, from 38° N. 74° W. to 35° N. 75° W. Swedish Expedition to Greenland under A. G. NATHORST: 26th to 31st, from 58° N. 9° E. to 61° N. 1° E. The vessels *Capella*: 5th to 30th, from 75° N. 5° W. to 70° N. 0° W., *Ceres*: 15th to 30th, from 58° N. 9° E. to 66° N. 24° W., *Victoria*: 6th to 13th, at 62° N. 2° E.

Stations: Vestmannaö, 2 samples. Färöes, 3 samples. — Number of samples 71.

June: Dutch Frigate »*Ajch*»: 1th to 30th, from 24° S. 6° E. to 9° N. 25° W., Steamer »*Orange Nassau*»: 5th to 11th, from 12° N. 52° W. to 36° N. 30° W. *Swedish Expedition to Greenland (Antarctic)*: 1th to 30th, from 62° N. 1° E. to 75° N. 15° W. The vessel »*Capella*»: 3rd to 27th, from 71° N. 6° E. to 74° N. 24° E. Steamer »*Rorik*»: 18th to 28th, from 64° N. 7° E. to 78° N. 12° E. Yacht »*Victoria*»: 5th to 17th, at 62° N. 2° E. Stations: Vestmannaö, 1 sample. — Number of samples 93.

July: British Steamer »*Lake Superior*»: 10th to 17th, from 56° N. 15° W. to 52° N. 54° W., 30th to 31th, from 51° N. 47° W. to 53° N. 42° W. — Dutch Frigate »*Ajch*»: 1th to 31th, from 11° N. 26° W. to 48° N. 23° W. — *Swedish Expedition to Greenland (Antarctic)*: 2nd to 29th, from 75° N. 18° W. to 71° N. 21° W. »*Capella*»: 4th to 10th, from 71° N. 32° E. to 79° N. 53° E. »*Rorik*»: 1st to 17th, from 78° N. 11° E. to 80° N. 16° E. »*Victoria*»: 11th to 22^d, at 61° N. 0° W. — Number of samples 60.

August: British Steamer »*Lake Superior*»: 1th to 4th, from 54° N. 34° W. to 55° N. 9° W. and 14th to 19th, from 56° N. 14° W. to 52° N. 53° W. — Dutch Frigate »*Ajch*»: 3rd to 8th, from 48° N. 20° W. to 49° N. 9° W. *Swedish Expedition to Greenland (Antarctic)*: 7th to 31th, from 71° N. 23° W. to 72° N. 16° W. The vessels »*Capella*»: 4th to 16th, from 80° N. 51° E. to 72° N. 26° E., »*Victoria*»: 13th and 29th, 60° N. 3° E. to 61° N. 0° W. — Number of samples 36.

September: British Steamer »*Lake Superior*»: 2nd to 7th, from 52° N. 55° W. to 56° N. 17° W. and 18th to 25th, from 55° N. 9° W. to 53° N. 51° W. *Swedish Expedition to Greenland (Antarctic)*: 1st to 9th, from 72° N. 16° W. to 60° N. 3° E. »*Rorik*»: 3rd to 17th, from 80° N. 16° E. to 57° N. 7° E. — Number of samples 47.

October: British Steamer »*Lake Superior*»: 8th to 13th, from 53° N. 52° W. to 56° N. 15° W. and 26th to 30th, from 52° N. 14° W. to 53° N. 37° W. — Number of samples 11.

November: British Steamer »*Lake Superior*»: 1st to 2^d, from 53° N. 43° W. to 52° N. 48° W. and 14th to 20th, from 47° N. 51° W. to 51° N. 13° W. — Number of samples 9.

The total number of samples from the surface of the Atlantic thus amounts to 1,331, of which 861 were from 1898 (December 1897 included) and 415 from 1899.

PLANKTON-TYPES.

In the following report on the seasonal distribution of the Atlantic plankton organisms I again use the signs *C*, *D*, *S*, *T*, which denote, as in my previous papers on this matter, *Chæto*-, *Desmo*-, *Stigli*- and *Tricho-plankton*, *Nn*, *Ns* and *Ng*, *Southern*, *Northern* and *Arctic neritic plankton*. The new sign *Nt* denotes *Tropical neritic plankton*. The *Sira-plankton* in my former publications may be disregarded for the Atlantic, as this type corresponds partly to *T* and partly to *Ng*. The *Sira-plankton* which appears in the Skagerak, as a rule in February and March, contains neritic arctic species intermingled with boreal species and some forms, which belong to the *Tricho-plankton*. As this kind of plankton is very characteristic for the Skagerak, it may be useful to keep the name for the said plankton in the Skagerak.

In the following lists the letters B, I, M, P, R and W denote the Baltic, Indian Ocean, Mediterranean, Pacific, Red Sea and White Sea.

I. **Tricho-plankton.** I have arranged most species of this type thus:

Tricho-plankton (Arctic oceanic species) *T*.

	Limits Lat. N.	Mean tem- perature	Mean salinity	Description outside the Atlantic
<i>Fritillaria borealis</i>	81°—50°	7.4	34.60	Antarctic.
<i>Boreophausia inermis</i>	78°—63°	3.4	35.01	
<i>Nyctiphanes norvegicus</i>	75°—61° (42)	0.6	35.10	
<i>Thysanoessa longicaudata</i>	85°—48°	6.0	34.84	
<i>Eutthemisto libellula</i>	85°—40°	2.9	34.80	
<i>Parathemisto obliqua</i>	85°—45°	2.3	34.36	
<i>Calanus finmarchicus</i>	85°—30°	7.8	34.30	Antarct. M. P. I.
<i>C. hyperboreus</i>	85°—58°	2.0	34.28	
<i>Chiridius armatus</i>	85°—65°	0.9	34.81	
<i>Eucharta norvegica</i>	85°—68°	2.3	35.12	
<i>Metridia longa</i>	85°—58°	0.1	34.24	
<i>Oncaea conferta</i>	78°—62°	0.7	34.93	M. R. I. P. New Zealand Islands.
<i>O. minuta</i>	78°—88°	5.0	35.01	M.

	Limits Lat. N.	Mean tem- perature	Mean salinity	Distribution outside the Atlantic
<i>Conchoecia borealis</i>	85°—58°	1.3	35.05	
<i>C. elegans</i>	80°—38°	1.2	35.11	
<i>Krohnia hamata</i>	80°—54°	10.5	34.56	Antarctic.
<i>Sagitta arctica</i>	81°—42°	7.8	35.38	
<i>Boreo eucumis</i>	78°—40°	1.5	35.05	Circumpolar?
<i>Pleurobrachia pileus</i>	82°—50°(32)	—	—	
<i>Bolina septentrionalis</i>	79°—40°	—	—	Circumpolar?
<i>Mertensia ovum</i>	80°—42°	—	—	Circumpolar.
<i>Codonum princeps</i>	80°—64°	—	—	
<i>Cyanea arctica</i>	74°—41°	—	—	Circumpolar.
<i>Pectyllis arctica</i>	82°—51°	—	—	
<i>Aglantha digitale</i>	78°—42°	9.7	35.05	Circumpolar.
<i>Cyttarocyclus dentienlata</i>	80°—37°	8.8	34.74	Bering Sea.
<i>C. norvegica</i>	81°—40°	5.6	34.42	
<i>Ptychocyclus acuta</i>	78°—40°	9.0	34.51	
<i>Tintinnus acuminatus</i>	80°—37°	9.5	34.03	
<i>Actinomma boreale</i>	80°—48°	9.4	35.29	
<i>Anthocycrtium anthemis</i>	63°	6.3	35.10	North P?
<i>Aulacantha levissima</i>	78°—60°	—	—	
<i>Beroetta melo</i>	78°	—	—	
<i>Botryopyle setosa</i>	78°—45°	—	—	
<i>Challengeria Harstonii</i>	80°—76°	—	—	North P.
<i>C. tridens</i>	80°—52°	—	—	
<i>Challengeron Channeri</i>	48°	—	—	North P.
<i>C. Nathorstii</i>	80°—56°	—	—	
<i>Dictyophimus gracilipes</i>	80°—45°	—	—	North P.
<i>Euphysetta Lucani</i>	45°	—	—	
<i>Euscenium tricolpium</i>	78°—43°	—	—	P.
<i>Hexadorus borealis</i>	80°—63°	—	—	
<i>Plectophora arachnoides</i>	78°—40°	—	—	
<i>Theocalyptra coronata</i>	80°—41°	—	—	North P.
<i>Ceratium arcticum</i>	80°—40°(34)	8.3	33.61	North P.
<i>C. longipes</i>	79°—39°	8.3	34.02	Bering Sea.
<i>Dinophysis Michaëlis</i>	80°—40°	7.3	34.44	
<i>D. Vanhöffenii</i>	81°—52°	5.9	34.13	North P.
<i>Peridinium depressum</i>	81°—36°	8.2	34.33	Bering Sea.
<i>P. ovatum</i>	80°—40°	6.1	34.60	

	Limits Lat. N.	Mean tem- perature	Mean salinity	Distribution outside the Atlantic
<i>P. pallidum</i>	79°—51°	8.5	34.87	
<i>P. pellucidum</i>	81°—40°	5.1	34.22	
<i>Phaeocystis Poucheii</i>	81°—40°	5.2	34.24	
<i>Asterionophalus Hookeri</i>	80°—40°	5.0	34.38	Antarctic.
<i>Chaetoceros atlanticus</i>	81°—37°	5.4	34.49	Bering Sea, Antarctic.
<i>C. borealis</i>	80°—39°	4.5	34.57	Antarctic.
var. <i>Brightwellii</i>	76°—41°	8.6	35.00	
<i>C. criophilus</i>	80°—40° (23)	6.2	34.25	Antarctic.
<i>C. decipiens</i>	81°—40° (32)	7.5	34.50	North P.
<i>C. lewis</i>	81°—42°	5.8	34.45	
<i>Coccinodiscus oculus iridis</i>	80°—40° (6)	6.7	34.40	Bering Sea.
<i>Leptocylindrus danicus</i>	81°—58° (45)	7.0	34.02	M.
<i>Nitzschia seriata</i>	81°—40°	8.5	35.74	M?
<i>Rhizosolenia hebetata</i>	77°—45°	7.3	34.28	Bering Sea.
<i>R. obtusa</i>	80°—41°	6.2	34.95	
<i>R. semispina</i>	80°—33°	7.0	34.77	
<i>Thalassiosira gravida</i>	80°—40°	2.7	34.08	
<i>Thalassiothrix longissima</i>	77°—21°	9.5	34.48	Bering Sea.

It appears from this list, that most of the species have been found as far north as 80°, several also, by the NARSEN Expedition, at 85° in the Polar Basin. Some of these species are circumpolar, i. e. have been found in the Bering Sea and in the N. Pacific. It thus seems as if the Northern Atlantic occasionally receives some currents from the Polar Basin and ultimately from the Northern Pacific. The currents may vary in different years, at least the following facts point to such a conclusion. *Rhizosolenia hebetata* was found in the Northern Atlantic in 1898, but not in 1899. This species occurs in the Bering Sea. A number of Radiolaria, not noted in the warmer Atlantic but certainly from the Pacific, were also found in 1898, but not in 1899, in the Northern Atlantic and W. of Norway. The copepod *Oncosa conferta*, which occurs in the Pacific, was collected by NARSEN at the New Siberian Islands, in hauls from 50 metre. The same animal occurred in many samples, collected in 1899 by the Nathorst Expedition to Greenland, but I have seen it but once in the temperate Atlantic at the Azores, and then very sparingly. It was on the other hand not found in any

of the numerous samples collected in 1898 by the NATHANET Expedition to Spitzbergen. This species is «arctic» in the Atlantic only.

The temperature of the water containing Tricho-plankton varied from 0° to 10° and the salinity varied as a rule between 34 and 35 p. m.

The route taken by the Tricho-plankton at the surface is from the entrance to the Polar Basin, between Spitzbergen and Greenland, along the east coast of Greenland towards Iceland. There it forks, one branch going to E. Greenland, where it follows the current round Cape Farewell, thence continuing along the western coast to Disco. The same kind of plankton prevails in the Labrador current and follows the east coast of N. America to about New York. The other branch goes from Iceland above the submarine ridge to the Färöes, the Shetlands and Western Norway. The bulk of the arctic plankton that appears regularly in February in the Skagerak probably gets there through the Norwegian depression and by means of an undercurrent. A part of the arctic plankton goes towards Scotland and enters the North Sea, whence it proceeds to the continental coast.

The distribution of the Tricho-plankton in the Atlantic varies according to the seasons. In the winter (from November) this kind of plankton extends, more or less intermingled with other kinds, from the Newfoundland Banks to the Azores, to the coasts of the Spanish Peninsula and to the western mouth of the English Channel. In the early spring the arctic plankton disappears more or less completely. The Atlantic waters that contain arctic plankton become mixed with water of higher salinity and drift in the spring northwards, towards Iceland and the Färöe Channel. Such water has a salinity of about 35 p. m. and contains *Chaeto-plankton* in abundance. This kind of plankton is thus nothing but Tricho-plankton carried into water of 35 p. m. salinity wherein *Chaetoceros decipiens* multiplies, but most of the other species of the Tricho-plankton die sooner or later. It drifts during the summer towards Spitzbergen.

The sudden appearance in the winter of arctic plankton over the whole northern Atlantic cannot be accounted for by surface currents, so it may be admitted that the cold southgoing current along the American coast continues during the summer as an undercurrent towards Europe, ascending to the surface from November onwards.

The Arctic coast regions are characterized by a number of more or less brackish forms, which together constitute the *Arctic neritic*

plankton-type, *Ng.* This kind forms a good deal of the *Sico-plankton* of the Skagerak. The mean temperature of the water containing this kind of plankton is, as a rule, low, — 0.5° to 8.5° , and the salinity is usually considerably below 34 p. m.

The following list contains the species of this kind of plankton:

Arctic neritic species. *Ng.*

	Limits Lat. N.	Mean tem- perature	Mean salinity	Outside the Atlantic
<i>Clione limacina</i>	82° — 42°	3.1	31.97	Circumpolar.
<i>Limacina helicina</i>	81° — 58° (36)	4.2	30.25	Circumpolar.
<i>Acartia longiremis</i>	80° — 58°	7.5	33.69	New Siberian Islands. B.
<i>Pseudocalanus elongatus</i> ...	79° — 40°	8.3	34.38	New Siberian Islands. B.
<i>Amphorella vitrea</i>	80° — 70°	—0.3	25.36	
<i>Fungulia arctica</i>	80° — 50°	3.6	33.55	
<i>Ptychocylis arctica</i>	75° — 37°	6.6	32.68	
<i>P. obtusa</i>	81° — 42°	3.5	33.66	
<i>Tintinnopsis karajacensis</i> ...	81° — 69°	2.7	32.46	
<i>Tintinnus bottnicus</i>	81° — 80°	2.7	33.84	B.
<i>Ceratium hyperboreum</i>	81° — 80°	2.1	29.65	
<i>Peridinium catenatum</i>	80° — 73°	3.2	34.55	B.
<i>Dinobryum pellucidum</i>	81° — 68°	1.3	32.63	B.
<i>Achnanthes tenuata</i>	80° — 57°	—0.3	34.39	B.
<i>Amphiprora hyperborea</i> ...	80° — 74°	—0.4	32.23	
<i>Chaetoceros bottnicus</i>	80° — 72°	—0.4	29.95	B.
<i>C. diadema</i>	80° — 40° (6)	6.9	33.61	North P.
<i>C. furcillatus</i>	80° — 59° (50)	4.5	34.64	North P.
<i>C. socialis</i>	74° — 50°	4.5	33.36	North P.
<i>Eucampia grönländica</i>	78° — 57°	—0.2	32.59	
<i>Fragilaria oceanica</i>	80° — 63°	0.3	33.31	
<i>Lauderia frugilis</i>	80° — 59°	0.9	33.50	
<i>Melosira hyperborea</i>	74° — 75°	—0.3	33.56	B.
<i>Navicula septentrionalis</i> ..	80° — 69°	1.5	32.44	B.
<i>Nitzschia frigida</i>	80° — 74°	—0.3	29.66	B.
<i>Thalassiosira hyalina</i>	80° — 63°	1.3	34.59	
<i>T. Nordenskiöldii</i>	80° — 40°	7.1	34.35	North P.

It is remarkable that many of these species are also Baltic and not a few circumpolar.

I distinguish as a particular class a number of plankton forms which are not strictly arctic, but *boreal*, and occur off Iceland and the Färöes, in the Irminger Sea and in the E. Greenland Current. The mean temperature of the water in which these forms occur is as a rule higher than for the strictly arctic species. A number of these forms constitute what I have called *Northern neritic plankton*, others fall under the *Sira-plankton*. It is remarkable that such a considerable percentage of these forms occur in the northern Pacific. There are also among these forms some Baltic species.

The following list contains such boreal forms:

Boreal species. Ns.

	Limits (lat. N)	Mean tem- perature	Mean salinity	Outside the Atlantic
<i>Limacina retroversa</i>	71°—41°	7.9	35.12	Antarctic.
<i>Arachnaetis albida</i>	62°—56°	12.1	35.37	
<i>Anomalocera Patersonii</i>	73°—50°	11.5	34.17	
<i>Centropages hamatus</i>	70°—50°	9.2	33.56	B.
<i>Metridia hibernica</i>	69°—42°	11.1	36.26	
<i>Temora longicornis</i>	70°—40°	10.2	34.28	B.
<i>Amphorella subulata</i>	65°—40°	15.9		M, B, W
<i>Codonella ventricosa</i>	66°—36°	11.1	35.15	M.
<i>Tintinnopsis beroidea</i>	63°—34°	16.5	34.01	
<i>Dinophysis acuta</i>	73°—42°	9.5	35.08	North P.
<i>Gonyaulax spinifera</i>	65°—34°	8.6	34.88	M.?
<i>Hexasterias problematica</i>	66°—51°	7.1	34.81	
<i>Asterionella japonica</i>	63°—50°	8.6	34.69	North P., Ant.
<i>Biddulphia aurita</i>	75°—52°	4.4	34.53	North P., Ant.
<i>Chaetoceros cinctus</i>	65°—60°	9.1	35.06	North P.
<i>C. constrictus</i>	63°—39°	8.5	34.05	North P.
<i>C. debilis</i>	74°—40°	7.6	34.02	North P.
<i>C. hiemalis</i>	76°—45°	8.1	33.96	
<i>C. laciniatus</i>	70°—43°	8.1	33.97	North P.
<i>C. scolopendra</i>	66°—40° (21°)	9.5	34.66	North P., Ant.
<i>Coscinodiscus concinnus</i>	69°—50° (7°)	7.4	34.70	
<i>C. excentricus</i>	64°—32° (21°)	9.6	35.03	

	Limits Lat. N.	Mean tem- perature	Mean salinity	Outside the Atlantic
<i>C. polychordus</i>	72°—50°	5.1	34.55	
<i>C. radiatus</i>	74°—20°	7.4	34.53	
<i>Nitzschia delicatissima</i>	65°—57°	8.6	34.98	Antarctic.
<i>Skeletonema costatum</i>	63°—37°	11.3	34.10	North P. B.
<i>Thalassiosira gelatinosa</i>	69°—50°	7.0	26.51	North P.
<i>Thalassiothrix Frauenfeldii</i>	63°—21°	10.1	34.25	

II. **Styli-plankton.** This kind constitutes the plankton of the water with 35 p. m. salinity, or the «Gulf-stream water» of the hydrographers. The range of distribution of this kind is West of S. Africa, or the Benguela current, the Gulf of Guinea, the Cape Verde region and the space between the Canaries, the Azores and the mouth of the English Channel. From March to May this area expands westwards, across the whole Atlantic, between 40° and 50° N., so it seems as if the water containing this kind of plankton ascended from deeper layers to the surface. Many of the species of the Styli-plankton also occur more or less intermingled with Desmo-plankton in the western Atlantic, so that the Styli-plankton surrounds the region of the Sargasso Sea in the form of an irregular ring.

The water between 40° and 50° N., containing Styli-plankton, advances northwards towards Iceland and the Färöe Channel and finally moves towards Spitzbergen. During the summer, especially in August, the water between 40° and 50° N., that contains Styli-plankton, becomes covered by a sheet of water containing Desmo-plankton. This is particularly the case in the western regions, along the American coast and above the Newfoundland Banks. Some specimens of the Desmo-plankton, more or less intermingled with the Styli-plankton, drift towards Iceland and the Färöe Channel, but in November the water with Desmo-plankton disappears from the area between 40° and 50° N., and then a number of Styli-plankton forms reappear, more or less intermingled with Tricho-plankton.

The Styli-plankton is very rich in species. I give the following list of the more important ones:

Styli-plankton. (Temperate oceanic species.) T.

	Limite.	Mean tem- perature	Mean salinity	Outside the Atlantic
<i>Evadne Nordmanni</i>	0° S.—73° N.	9.7	34.45	B.
<i>E. spinifera</i>	35° S.—59° N.	20.7	35.50	P. I.
<i>E. tergestina</i>	6° N.—29° N.	25.7	36.55	M. I.
<i>Acartia Clausii</i>	38° N.—73° N.	11.4	35.50	M.
<i>A. Danae</i>	34° N.—49° N.	17.6	35.97	P.
<i>Centropages typicus</i>	6° S.—63° N.	15.7	34.24	M.
<i>Clausocalanus arcuicornis</i>	33° S.—55° N.	17.4	35.29	M. R. P.
<i>Corycaeus rostratus</i>	33° S.—48° N.	19.4	35.28	M.
<i>Eucalanus elongatus</i>	36° N.—60° N.	17.4	36.54	M. P.
<i>Euchirella rostrata</i>	32° N.—44° N.	16.2	35.93	M.
<i>Mecynocera Clausii</i>	30° S.—50° N.	16.8	35.77	M. P.
<i>Microsetella atlantica</i>	31° S.—79° N.	19.6	35.60	M. R. I. P.
<i>Oithona similis</i>	33° S.—81° N.	12.3	35.00	M. Bering Sea.
<i>Onca subtilis</i>	32° S.—47° N.	13.6	35.67	M.
<i>Paracalanus parvus</i>	32° S.—61° N.	15.4	34.58	M. R. P. I.
<i>Pleuromma abdominale</i>	16° N.—50° N.	13.4	35.17	M. P. I.
<i>P. gracile</i>	33° N.—50° N.	15.6	35.62	M. P. I.
<i>Rhinocalanus nasutus</i> ...	21° N.—60° N.	15.5	35.61	M. P.
<i>Sagitta bipunctata</i>	35° S.—60° N.	19.4	35.33	
<i>Amphorella amphora</i>	20° S.—60° N.	16.4	35.50	M.
<i>A. garymedes</i>	20° S.—50° N.	16.9	35.35	M.
<i>A. Stenstrupii</i>	20° S.—72° N.	16.49	35.21	M.
<i>Codonella ampulla</i>	25° S.—51° N.	16.37	35.28	M.
<i>C. pusilla</i>	40° N.—51° N.	11.5	35.38	
<i>Cyttarocypris Trefortii</i>	25° S.—56° N.	17.13	35.13	M.
<i>Dicyocysta elegans</i>	25° S.—63° N.	13.2	35.38	M. R. I.
<i>D. mitra</i>	20° S.—53° N.	17.3	35.61	
<i>Tintinnus Fraukoi</i>	26° S.—50° N.	20.7	35.22	M. R. I.
<i>T. lusus undae</i>	45° N.—63° N.	11.6	35.23	M.
<i>Undella caudata</i>	15° S.—63° N.	14.7	35.43	
<i>U. heros</i>	30° N.—51° N.	17.5	35.61	
<i>U. hyalina</i>	34° N.—40° N.	18.15	36.45	M.
<i>U. urceolata</i>	45° N.—57° N.	11.5	35.19	
<i>Acanthochiasmus fusiforme</i>	5° S.—66° N.	14.5	35.72	M. P.

	Limits	Mean tem- perature	Mean salinity	Occurrence in Atlantic
<i>Acanthochiasma Krohnii</i>	17° S.—56°(72°) N.	18.4	35.39	M. I. P.
<i>Acanthometron quadri- folium</i>	25° S.—78° N.	14.4	35.30	M.
<i>A. pellucidum</i> (incl. <i>A. elasticum</i>)	26° S.—50°(67°) N.	21.1	35.85	M. I. P.
<i>Acanthonia cuspidata</i>	33° S.—57° N.	20.1	35.82	M. P.
<i>A. Mülleri</i>	5° S.—76° N.	12.9	35.47	M.
<i>Challengeria xiphodon</i>	15° N.—66° N.	14.6	35.61	
<i>Collozoum inermis</i>	21° S.—72° N.	16.7	35.74	
<i>Litholobus ligurinus</i>	21° S.—79° N.	16.4	35.29	M. P.
<i>Globigerina bulloides</i>	25° S.—81° N.	17.5	35.21	
<i>Halosphaera viridis</i>	26° S.—67° N.	14.5	35.18	M. I.
<i>Ceratium arietinum</i>	4° N.—56° N.	19.0	35.36	I.
<i>C. bucephalum</i>	7° N.—76° N.	15.8	35.69	
<i>C. fures</i>	29° S.—76° N.	13.1	35.12	R. I. P.
<i>C. fusus</i>	26° S.—77° N.	10.9	34.61	
<i>C. lineatum</i>	26° S.—77° N.	19.8	35.43	P. I. P.
<i>C. macroceros</i>	25° S.—77° N.	12.3	34.15	
<i>C. platycorne</i>	34° N.—56° N.	14.8	36.12	
<i>C. reticulatum</i>	21° S.—50°(62°) N.	19.4	36.46	M. I.
<i>C. tripos</i>	35° S.—78° N.	11.4	34.02	
<i>Dinophysis hastata</i>	11° S.—62° N.	17.9	35.71	I.
<i>D. hommenulus</i>	35° S.—63° N.	18.5	35.54	M. I. P.
<i>Diplopsalis lenticula</i>	11° S.—63° N.	16.9	35.67	M. I. P.
<i>Gonyaulax polygramma</i>	26° S.—61° N.	17.4	35.70	M. I. P.
<i>Oxytoxum scolopax</i>	20° S.—50° N.	18.7	35.02	M. I. P.
<i>Peridinium divergens</i>	30° S.—78° N.	15.1	35.47	M. I. R.
<i>P. globulus</i>	15° S.—65° N.	20.8	35.53	R.
<i>P. Michaëlis</i>	20° S.—80° N.	16.3	35.59	
<i>P. oceanicum</i>	7° N.—65° N.	12.9	35.45	R. I.
<i>P. pedunculatum</i>	23° N.—60° N.	14.2	35.42	M.
<i>Asteromphalus heptactis</i>	26° S.—63° N.	13.6	35.36	
<i>Bacteriastrium delicatulum</i>	17° N.—65° N.	14.7	35.22	R.
<i>B. elongatum</i>	7° N.—63° N.	16.8	34.91	M. I.
<i>Chaetoceros furca</i>	6° N.—49° N.	18.1	35.72	M. R. I.
<i>C. Lorenzianus</i>	6° N.—50° N.	19.4	35.72	M. R. I.
<i>C. skeleton</i>	1° S.—65° N.	15.1	35.61	I.

	Limits	Mean temperature	Mean salinity	Outside the Atlantic:
<i>Chaetoceros volans</i>	4° S.—77° N.	14.1	35.19	
<i>Corethron hystrix</i>	7° N.—76° N.	10.4	35.12	North P.
<i>Coscinodiscus sol</i>	32° S.—57° N.	15.6	35.20	M. R. P.
<i>Dactylosolen antarcticus</i>	35° N.—62° N.	11.7	35.27	Antarctic.
<i>D. hyalinus</i>	32° N.—47° N.	14.1	35.20	
<i>Hemidiscus euciformis</i> ..	29° S.—66° N.	20.1	35.19	M. I.
<i>Navicula membranacea</i> ..	21° N.—43° N.	15.2	35.27	R. I. P.
<i>Rhizosolenia alata</i>	30° S.—66° N.	11.9	35.29	M. I. P.
<i>R. copulcula</i>	5° S.—64° N.	15.7	35.22	North P.
<i>R. styliformis</i>	26° S.—80° N.	12.6	34.77	M. P.

It will be seen that many have a very wide range of distribution, several from the Cape of Good Hope to Spitzbergen. Many occur in the Mediterranean, some in the Pacific, and some in the Indian Ocean. Among these species there is also one Baltic species, *Evadne Nordmannii*, which I should have placed among the boreal species, had it not, according to HANSEN'S statement, been found in the Gulf of Guinea.

A certain number of species, which occur usually in the coast-regions of the temperate Atlantic, form a kind of plankton that is related to the Styli-plankton in the same way as the arctic neritic plankton to the Tricho-plankton. They constitute the plankton-type I have called *Didymus-plankton* or *Southern neritic plankton*.

The following list contains such forms as belong to this type.

Didymus-plankton. (Temperate neritic species.) *Nova.*

	Limits	Mean temperature	Mean salinity	Outside the Atlantic:
<i>Podon intermedius</i>	40° N.—70° N.	12.1	35.45	B.
<i>Acartia biflosa</i>	6° S.—63° N.	—	—	B.
<i>Eutерpe aculifrons</i>	40° S.—51° N.	—	—	M. I.
<i>Cyttarocypris serrata</i>	33° S.—58° N.	—	—	
<i>Tintinnopsis campanula</i> ..	9° N.—58° N.	—	—	B. M.
<i>Bacteriastrom varians</i> ...	7° N.—58° N.	—	—	
<i>Biddulphia mobilensis</i> ...	21° N.—62° N.	14.1	34.44	
<i>Cerataulina Bergonii</i>	7° N.—80° N.	11.1	34.88	M.

	Limits	Mean temperature	Mean salinity	Outside the Atlantic
<i>Chaetoceros curvisetus</i> ...	11° N.—66° N.	14.7	34.24	
<i>C. danicus</i>	21° N.—58° N.	15.6	—	B. North P.
<i>C. densus</i>	12° N.—60° N.	13.5	35.13	M.
<i>C. didymus</i>	20° N.—60° N.	12.5	35.35	M. North P.
<i>C. Schütti</i>	35° N.—62° N.	11.5	34.68	North P.
<i>Ditylum brightwellii</i>	23° N.—60° N.	10.5	34.65	North P.
<i>Eucampia zodiacus</i>	34° N.—60° N.	14.5	35.12	North P.
<i>Guinardia faccida</i>	16° N.—63° N.	12.5	34.72	M.
<i>Lauderia annulata</i>	21°(7)N.—62° N.	13.4	35.11	M. I. P.
<i>Lithodesmium undulatum</i>	40° N.—55° N.	14.5	33.21	
<i>Rhizosolenia calcar avis</i> ...	5° N.—48° (58°)N.	19.4	34.37	M.
<i>R. gracillima</i>	4° S.—80° N.	14.1	34.38	B.
<i>R. setigera</i>	7° N.—44° N.	—	—	
<i>R. Shrubsolei</i>	18° N.—64° N.	12.6	35.01	M. R. I.
<i>R. Stolterfothii</i>	10° N.—64° N.	14.8	35.00	North P.
<i>Stephanopyxis turgida</i> ..	5° S.—51° N.	13.7	34.53	
<i>Streptothecca thamesis</i> ...	45° N.—58° N.	10.5	35.22	

Some of these species go very far to the south, even to the Gulf of Guinea. They enter the plankton above the 200 metre plateau, west of the European Continent, and arrive in the spring and the summer through the English Channel into the south part of the North Sea. The same kind of plankton also moves west of the British Islands towards Scotland. There are some few Baltic forms among these species.

III. **Desmo-plankton.** This kind is the prevailing one in the whole of the tropical Atlantic, in the southern hemisphere between Africa and S. America and in the Equatorial Current. The average space it occupied in the northern hemisphere was to the left of a line drawn from Cape Verde to the Newfoundland Banks, but the extension of this area was very different at different seasons. In the winter the northern limit was at about 35° N., but in May it had advanced beyond 40°, nearly to 45° N. In November the limit had retired below 40° N., but the region had moved eastwards, so that Desmo-plankton was found in November 1898 off the Canaries and Gibraltar.

The Desmo-plankton is very rich in species, as will be seen from the following list.

Desmo-plankton. (Tropical oceanic species.) D.

	Limits	Mean temperature	Mean salinity	Outside the Atlantic
<i>Lucifer Reynaudii</i>	26° S. — 33° N.	24.6	35.52	I. P.
<i>Acartia negligens</i>	33° S. — 36° N.	22.6	36.19	M. I. R. P.
<i>Calanus minor</i>	32° S. — 40° N.	20.5	36.00	M. I. P.
<i>C. vulgaris</i>	25° S. — 40° N.	24.4	35.02	P. I.
<i>Calocalanus pavo</i>	6° S. — 40° (50) N.	22.2	36.19	M. P. I.
<i>Gandaca ethiopica</i>	3° N. — 40° N.	22.7	36.00	M. P.
<i>Gentropages violaceus</i>	26° S. — 4½° N.	22.1	35.52	M. P.
<i>Clausocalanus furcatus</i>	25° S. — 40° N.	23.9	35.34	M. P. I. R.
<i>Copilia mirabilis</i>	6° S. — 36° N.	24.3	35.10	P. I. R.
<i>Coryceus longicauda</i>	35° S. — 45° N.	25.2	35.10	P.
<i>C. speciosus</i>	30° S. — 40° (50) N.	24.6	35.92	P.
<i>Euchaeta marina</i>	26° S. — 30° (50) N.	24.3	35.26	M. I. P.
<i>Miracia efferata</i>	4° S. — 42° N.	24.1	35.37	P.
<i>Oithona plumifera</i>	33° S. — 40° (50) N.	21.8	36.01	M. R. I. P.
<i>Oncosa media</i>	33° S. — 47° N.	22.2	35.76	M. R. I. P.
<i>Paracalanus aculeatus</i>	1° S. — 41° N.	23.9	35.37	R. P. I.
<i>Poecilina plumata</i>	35° S. — 38° N.	25.3	35.22	M. R. I. P.
<i>Sapphirina gemma</i>	36° S. — 11° N.	26.2	35.22	M. P. I.
<i>Scolecithrix Danae</i>	18° S. — 34° N.	25.6	35.23	M. P.
<i>Setella gracilis</i>	37° S. — 47° N.	24.5	35.02	M. P. I.
<i>Veella spirans</i>	0° S. — 61° N.			
<i>Codonella cassis</i>	21° S. — 45° (50) N.	19.32	36.31	I. M.
<i>C. lagenula</i>	20° S. — 52° (60) N.	20.37	35.34	I. M.
<i>Cyttarocylis acuminata</i>	29° S. — 50° N.	22.6	35.93	I. M.
<i>C. amor</i>	19° S. — 50° N.	23.3	36.09	I.
<i>C. hebe</i>	26° S. — 48° N.	21.2	35.53	R. I.
<i>C. simplex</i>	20° S. — 56° N.	19.3	35.22	
<i>Undella Claparedii</i>	20° S. — 50° N.	20.13	35.31	M. R.
<i>Aerosphaera spinosa</i>	21° S. — 40° (50) N.	21.5	36.44	M.
<i>Amphilonche helonoides</i>	29° S. — 57° N.	19.5	35.12	M. P.
<i>A. diodon</i>	7° N. — 44° N.	24.7	35.31	
<i>A. elongata</i>	26° S. — 40° (50) N.	21.5	35.72	M. I. P.

	Limits	Mean length (microns)	Mean width (microns)	Outside the Atlantic
<i>A. tetraptera</i>	24° S.—40° (56°) N.	22.2	35.29	M. P.
<i>Callimitra Eomae</i>	14° S.—33° N.	26.2	36.13	P.
<i>Collesphæra Huxleyi</i>	26° S.—50° N.	22.2	35.96	
<i>Diplocoelus fascies</i>	29° S.—35° N.	23.2	36.29	M.
<i>Eucyrtidium tropezianum</i>	21° S.—45° N.	23.3	36.12	M.
<i>Hexalaspis heliodiscus</i>	24° S.—30° N.	22.2	36.45	P.
<i>Hymeniastrum Euclidis</i>	21° S.—41° N.	24.9	35.72	P.
<i>Lithostrobos botryocystis</i>	21° S.—56° N.	18.2	35.31	P.
<i>Lychnaspis Giltchii</i>	21° S.—41° N.	21.7	36.31	
<i>Pterocanium pretextum</i>	21° S.—34° (47°) N.	25.2	36.20	I. P.
<i>Quadrilonche erux</i>	26° S.—36° N.	25.1	36.40	
<i>Siphonosphæra cyathina</i>	21° S.—41° N.	22.2	36.28	
<i>S. socialis</i>	21° S.—43° N.	22.5	36.36	
<i>Stylodictya arachnia</i>	21° S.—56° N.	20.9	36.51	
<i>Tessaraspis arachnoides</i>	26° S.—36° N.	24.1	36.13	
<i>Thecooelus zancleus</i>	7° N.—49° N.	24.2	35.82	M.
<i>Theopilium tricostratum</i>	21° S.—56° N.	22.1	35.67	P.
<i>Pulvinulina Menardi</i>	38° S.—11° N.	23.00	35.72	
<i>Amphisolenia palmata</i>	19° S.—52° N.	24.4	36.22	R. I. P.
<i>A. thrinax</i>	21° S.—32° N.	22.5	36.21	I. P.
<i>Ceratium arcuatum</i>	35° S.—50° N.	23.1	35.55	
<i>C. candelabrum</i>	35° S.—50° N.	22.4	35.69	M. I.
<i>C. contortum</i>	26° S.—44° N.	25.2	35.19	M. I. P.
<i>C. curvicorné</i>	26° S.—45° N.	21.6	35.71	M. R. I.
<i>C. fusus</i> v. <i>extensa</i>	19° S.—50° N.	21.1	36.02	M. P.
<i>C. flagelliferum</i>	29° S.—45° N.	22.9	36.06	
<i>C. gravidum</i>	28° S.—49° N.	22.4	35.96	M. I.
<i>C. limulus</i>	17° S.—36° N.	20.9	36.22	
<i>C. ranipes</i>	10° N.—49° N.	21.2	36.12	
<i>C. volans</i>	26° S.—44° N.	21.9	36.19	
<i>C. vultur</i>	21° S.—45° N.	24.4	35.69	I.
<i>Ceratocorys horrida</i>	21° S.—45° (50°) N.	23.2	35.78	M. I. P.
<i>Cladopyxis brachiolata</i>	18° S.—50° N.	22.7	35.91	
<i>Goniodoma acuminatum</i>	35° S.—60° N.	22.4	35.28	R. I.
<i>Gonyaulax Jolliffei</i>	26° S.—43° N.	23.2	36.17	M.
<i>Histioneis magnifica</i>	29° S.—44° N.	22.2	36.12	M. R. I. P.
<i>Peridinium elegans</i>	21° S.—47° N.	23.2	35.24	I.

	Limits	Mean temperature	Mean salinity	Outside the Atlantic
<i>Phalerona cuneus</i>	3° S.—40° N.	22.7	36.40	M. I.
<i>P. doryphorum</i>	12° S.—57° N.	22.0	35.03	M. R. I.
<i>P. Hindmarchii</i>	9° N.—34° N.	24.3	36.37	
<i>P. rapa</i>	20° S.—42° N.	21.1	35.80	South P.
<i>P. operculatum</i>	17° S.—47° N.	22.4	36.23	M. R. I.
<i>Podolampas bipes</i>	10° S.—53° N.	23.0	35.74	M. R. I. P.
<i>P. palmipes</i>	20° S.—68° N.	19.4	35.09	M. R. I. P.
<i>Pyrophaeus horologium</i> ..	20° S.—66° N.	23.3	35.39	M. I. P.
<i>Steiniella mitra</i>	7° N.—42° N.	22.9	35.93	M.
<i>Pyrocystis fusiformis</i>	29° S.—44° N.	21.5	35.00	
<i>P. pseudonocellulosa</i>	25° S.—40° (60) N.	23.88	35.93	R. I. P.
<i>Asterolampas marylandica</i>	9° N.—36° N.	24.4	36.19	R. I.
<i>A. rotula</i>	21° S.—39° N.	27.0	36.38	I.
<i>Chaetoceros peruvianus</i> ...	21° S.—43° N.	21.6	36.05	M. R. I. P.
<i>C. coarctatus</i>	25° S.—47° N.	23.4	35.01	I.
<i>C. tetrastrichon</i>	10° N.—46° N.	23.1	36.16	M.
<i>Climacodium biconcavum</i>	26° S.—42° N.	24.3	35.81	M. R.
<i>C. Frauenfeldianum</i>	12° S.—42° N.	25.4	35.21	R. I. P.
<i>Hemianthus Hauekii</i>	24° S.—45° N.	23.4	36.06	M. I. P.
<i>H. Heibergii</i>	6° N.—26° N.	24.3	36.01	M. R. I. P.
<i>Rhizosolenia acuminata</i> ..	35° S.—40° N.	23.6	35.13	M. P.
<i>R. Castracanei</i>	35° S.—48° N.	20.1	35.83	M.
<i>Trichodesmium Thiebaultii</i>	26° S.—59° N.	23.6	35.46	M. I.

It appears from the above list that the animal plankton is represented by a considerable number of copepoda, tintinnodea and radiolaria. The phytoplankton is poor in diatoms, in respect to both the number of species and the number of individuals, the bulk of it being represented by *Trichodesmium*, *Pyrocystis* and various dinoflagellates.

Most of the species of the Desmo-plankton go far to the south and as a rule to 40° or 50° N. Nevertheless, some species may occasionally and as rare specimens drift together with the Styliankton still farther northwards, or to about 60° N. Most of the species of the Desmo-plankton occur besides in the Mediterranean, many of them also in the Pacific and the Indian Ocean.

The temperature of the water that contains Desmo-plankton is high, above 20°, and the salinity 36 p. m. or more.

The coast regions of the tropical Atlantic are characterized by a number of more or less brackish species, of which I give the following list:

Tropical neritic plankton. *Nt.*

	Limits	Mean tempe- rature	Mean salinity	Occide the Atlantic
<i>Temora stylifera</i>	37° S.—42° N.	22.4	34.63	M. I.
<i>T. turbinata</i>	6° S.—18° N.	21.05	20.32	P.
<i>Asterionella notata</i>	18° N.—40° N.	22.5	35.57	M.
<i>Biddulphia chinensis</i>	7° N.—10° N.	27.2	36.61	P. I.
<i>Chaetoceros</i> (<i>didym.</i> v.) <i>longicurris</i>	29° S.—40. N.	17.8	35.64	M. R. I.
<i>C. diversus</i>	29° S.—40° N.	25.7	34.51	M. R. I.
<i>C. femur</i>	7° N.—12° N.	26.5		
<i>Coscinodiscus nobilis</i>	5° S.—6° S.	26.8	27.21	
<i>Ditylum sol</i>	10° N.	37.2	36.61	I. P.
<i>Nitzschia pungens</i>	7° N.—10° N.	26.6	36.01	I. P.
<i>Rhizosolenia cylindrus</i> ..	3° N.—42° N.	25.4	34.15	
<i>B. robusta</i>	5° S.—50° N.	21.5	34.33	M. I. P.
<i>Skeletonema tropicum</i> ...	29° S.—10° N.	25.8	35.22	

I call the kind of plankton constituted by these species *Tropical neritic plankton* (Sign. *Nt.*) Some of the species falling under that kind have a very wide range of distribution, i. e. have been found off Australia, in the Malay Archipelago etc.

Appendicularia.

In many samples appendicularia occurred, but their bad state of preservation and the difficulty of examining them induced me to give up attempting to identify them, with the exception of the easily recognized *Fritillaria borealis*.

FRITILLARIA BOREALIS LOHM.

(*Ergebnisse d. Plankton Expedition, D. Appendicularien* pag. 49).

1898 *May*: Färöes.

July: 78° N. 3° W. (deep sea haul. Auriv.)

August: Spitzbergen; Beeren Island; area between 76° N. 12° E., 78° N. 10°—33° E. and 81° N. 23° E. (Auriv.)

September: 74°—76° N. 19°—13° E. (Auriv.)

1899 *March and April*: Färöes.

May: Färöes to 59° N. 2° E.; 50° N. 33° W.; off Newfoundland.

June: 67° N. 11° E. to 72° N. 18° E.

July: 71° N. 32° E.; 71° N. 21° W.

September: 74°—77° N. 18°—14° E.

Temperature: 3.5 to 9.6, exceptionally 22.

Salinity: about 34, max. 35.46, min. 32.21.

Plankton-type. Noted from the Strait of Magellan (LOHM.), Smiths Sound, Davis's Strait, Newfoundland, Irminger Sea, North Sea, Skagerrak, Kiel (AURIVILLIUS), Gulf of Finland (LEVANDER) — *T.*

Pteropoda.

CLIO (CRESEIS) CONICA ESCH.

(Pilsener: Rep. Challeng. Pteropoda pag. 60, Pl. II (t. 1.)

1898 *March*: 3° N. 16° W. common.

Temperature: 28.3.

Salinity: 34.83.

Plankton-type. Found in the Pacific, Mediterranean, and off Brazil. — *D.* or *Nt.*

CLIONE LIMACINA PHIPPS.¹

(G. O. Sars: Mollusca regionis arcticae Norvegiæ pag. 332, Pl. XXIX fig. 4.
Clio borealis Vaukhöfen. Grönl. Exp. Fauna u. Flora Pl. II. fig. 6.)

1898 *July*: 58° N. 36° W.

August: N. of Spitzbergen.

September: 74° N. 19° E.

1899 *June*: 74° N. 14° W.

July: 71°—72° N. 21°—22° W.

August: 71° N. 23° W.

Temperature: 3.1, mean of 3 obs., max. 9.4, min. —0.5.

Salinity: 31.37, mean of 3 obs., max. 35.11, min. 28.21.

Plankton-type. This species is found in the Bering Sea (Krause), off W. Greenland, from Labrador to Massachusetts Bay and in the area between Lofoten—Spitzbergen and Novaja Semlja, in the White Sea and Kara Sea, off Scotland and in the Skagerak. — *Np.*

LIMACINA HELICINA PHIPPS.¹

(G. O. Sars Mollusca region. arct. Norvegiæ 1878 pag. 326, Pl. XXIX fig. 1.)

1898 *July*: 58° N. 44° W.; 78° N. 3° W.; Spitzbergen.

August: N. of Spitzbergen.

1899 *June*: 74° N. 14° W. (haul from 25 metres).

¹ Ostenfeld's data used.

July: 71°—74° N. 22°—18° W., rare.

August: 71°—72° N. 23°—16° W., rare to common.

September: 71° N. 16° W., very common.

Temperature: 4., mean of 3 obs., max. 7., min. 1.

Salinity: 29.₀₀ to 31.₀₁.

Plankton-type. This arctic species has been found off Alaska and the Aleutian Islands, in Baffins Bay from 78° N., off Labrador, at Jan Mayen, from Spitzbergen to Northern Norway and in the White Sea. The most southern points where it has been found are, according to H. MONTRE (Bih. till K. Sv. Vet. Akad. Handl. Vol. XIII. 4. no 2 pag. 5), 38° N. 72° W. and 35° N. 43° W. — *Nyg.*

LIMACINA RETROVERSA (FLEM.)¹

(*Spiriotis bateu*: G. O. Sars. Mell. reg. arct. Norvegie pag. 329 Pl. XXIX fig. 2. 3.)

1898 *February*: 45° N. 49° W.

April: 59° N. 33° W. to Cape Farewell and thence to 62° N. 50° W.; 43° N. 50° W. to 49° N. 31° W.

May: area between 58° N. 45° W., 61° N. 20° W., 59° N. 16° W. and 57° N. 34° W.

June: 57° N. 38° W.; Westmanna ö; 60° N. 3° W.

July: area between the Färöes, S. Iceland, 57° N. 47° W. and 59° N. 23° W.; 33° N. 74° W.

August: area between the Shetlands, S. E. Iceland and 62° N. 18° W.; 66°—62° N. 56° W.

September: area between the Shetlands, the Färöes, 65° N. 36° W. and 60° N. 26° W.; 59° N. 50° W. to 60° N. 55° W. and thence to 66° N. 55° W.; 71° N. 20° E.

October: area between the Shetlands, 64° N. 21° W. and 59° N. 21° W.; 57° N. 27° W. to 57° N. 42° W. and thence to 62° N. 56° W.

November: 63° N. 19° W. to 62° N. 8° W.

December: 64° N. 21° W. to 61° N. 6° W.; 46° N. 50° W.

1899 *January*: 41° N. 69° W.

September: 56° N. 30° W. common.

¹ Ostenfeld's data for *Spiriotis* used.

Temperature: 7.2, mean of 48 obs., max. 14, min. 0, exceptionally 27.

Salinity: 35.12, mean of 40 obs., max 36.94, min. 32.61.

Plankton-type. The principal area of distribution is between Greenland, Iceland and the Shetlands, whence it spreads into the Skagerak and follows the coast of Norway to Finmark. It also enters Davis's Strait and follows the southward current along the Newfoundland Banks to Massachusetts Bay. It has, according to ANATOLIUS, been noted S. of Ireland, in the Bay of Biscay and at the Azores, but these statements are, according to PRUDHOMME, erroneous or doubtful. It also occurs in the southern hemisphere, round Cape Horn (H. MURRAY)—*T.*

Macrura.

LUCIFER REYNAUDII M. KOW.

(Date: Rep. on the macrura collect. by H. M. S. "Challenger" 1888 pag. 466
Pl. LXXXIV.)

- 1898 *January*: 35° N. 74° W.
February: 5° S. 4° - 8° E.
March: 3° N. 16° W.
June: 33° N. 48° W.
September: 33° N. 16° W.
November: 26° S. 30° W.

Temperature: 24.5, mean of 7 obs., max. 28.2, min. 20.2.

Salinity: 35.76, mean of 5 obs., max. 36.50, min. 34.

Plankton-type. Found in the Indian and Pacific, the S. and N. Equatorial current, Guinea current, Florida current and the Sargasso Sea — *D.*

PONTOPHILUS NORVEGICUS M. SARR.

(Determination by G. O. Sars.)

- 1899 *September*: 61° N. 1° E., haul from 50 metre.

Temperature: 9.3.

Salinity: 35.46.

Plankton-type. This species belongs only in its young state to the oceanic plankton and occurs off the east coast of N. America, off the Norwegian coasts and in the area between Finmark and Beeren Island — *Ns.?*

Schizopoda.

BOREOPHAUSIA INERMIS (KRÖYER).

(Determination by G. O. Sars.)

- 1898 *July*: 78° N. 1° E.—3° W. (deep sea hauls. Auriv.)
August: 78° N. 10° E. (deep sea hauls. Auriv.)
September: 76° N. 15° E. (deep sea haul. Auriv.)
 1899 *July*: 72° N. 22° W.; 71° N. 21° W., haul from 225 metres.
September: 67° N. 3° W., hauls from 300 and 167 metres; 63°
 N. 1° E., haul from 50 metres.

Temperature: 3.4, mean of 3 obs., max. 8.2, min. -0.5.

Salinity: 35.20, mean of 3 obs., max. 35.44, min. 34.71.

Plankton-type. Found along the E. coast of North America, off Greenland, Spitzbergen and Finmark (G. O. Sars) — *T.*

CYNTHILIA THOMPSONII (M. EDW.)

(Determination by G. O. Sars.)

- 1899 *June*: 24° S. 6° E.
Temperature: 19.6.
Salinity: 35.71.
Plankton-type. Found in the N. and S. Atlantic, Pacific (G. O. Sars) — *S. or D.*

EUPHAUSIA GRACILIS DANA.

(Determination by G. O. Sars.)

- 1898 *March*: 3° 30' N. 16° W.
Temperature: 28.2.
Salinity: 34.82.
Plankton-type. Found in the tropical Atlantic and the Pacific — *Ni?*, *D?*.

EUPHAUSIA PELLUCIDA DANA.

(Determination by G. O. Sars.)

1898 *October*: 37°—39° N. 27°—21° W.1899 *May*: 25° S. 7° E.**Temperature:** 17.₉, mean of 3 obs., max. 20, min. 14.₈.**Salinity:** 36.₆₈, mean of 3 obs., max. 36.₂₆, min. 35.₇₁.**Plankton-type.** According to G. O. Sars this species is cosmopolitan: — S?

NYCTIPHANES NORVEGICUS (M. Sars.)

(Determination by G. O. Sars.)

1899 *September*: 67° N. 3° W.; 62° N. 1° E. (deep sea hauls from 500 and 50 metres); 61° N. 1° E., hauls from 50 and 100 metres.**Temperature:** 0.₂.**Salinity:** 35.₁₀.**Plankton-type.** Found in Massachusetts Bay, off Ireland, Scotland, the Shetlands, Norway, SW. of Spitzbergen, Jan Mayen (836 metre), in the Bay of Biscay and off the coast of Portugal (AURVILLE). — T.

THYSANOESSA GREGARIA G. O. Sars.

(Determination by G. O. Sars.)

1899 *October*: 56° N. 23° W.**Temperature:** 12.**Salinity:** 35.₄₄.**Plankton-type.** This species has a very wide range of distribution. It is known to exist in the N. Atlantic, S. and E. of Buenos Ayres, in the region between Patagonia and the Falklands Islands, S. of the Cape of Good Hope, S. Pacific, N. Pacific to Japan and in the Mediterranean. — ?

THYSANOESSA LONGICAUDATA KRÖYER.

(Determination by G. O. Sars.)

1898 *February*: 48° N. 41° W., common.*March*: 51° N. 27° W., common.*April*: 43° N. 50° W., common.*October*: 56° N. 29° W.

1899 *March*: 66° N. 22° W.

May: 67° N. 16° W.

June: 64° N. 0° E. and 67° N. 3° W., deep sea hauls, from 200 metres.

July: 53° N. 42° W.

August: 56° N. 23° W.; 52° N. 53° W.

September: 67° N. 3° W. (haul from 500 metres); 62° N. 1° E. (hauls from 50 and 25 metres); 56° N. 24° W.; 53° N. 51° W.

October: area between 56° N. 23° W., 51° N. 34° W. and 54° N. 45° W.

November: 51° N. 34° W.

Temperature: 6.3, mean of 5 obs., max. 10.2, min. 0.3.

Salinity: 34.81, mean of 5 obs., max. 35.36, min. 34.21.

Plankton-type. Found off Finmark and Greenland (G. O. Sars). NANSEN collected it in the Polar Basin, 80°—85° N. 134° to 11° E. — *T.*

THYSANOPODA TRICUSPIDATA M. Edw.

(Determination by G. O. Sars)

1897 *December*: 12° N. 50° W.

1898 *March*: 3° 30' N. 16° W.

Temperature: 26.3 and 28.3.

Salinity: 34.36 (one obs.).

Plankton-type. Found in the tropical Atlantic and the Pacific (G. O. Sars) — *N? D?*

Amphipoda.

EUTHEMISTO LIBELLULA (MANN)

(G. O. Sars: Crustacea of Norway, Amphipoda pag. 130.)

- 1898 *June*: 78° N. 7° E.; 72°—76° N. 22°—26° E.
July: 78° N. 1° E.—3° W. (deep sea hauls, Arriv.)
August: 76°—79° N. 10°—12° E. (deep sea hauls, Arriv.)
September: 56° N. 36° W.
November: 40° N. 67° W.
- 1899 *May*: 75° N. 3° W.
June: 66°—68° N. 2° 30'—11° W., common; 76° N. 9° E.
July: 73° N. 22° W.; 73° N. 36° E.
August: 73° N. 24° W., rare; 52° N. 53° W., rare.
September: 70° N. 13° W.; 80° N. 13° E.

Temperature: 2.2, mean of 11 obs., max. 18.2, min. —1.6.

Salinity: 34.50, mean of 8 obs., max. 35.22 min. 34.11, exceptionally 29.57.

Plankton-type. Found in the Siberian Polar Sea, off Spitzbergen, Jan Mayen, Greenland. NÅNSEN collected it at 80° N. 134° E. and at 85° N. 25°—11° E. — *T.*

PARATHMISTO OBLIVIA (KRÖYER).

(G. O. Sars: Crustacea of Norway, Amphipoda pag. 101.)

- 1898 *February*: 45° N. 50° W.
June: 69° N. 15° W.
July: 78° N. 1° E. (deep sea haul).
August: 54° N. 47° W.; 77°—79° N. 12°—10° E. (deep sea hauls).
September: 76° N. 13° E.; 72° N. 19° E. (deep sea haul).
October: Färöes.

November: 50° N. 44° W.; 47° N. 41° W.; 40° N. 67° W.

December: 45° N. 53° W.

1899 *June*: 67° N. 11° E.; 69° N. 13° W.; 71° N. 10° W.

July: 71° N. 10° W.; 71° N. 21° W.; 54° N. 45° W.

September: 69° N. 13° W.; 56° N. 23°—24° W.; 53° N. 51° W.

October: 56° N. 30° W. to 54° N. 45° W.

November: 51° N. 28° W.

Temperature: — 0.3 to 6.1 (exceptionally 18).

Salinity: 34.15, mean of 8 obs., max. 34.82, min. 32.41.

Plankton-type. NANSSEN collected this species in the Polar Basin, between 80° N. 134° E. and 84° N. 11° E., at 85° N. 76° E. in the surface. It occurs along the coast of Norway, usually in deep water, in the Skagerak and in the Murman Sea, S. and W. of Greenland. — *T. Ng.*

PSEUDALIBROTES LITTORALIS (KRÖYER).

(Determination by G. O. SANS.)

1899 *August*: 73° N. 24° W., rare.

Temperature: 2.4.

Salinity: 29.57.

Plankton-type. Found off Finmarken, Spitzbergen and Franz Josef Land, in the Kara Sea, Siberian polar Sea, off Greenland, Jan Mayen (G. O. SANS Crustacea of Norway 1890—95). — *Ng.*

Cladocera.

EVADNE NORDMANNI Lovén.¹

(Kongl. Sv. Vetensk. Akad. Handl. 1835 pag. 1, Pl. 1, II.)

- 1898 *April*: 50° N. 3° E.
May: 48° N. 26° W.; English Channel; Färöes, common; Shetlands to Norway, 58°—60° N. 3°—5° E.
June: 48° N. 17° W.; S. of Iceland; Färöes; Scotland to the Shetlands and to Norway (62° N. 2° 30' E.).
July: W. and S. of Iceland; 59°—62° N. 23°—0° W.
August: S. of Iceland; between Iceland and the Färöes; Shetlands to the E. of Scotland.
September: Färöes; N. of Scotland; between Ireland and Rockall; 72° N. 19° E.
- 1899 *May*: 51° N. 14° W., very rare; 60° N. 3° W. to 58° N. 9° E. as a rule very common.
June: 51° N. 20° W., rare; 62° N. 2° E., common.
July: 62° N. 0° W., not common.
August: 72°—73° N. 26°—31° E.; 56° N. 23° W. to 55° N. 9° W., not rare.
September: 68° N. 6° W.; 56° N. 17° W., common.

Temperature: 9.7, mean of 8 obs., max. 12.3, min. 8 (only such samples considered as contained this species abundantly).

Salinity: 34.0, mean of 7 obs., max. 35.4, min. 31.3.

Plankton-type. Found in the Gulf of Guinea, the Färöe Channel and on the Newfoundland Banks (HANSEN, *Ergebn. d. Plankton Exp. G. d.* pag. 9), in the North Sea and the whole Baltic (ANNULIUS). It seems to have the same distribution in the Eastern and Northern Atlantic as other forms of the Styli-type, advances to Iceland and through the Färöe Channel into the North Sea and towards

¹ Osenfeld's data used.

the coast of Norway, whence rare specimens may drift at least to 73° N. in the Murman Sea. — S.

EVADNE SPINIFERA P. E. MOLL.

(Naturh. Tidsskr. 3dje Række Vol. V, 1868, Pl. VI, fig. 11—13.)

- 1898 *April*: 28° N. 47° W.
May: 26° N. 42° W. to 31° N. 36° W.
June: 29° N. 36° W.; 31°—32° N. 50°—48° W.; 31° N. 17° W.;
 35° N. 20° W.; Azores; 44° N. 9° W.
July: Azores; 59° N. 2° E.
August: Azores; 49° N. 12°—14° W.; 59° N. 2° W. to 58° N.
 5° E.
September: 18° N. 25° W.; Azores, common; 48° N. 23° W.,
 common; 57° N. 14° W. rare.
November: Rio Janeiro; 24° S. 29° W. to 18° S. 31° W.
December: 18° N. 67° W. rare.
- 1899 *June*: Azores; 24° N. 42° W.
October: 52° N. 14° W., rare.
- Temperature**: 20.7, mean of 35 obs., max. 25, min. 10.7.
Salinity: 35.39, mean of 26 obs., max. 37.41, min. 30.69.
- Plankton-type**. Found in the Mediterranean and on the west coast of Australia (HANSEN) in the North Sea, the Skagerrak and the Baltic. — S. (D.)

EVADNE TERGESTINA CLAUD.

(Determination by W. LILLJENORF.)

- 1898 *March*: 7°—11° N. 15°—19° W.; 7° N. 55° W., common.
May: 6°—7° N. 56°—54° W.; 29° N. 39° W.
- Temperature**: 22.8 to 27.8.
Salinity: 35.83 to 36.85, exceptionally 32.
- Plankton-type**. This species has been found off Sydney, Auckland, the west coast of Australia, in the Indian Ocean, the Adriatic and in the Atlantic, in the N. Equatorial Current, the Sargasso Sea and Florida Current. (HANSEN: *Ergebn. d. Plankton Exp. G.* d. pag. 11.) — D. N.

PODON INTERMEDIUS LILLJEB.¹

(P. E. MÖLL. Naturh. Tidskr. Sjödj. Raskis, Vol. V 1868, Pl. 5 fig. 22, VI fig. 1-4.)

1898 *April*: 50° N. 3° W.

July: 59° N. 13° W.

August: 56° N. 13° W.; 61° N. 8° W. to 60° N. 3° W.; Westmannö.

September: 56°—57° N. 12°—14° W.; 60° N. 4°—3° W.; 70° N. 21° E. (Auriv.)

1899 *August*: 54° N. 18° W., not rare.

September: 56° N. 17° W., not rare.

Temperature: 12.1, mean of 13 obs., max. 14.1, min. 10.1 (According to AURIVILLIUS 14.)

Salinity: in the Atlantic 35.42, mean of 11 obs. max. 36.51, min. 33.50 (in the Skagerak 21, AURIVILLIUS).

Plankton-type. This species is found in the Adriatic and Mediterranean, on the west coast of France, off the British Islands, the coast of Norway, in the North Sea, the Skagerak, the Baltic, at least to 63° N. (HANSEN, AURIVILLIUS). Evidently a neritic form of the eastern temperate Atlantic. — *Nox.*

PODON POLYPHEMOIDES LETICK.

(*P. viviparus* de GRASSE. Bull. soc. zool. de France vol. XII 1887.)

1898 *December*: 46° N. 50° W.

Temperature: 13—14 (AURIVILLIUS).

Salinity: 21 (AURIVILLIUS).

Plankton-type. Found off Auckland, in the Gulf of Guinea, the Mediterranean and Black Sea, off the west coast of France, in the southern North Sea, the Skagerak, the Baltic to 66° N., off Norway to Lofoten (HANSEN, AURIVILLIUS). Evidently a neritic form living on the eastern coasts of the warmer Atlantic. — *Nox.*

¹ Gossefeld's data used.

Ostracoda.

CONCHOECETTA ACUMINATA CLAUS.

(CLAUS: Die Heloscypriden des Atlant. Ozeans und Mittelmeeres. 1891. P. 67.
Pl. XIII, XIV. Determination by J. GUNNAR ANDERSSON).

1898 *March*: 42° N. 42° W.

Temperature: 16°.

Salinity: 36.11.

Plankton-type. Found off the Canaries (surface) and Cape Finisterre (depth 1,000 metres). — S.

CONCHOECIA BISPINOSA CLAUS.

(CLAUS: Die Heloscypriden des Atlant. Ozeans und Mittelmeeres. 1891. P. 59.
Pl. V. Determination by J. GUNNAR ANDERSSON).

1898 *March*: 42° N. 42° W.

Temperature: 16°.

Salinity: 36.11.

Plankton-type. Found off Madeira (surface) and at 38° N. 14° W., depth 1,500 metres. — S.

CONCHOECIA BORBALIS G. O. SARS.

(BRADY and NORMAN. A. Monograph of the marine and freshwater Ostracoda. Part. II. 1895. P. 685-686. Pl. LXI. F. 1-8. *C. maculosa*, F. 9-12. *C. borealis*, *C. maculosa* Brady & Norman included. Determination by J. GUNNAR ANDERSSON).

1898 *July*: 78° N. 1° E., haul from 500 metres, not rare; 78° N. 3° W., hauls from 500 metres, not rare, from 2,500 metres, common.

August: 77° N. 12° E., haul from 500 metres, rare; 80° N. 10° E., haul from 500 metres, very rare.

1899 *June*: 67° N. 3° W., haul from 200 metres, rare, from 500 metres not rare.

July: 71° N. 21° W., haul from 200 metres, very rare.

Temperature: 1 to 2.5.

Salinity: 35.05.

Plankton-type. Found in deep water at 63° N. 5° E—5° W., along the coast of Norway and at Spitzbergen. NANSSEN collected it in the Polar basin, between 78° N. 136° E. and 84° N. 11° E., and at 85° N. 76° E. at the surface. — *T?*

CONCHOECIA ELEGANS G. O. SARS.

(BRADY and NORMAN. A. Monograph of the marine and freshwater Ostracoda. Part. II, 1895 pag. 684. Pl. LXV, fig. 11—22. Determination by I. GUNNAR ANDERSSON).

1898 *July*: 78° N. 3° W., rare in hauls from 2,600 and 500 metres.

August: 77° N. 12° E., very rare in a haul from 500 metres;

80° N. 10° E., rare in a haul from 400 metres.

1899 *June*: 67° N. 3° W., haul from 500 metres.

July: 74° N. 18° W., haul from 250 metres.

September: 67° N. 3° W., haul from 500 metres.

Temperature: 0.5 to 1.5.

Salinity: 35.10 to 35.12.

Plankton-type. Found in deep water in Dröbakfjord, off Lofoten, in Loch Elive (W. Scotland) and at 38° N. 14° W. (AURIVILLIUS). — *T.*

MICROCONCHOECIA CLAUSII G. O. SARS.

(CLAUS. Die Falacypriden des Atlant. Oceans und Mittelmeeres 1891 pag. 79. Pl. XX. Determination by I. GUNNAR ANDERSSON).

1898 *March*: 42° N. 42° W.

1899 *April*: 40° N. 16° W.

Temperature: 16° to 15°.

Salinity: 36.11 to 36.01.

Plankton-type. Found in the Mediterranean and off the Canaries (450—500 metres). — *S.*

PARACONCHOECIA OBLONGA CLAUS.

(CLAUS: Die Halocypriden des Atlant. Oceans und Mittelmeeres, 1891, pag. 63.
Pl. VIII, F. 10—11. Pl. IX. Determination by J. GUNNAR ANDERSSON).

1898 *March*: 42° N. 42° W.

July: 38° N. 74° W.

Temperature: 24.3 to 16.

Salinity: 36.11 to 34.07.

Plankton-type. Found between Madeira and Portugal. — S.

Copepoda.¹

ACARTIA BIFILOSA GIESBR.

1898 *February*: 6° S. 12° E (mouth of the Congo), common.

Temperature: 26.2.

Salinity: 20.29.

Plankton-type. Noted from the North Sea, the Skagerak (salinity 30.34, temp. 1.53) and the Baltic (salinity 4). — *N*₁₀ (and *N*₁₇)?

ACARTIA CLAUSII GIESBR.

1898 *March*: Azores; 60° to 63° N. 4° to 2° E.

April: Azores to 49° N. 18° W. and 50° N. 3° W.; 58° N. 2° W.

May: 49° N. 14° W.; Färöes to Norway, 58°—64° N. 6° E.

June: Azores to 46° N. 24° W.; coast of Portugal to Cape Finisterre; Färöes to Norway, 62° N. 2° 30' E. to 67° N. 10° 30' E.

July: Azores; SW. of Ireland, 50° N. 10°—11° W.; Färöes, Shetlands.

August: 49° N. 20° W. to 56° N. 13°—28° W.; round Scotland to 60° N. 3° E.; S. of Iceland.

September: 30° N. 34° W.; Engl. Channel; 56° N. 28°—12° W., N. of Iceland; between Scotland and the Shetlands: 71° N. 20° E.

October: 56° N. 10°—31° W.; Färöes.

November: Engl. Channel; 53°—56° N. 14°—30° W., Färöes.

December: Färöes.

1899 *January*: Färöes.

April: 37° N. 9° W.

¹ The only literature used, when not stated otherwise, is W. GIESBRECHT: Systematik und Faunistik der pelagischen Copepoden des Golfes von Neapel-Berlin 1892. 410.

May: 58°—59° N. 2° W.; 57°—58° N. 3°—9° E.

June: 62° N. 7° W., 62° N. 2° E.

July: 62° N. 0° W. to 58° N. 6° E.; 56° N. 15° W. common.

August: 55° N. 9° W. to 55° N. 28° W., very common.

September: 72° N. 19° E.; 56° N. 12°—24° W., very common.

October: 56° N. 15° W., very common; 52° N. 14° W., rare.

November: 51° N. 13° W., rare.

Temperature: 11.4, mean of 27 obs., max. 17.2, min. 8. (Only such samples considered as contained this species abundantly).

Salinity: 35.26, mean of 27 obs., max. 36.63, min. 31.62.

Plankton-type. Noted from the Mediterranean. The area of distribution is between the Azores, Gibraltar the Färöes and about 56° N. 30° W. Thence it drifts into the North Sea and follows the coast of Norway to about 70° or 74° N. (Arrarvilans). On the other hand it advances to Iceland (July), goes round that island and was found in September at the north side. — S.

ACARTIA DANÆ GIESBRE.

1898 *March*: 39° N. 29° W.; 43° N. 41° W.

May: 38° N. 21° W.

June: 39° N. 39° W.

October: Azores.

November: Azores, 34° N. 10° W., 49° N. 28° W.

1899 *January*: 34° N. 12° W.

May: 30° S. 11° E.

Temperature: 17.6, mean of 10 obs., max. 24, min. 12.

Salinity: 36.27, mean of 9 obs., max. 36.62, min. 35.32.

Plankton-type. Noted from the Pacific and the Cape Verde Islands. In the northern hemisphere the distribution is essentially eastern, 34°—49° N. 12°—14° W. It occurs in the Benguela current. — S.

ACARTIA LONGIREMIS (LILLJEBG.)

1898 *May*: Färöes; 58° N. 6° E. to 64° N. 6° E.

June and July: Färöes.

August: Färöes; 58° N. 5° E.

September: Färöes; 62° N. 6° W.

October to December: Färöes.

1899 *January and February*: Färöes.

March: 66° N. 20° W.

May: 66° N. 22°—24° W.; round the Färöes; 58° N. 3°—9° E.

June: 62° N. 1° E.

Temperature: 7.₈, mean of 16 obs., max. 12, min. 1.₈.

Salinity: 33.₉₆, mean of 15 obs., max. 35.₃₇, min. 30.₆₂.

Plankton-type. This species occurs in the spring N. of Iceland, towards E. Greenland, the whole year at the Färöes, along the coast of Norway, at Spitzbergen, in the North Sea, the Skagerak and in the Baltic to Åland. It was found by NANSEN at 78° N. 136° E. The above numbers for the temperature and salinity relate to the Atlantic only. It occurs in the Baltic in water of 6 p. m. salinity. — *Ns.*

ACARTIA MACROPUS Cl.

(X. Velensk. Akad. Handl. Vol. XXXIV no 1, pag. 3. Pl. 1, fig. 1—7).

1898 *August and September*: Azores, rare.

Temperature: 21.₂ to 21.₄.

Salinity: 36.₃₂ to 36.₃₃.

Plankton-type. — *D⁸*

ACARTIA NEGLIGENS DANA.

1898 *March*: 25° N. 41° W.; 26° N. 36° W.

April: 27° N. 75° W.; 36° N. 74° W.

May: 17° N. 50° W.; 26° N. 52° W.; 32° N. 37°—36° W.

June: 19° N. 63° W. to 36° N. 44° W.; Azores.

July and August: Azores.

September: 15° N. 49° W.; 17° N. 48° W.; 20° N. 45° W.;
35° N. 30° W.

October: 26° N. 76° W.; Azores.

November: 19° N. 58° W.; 22° N. 53° W.; Azores.

December: 19° N. 58° W.

1899 *May*: 33° S. 16° E. to 25° S. 7° E.; 35° N. 75° W.

June: 19° S. 0° W.; 15° N. 50° W.

Temperature: 22.6, mean of 35 obs., max. 28, min. 17.1.

Salinity: 36.16, mean of 29 obs., max. 36.98, min. 35.33.

Plankton-type. This species is found in the Pacific and the Mediterranean. In the southern hemisphere it occurs west of S. Africa and in the northern from the Azores, across the Sargasso Sea, to the north of South America and in the Antilles and Florida currents. — *D.*

* ACARTIA TONSA DANA

1898 *March:* 7° N. 65° W., rare.

Temperature: 26.5.

Salinity: 31.82.

Plankton-type. Noted from Australia (Port Jackson) and the west coast of South America, between Valparaiso and Callao. — *Nf.*

ANOMALOCERA PATERSONII TEMPLE.

1898 *May:* 61° N. 1° W.

July: 59° N. 2° E.

September: 70°—73° N. 21°—19° E. (AURIVILLIUS).

1899 *July:* 62° N. 0° E. to 58° N. 6° E.

Temperature: 11.8, mean of 12 obs., max. 16, min. 7.2.

Salinity: 34.17, mean of 12 obs., max. 35.43, min. 29.94.

Plankton-type. This species is not oceanic, but belongs to the coasts of the temperate Atlantic, the Engl. Channel, Scotland, the North Sea and the Skagerak, where it enters the Tripos-plankton. — *Nm. Tp.*

CALANUS BREVICORNIS LUBBOCK.

1898 *March:* 14°—18° N. 18° W.

Temperature: 20 to 22.

Plankton-type. Noted from the Indian Ocean (east of Africa) west of the Cape of Good Hope, Gulf of Guinea and Gibraltar, and besides at Rio Janeiro. — *S? Nf?*

CALANUS FINMARCHICUS (Gunn.)

1898 *February*: 55° N. 50° W., very common; 50° N. 0° W.

March: round Iceland; Denmark's Sound; between Iceland and the Färöes; Färöes; 59° N. 1° E.; 44° N. 45° W. to 40° N. 70° W., very abundant on the whole route; N. and S. of the Azores.

April: 74° N. 5° W., rare; S. of Iceland to the Färöes; N. of Scotland; 49° N. 31° W. to 39° N. 74° W.; N. of the Azores to the Engl. Channel and S. of Ireland.

May: 71° N. 15° W. to 68° N. 17° W., rare; Vestmannaö, common; Färöes, very common; Shetlands, not abundant; coast of Norway from 58° N. 6° E. to 65° N. 9° E., rare to common; 50° N. 7° W., not rare; 49° N. 11° W.; 48° N. 26°—33° W.; 48° N. 38° W. to 40° N. 72° W., on the whole very common.

June: Denmark's Sound; Färöes, common; Shetlands, rare to common; 62° N. 2° 30' E.; along the coast of Norway, from 60° N. to Tromsöe and E. of Spitzbergen (77° N. 27° E.), very common from 66° to 77° N.; 47° N. 33° W.; 45° N. 23° W.; 45° N. 41° W.

July: N. and E. of Iceland, common; S. of Iceland, rare; Färöes, rare; 62° N. 0°—1° W., not rare to common; 57°—58° N. 1°—6° E., not rare; 48° N. 6° W.; 48° N. 14° W., not rare.

August: N. E. and S. of Iceland, common; Färöes, not rare; NW. of the Hebrides; E. and W. of Spitzbergen, rare to common; 56° N. 34° W. to 54° N. 47° W., more or less scarce.

September: N. E. and S. of Iceland, common; N. of the Färöes, common; Färöes, not rare; between Tromsöe and Spitzbergen, not common; 56° N. 28° W. to 53° N. 49° W., as a rule common or very common.

October: Vestmannaö, rare; 59° N. 1° W., not rare; 50° N. 10° W.; 53° N. 51° W., very common.

November: Färöes, not common; 60° N. 1° W., rare; 51° N. 20° W., not rare; 34° N. 10° W., very rare; 29° N. 19° W., very rare; 48° N. 40° W. to 40° N. 67° W., not rare or common.

December: Färöes, not rare; Azores, not rare; 47° N. 45° W. to 42° N. 63° W., as a rule common.

1890 *January*: Färöes, rare; 45° N. 49° W. to 43° N. 57° W., more or less common.

March: N. and N.E. of Iceland, more or less common; from E. Iceland to the Färöes, rare; 44° N. 16° W., very rare; 37° N. 26° W., not rare.

April: Vestmannaö., very abundant; Färöes, rare; 37° N. 9° W., rare.

May: 66° N. 22° W., rare; 64° N. 12° W., very abundant; Färöes, very abundant; 60° N. 3° W., very abundant, thence common to 56° N. 1° W.; 58° N. 2° E., not common; 58° N. 5° E., very common; 51° N. 20° and 26° W., rare; 50° N. 34° W. to 47° N. 50° W., extremely abundant; 41°—44° N. 17°—15° W. to 39° N. 16° W., more or less rare.

June: 75° N. 15° W., not rare at the surface; 74° N. 14° W., very common in a haul from 25 metres; 66°—67° N. 2°—3° W., rare at the surface; 65°—67° N. 1°—3° W., extremely abundant in hauls from 550 and 500 metres; 62°—60° N. 0°—1° E., rare to common and 62° N. 2° E., extremely abundant in the surface; 64°—62° N. 0°—1° E., extremely abundant in hauls from 100 and 450 metres; 67° N. 11° E., rare; 70° N. 20° E., not rare.

July: 74° N. 18° W., very common in a haul from 280 metres; 72° N. 22° W., very common in a haul from 180 metres; 71° N. 21° W., common in a haul from 260 metres; 62° N. 0° W., rare; 79° N. 53° E., rare; 56° N. 15° W., not common; 56° N. 38° W. to 51° N. 47° W. (very common at 53°—54° N. 42°—45° W.)

August: 73°—72° N. 27°—20° W., common; 80° N. 51° E., not rare; 55° N. 26° W., rare; 54° N. 46° W., rare; 52° N. 53° W., not rare.

September: 69°—70° N. 13° W., rare; 69° N. 10° W. to 65° N. 2° W., very common; 65°—62° N. 1° W.—1° E., rare; 63° N. 1° E., very common; 61° N. 1° E., common in a haul from 100 metres; 60° N. 3° E., not rare; 56° N. 12° W. to 54° N. 48° W., rare; 53° N. 51° W. to 52° N. 55° W., common.

October: 56° N. 38° W. to 53° N. 48° W., rare.

¹ It is worthy of note that it was rare above the western slope of the Wyville-Eide, close to the haul from Iceland to E. Scotland, where it was so extremely abundant.

November: 51° N. 13° W., rare; 53° N. 43° W. (rare) to 48° N. 46° W. (common) and 47° N. 51° W., (rare).

Temperature: 7.3, mean of 50 obs., max. 22, min. 0.2. (Only such samples considered as contained this species abundantly).

Salinity: 34.36, mean of 50 obs., max. 35.41, min. 32.12.

Plankton-type. This species has a very wide range of distribution, according to the compilation of ANATILLUS (Kongl. Vetensk.-Akad. Handl. Vol. XXX n. 3 pag. 69) in the *northern Pacific*, off Japan and along the coast of Asia to N. China, in the *southern Pacific*, 37°—38° S. 133°—149° E. and along the west coast of South America, in the *Indian Ocean*, at 35° S. 45° E. In the *Atlantic* it has been seen in the northern hemisphere as far south as the Canaries. It is besides found in the Mediterranean. It was collected by NANSEN in the Polar Basin between 78° N. 136° E., 85° N. 79° E. and 84° N. 11° E. According to the above statements this species is a characteristic inhabitant of the arctic regions, along the coast-banks of Greenland, Iceland, North America etc., from where it drifts by (under-) currents across the Atlantic to the coasts of Europe. In the winter the plankton of these currents comes to the surface. — *T.*

CALANUS GRACILIS DANA.

1898 *September*: 32° N. 33° W., very rare.

Temperature: 25.1.

Salinity: 36.71.

Plankton-type. Noted from the Gulf of Guinea, the Canaries, the Mediterranean and central Atlantic; also from Australia and the Philippines. — *D.*

CALANUS HYPERBOREUS ΚΑΘΥΡΝ.

1898 *June*: 71°—72° N. 21°—23° E. (Auriv.)

July: 78° N. 1° E.—3° W. (deep sea hauls, Auriv.)

August: 79° N. 10° E. (deep sea hauls, Auriv.)

September: 74° N. 19° E. (Auriv.)

- 1899 *June*: 71°—75° N. 8°—15° W., surface, rare; 74° N. 14° W., haul from 25 metres, common; 67° N. 5° W., common between 500 to 100 metres; 65° N. 1° W., 550—500 metres, not rare; 64° N. 0° E., 450 to 100 metres, more or less rare.
July: 74° N. 18° W., haul from 280 metres, common; 72° N. 22° W., haul from 180 metres, common; 71° N. 21° W., common between 260 and 200 metres.

Temperature: 2, mean of 11 obs., max. 4, min. —1.

Salinity: 34.68, mean of 11 obs., max. 35.08, min. 34.67.

Plankton-type. Noted from Baffin's Bay, Greenland, Jan Møven, Spitzbergen, Norway and the Skagacuk. It was collected by NANSEN in the Polar Basin, between 78° N. 136° E., 85° N. 79° E. and 84° N. 11° E.; also at the surface at 84° N. 76° E. — *T*.

CALANUS MINOR (CLAUS).

- 1898 *February*: 5° S. 9° E.; 26° N. 74° W.
March: 14° N. 18° W.; 9° N. 59° W.; 40° N. 56° W.
May: 6° N. 56° W.; 41° N. 56° W.
June: 24°—27° N. 58°—55° W.; 36° N. 44° W.
August and September: Azores.
October: Azores: 38° N. 74° W.
November: 26° S. 30° W.; Cape Verde Islands; 26° N. 48° W.; Azores; 48° N. 29° W.; 42° N. 64° W.
December: 34° N. 38° W.; Azores.
- 1899 *March*: Azores.
April: 28°—36° N. 75°—74° W.
May: 32° S. 13° E.; 35° N. 75° W.
June: 24° N. 42° W.

Temperature: 20.5, mean of 39 obs., max. 27.7, min. 11.

Salinity: 36.00, mean of 26 obs., max. 37.28, min. 33.11.

Plankton-type. This species is found in the Mediterranean, the Indian and Pacific. It occurs in the whole tropical Atlantic from 26° S. in the eastern and 32° S. in the western Atlantic to about 40° (exceptionally 48°) N. — *D*.

CALANUS TENUICORNIS DANA.

1898 *November*: area between 22° N. 53° W., 26° N. 48° W. and 32° N. 38° W.

December: 28° N. 47° W.; 34° N. 28° W.

1899 *March*: 30° N. 35° W.

Temperature: 20.4, mean of 6 obs., max. 25.4, min. 18.4.

Salinity: 36.30, mean of 6 obs., max. 37.48, min. 36.10.

Plankton-type. Noted from the Pacific, Mediterranean and Gibraltar. — D.

CALANUS VULGARIS (DANA).

1898 *February*: 5° S. 0° W.; Caribbean Sea.

March: 5° S. 4° W. to 23° N. 28° W.; Azores; 7° N. 56° W.

April: 18° N. 17° W.

May: 20°—23° N. 60°—56° W.; 41° N. 65° W. to 46° N. 38° W.

June: 10° N. 53° W.; 22° N. 60° W.

July: 29°—38° N. 74° W.

August: Caribbean Sea; 21°—34° N. 74°—73° W.; 41° N. 57°—58° W.

September: 8° N. 25° W.; 9° N. 53° W. to 27° N. 36° W.

October: Caribbean Sea; Bahamas; 38° N. 74° W.

November: Rio Janeiro; 0°—8° N. 31°—28° W.; Cape Verde Islands; 19°—22° N. 58°—53° W.; 32° N. 38° W.

December: 18° N. 67° W.

1899 *March*: 21° N. 43° W.

April: 32°—36° N. 75°—74° W.

June: 1° N. 23° W.; 12° N. 52° W.; 18° N. 47° W.

Temperature: 24.4, mean of 56 obs., max. 28.4, min. 9.

Salinity: 35.69, mean of 51 obs., max. 37.33, min. 33.41.

Plankton-type. Noted from the whole Pacific, between 8° S. and 20° N. According to the above statements it occurs over the whole tropical Atlantic to about 40° N., beyond which degree it goes in May — D.

CALOCALANUS PAVO (DANA).

1898 *March*: 6° S. 4° W. to 11° N. 20° W.; 26° N. 29° W.; 35° N. 28° W.; Azores; 14°—17° N. 56°—47° W.; Caribbean Sea; 28° N. 74° W.

April: 31° N. 74° W.

May: area between 11° N. 54° W. and 23° N. 46°—56° W.

June: area between 19° N. 63°—35° W. and 25° N. 66° W.

July 24°—26° N. 54°—46° W.; 33° N. 74° W.

August: 22°—25° N. 74° W.; 40° N. 66° W. to 41° N. 58° W.

September: 23° N. 42° W.; 20°—29° N. 74° W.; 40° N. 65° W.; 30° N. 35° W.; Azores; 56° N. 12° W.

October: Azores.

November: 8° N. 28° W. to 13° N. 27° W.; 22° N. 53° W. to 26° N. 48° W.; 32° N. 38° W.; Azores; 56° N. 26° W.

December: 22° N. 56° W.; Azores.

1899 *January*: Canaries.

March: 18° N. 45° W.; 30° N. 35° W.; Azores.

April: 36° N. 74° W.

June: 12° N. 52° W.

Temperature: 22.8, mean of 61 obs., max. 28, min. 10.

Salinity: 36.58, mean of 52 obs., max. 37.51, min. 33.22.

Plankton-type. Noted from the Mediterranean and the Pacific.

This species occurs in the Gulf of Guinea, follows the Equatorial current into the Caribbean Sea and the Sargasso Sea, the Florida current and goes thence to the Azores and the Canaries. It proceeds in August and September beyond 43° N., and rare specimens had in September and November drifted to about 56° N. — *D.*

CANDACE BISPINOSA CLAUS.

1898 *July and August*: 38° N. 74° W.

September: 20° N. 45° W.

December: 26° N. 52° W.; 34° N. 38° W.

Temperature: 23.7, mean of 5 obs., max. 26.1, min. 19.2.

Salinity: 35.5, mean of 5 obs., max. 37.17, min. 33.22.

Plankton-type. Noted from the Pacific and the Mediterranean — *D.*

CANDACE ETHIOPICA DANA.

1897 *December* and1898 *January*: 12° N. 50° W.; 32° N. 33° W.; Azores.*March*: 3° N. 18° W. to Cape Verde Islands; 9° N. 59° W. to 15° N. 49° W.; 25° N. 41° W.*April*: Caribbean Sea.*June*: 10° N. 53° W.*August*: 34° N. 73° W.; Azores.*September*: Azores.*December*: 28° N. 47° W.; 36° N. 34° W. to 40° N. 23° W.1899 *January*: 33° N. 15° W.*February*: 34° N. 40° W.*March*: Azores.**Temperature**: 22.7, mean of 24 obs., max. 28.2, min. 14.**Salinity**: 36.06, mean of 18 obs., max. 37.12, min. 34.86.**Plankton-type**. Noted from the Pacific and the Mediterranean.It occurs in the Atlantic in the Equatorial current, the Caribbean Sea, the Florida current and the Sargasso Sea to the Azores (August to January), in March south of the Cape Verde Islands. — *D.*

CANDACE PACHYDACTYLA DANA.

1898 *July*: 38° N. 74° W.*November*: 19° N. 58° W.; 18° N. 25° W.**Temperature**: 25.2, mean of 3 obs., max. 27.5, min. 24.4.**Salinity**: 35.32, mean of 3 obs., max. 35.77, min. 34.91.**Plankton-type**. Noted from the Pacific and the Mediterranean.It occurs in the Atlantic between 18° N. and 18° S. — *D.*

CANDACE PECTINATA BRADY.

1898 *May*: 60° N. 11° W.*September*: Azores.1899 *March*: 33° N. 32° W.**Temperature**: 17.3, mean of 3 obs., max. 21.3, min. 17.4.**Salinity**: 36.09, mean of 3 obs., max. 36.54, min. 35.54.**Plankton-type**. This species is noted from the Mediterranean, the Scilly Islands and Scotland. It occurs very rarely in the North Sea. — *S.*

CENTROPAGES CHIERCHIÆ GIESB.

1898 *May*: 41° N. 16° W.; 43° N. 11° W.; 48° N. 25° W.

1899 *April*: 38° N. 10° W.

Temperature: 15, mean of 4 obs., max. 16.4, min. 13.8

Salinity: 35.81, mean of 4 obs., max. 36.83, min. 35.47.

Plankton-type. Noted from Gibraltar. According to the above statements it occurs between the Azores and Portugal. — S.

CENTROPAGES FURCATUS (DANA).

1898 *February*: 5° S. 4° E. to 6° S. 12° W.

April: 10° N. 52° W.

June: 10° N. 53° W.

November: Rio Janeiro, abundant.

1899 *April*: 9° N. 59° W.

Temperature: 25.8, mean of 7 obs., max. 27.8, min. 22.

Salinity: 31.61, mean of 7 obs., max. 36.61, min. 20.22.

Plankton-type. Noted from Banks Straits, E. and N. Australia, the Philippines and the west of S. America, between 10° N. and 10° S. (Giesbr.) New to the Atlantic. According to the above statements it occurs in the Tropical Atlantic, both along the African and American coasts. The low salinity proves it to be a neritic form — N.

CENTROPAGES HAMATUS (LILLJEL.)

1898 *March*: 41° N. 70° W.

May: 63° N. 2° E.

July: 59° N. 2° E.

August: Westmannö.

November: 51° N. 1° W.

1899 *January*: Färöes.

May: 66° N. 24° W.; 58° N. 2° W. — 4° E.

July: 58° N. 0° — 6° E.

Temperature: 9.7, mean of 10 obs., max. 16, min. 4.4.

Salinity: 33.38, mean of 10 obs., max. 35.27, min. 29.41.

Plankton-type. This species is found on the coasts all around the British Islands, the Engl. Channel, the North Sea and the Skagerrak, the Baltic (at least to the N. of Gotland and the Gulf of Finland) and the coasts of Norway to 70° N. (AURIV.). It is essentially a northern neritic form, and the above means for the temperature and the salinity relate to the Atlantic only. ATRIVILLIUS gives the numbers 1°—20° for the temperature and 12.00 to 35.00 for the salinity — Ns.

CENTROPAGES TYPICUS KRÖYER.

- 1898 *January*: 21° N. 17° W.
February: 6° S. 12° E.
March: 21° N. 18° W. to 27° N. 16° W.; 42° N. 42° W. to 40° N. 64° W.
April: 41° N. 19° W.; 50° N. 3° W.
May: area between 40° N. 16° W., Cape Finisterre, the Engl. Channel and 48° N. 26° W.; 41° N. 54° W. to 40° N. 65° W.
June: area between 44° N. 16° W. (common), 48° N. 17° W. and the Engl. Channel; 60° N. 1° W.; 62° N. 2° 30' E.
July: 49° N. 22°—11° W.; 59° N. 2° E.; 40° N. 69° W. (common) to 38° N. 74° W.
August: Azores, rare; 49° N. 20°—11° W.; 56° N. 20° W.; 59° N. 2° W. to 60° N. 3° E.; 41° N. 72° W. to 38° N. 74° W., common.
September: Azores: 48° N. 24° W.; Engl. Channel; N. of Iceland; 60°—61° N. 3°—2° W., common.
October: 50° N. 10° W.; 38° N. 74° W., common.
November:¹ Engl. Channel; 48° N. 41° W. to 41° N. 69° W. (common).
December: 44° N. 57° W.
- 1899 *January*: 41° N. 69° W., rare.
April: 37° N. 9° W., rare.
May: 57° N. 6° E., rare; 38° N. 74° W., very abundant.
June: 62° N. 2° E., very rare.
July: 62° N. 0° W. to 58° N. 6° E., rare to common.
August: 60° N. 3° E., common; 55° N. 9° W., rare; 56° N. 14° W., very common.
September: 56° N. 12° W., common; 56° N. 16° W., rare.

October: 56° N. 23° W.; 53° N. 25° W., common; 52° N. 14° W., not rare.

November: 51° N. 13° W., not rare.

Temperature: 15.7, mean of 18 obs., max. 21.4, min. 7.

Salinity: 34.34, mean of 18 obs., max. 36.25, min. 31.61. (Only such samples as contained this species abundantly considered).

Plankton-type. Noted from the Mediterranean, Cape Finisterre, the Engl. Channel, the British Islands, the North Sea, the Skagerak and the coast of Norway, at least to 63° N. According to the above statements it goes along the west coast of Africa, towards the Azores and occurs in the summer between these Islands and the coast of Europe, from where it spreads to the Engl. Channel and advances towards Iceland and the Färöe Channel. In September it reached the N. of Iceland. From the Färöe Channel it proceeds to the west of Norway (but seems not to advance there far beyond 62° N.) and into the Skagerak. It occurs abundantly, almost the whole year above the coast-banks from Newfoundland towards New York. *Centropages typicus* seems not to be a neritic form, and the low mean salinity is to be accounted for by the fact that a number of the calculated samples are taken from the region of the Newfoundland Banks. — S.

CENTROPAGES VIOLACEUS (CLAUDE)

1898 *March*: 6° S. 4° E.; 7° N. 17° W.; 14° N. 50° W.

April: 34° N. 74° W.

May: 41° N. 16° W.; 25° N. 52° W.; 43° N. 43° W.

June: 36° N. 44° W.

July: 33° N. 74° W.

August: Azores; 44° N. 42° W.; 34°—38° N. 73°—74° W.

September: 33° N. 16° W.; 41° N. 65° W.

October: Azores.

November: 26° S. 30° W.; Azores.

December: Azores.

Temperature: 22.1, mean of 22 obs., max. 27.4, min. 15.

Salinity: 35.97, mean of 18 obs., max. 36.56, min. 33.36.

Plankton-type. Noted from the Pacific and the Mediterranean. It occurs in the tropical Atlantic, in May and August somewhat north of 40° — D.

CHIRIDIUS ARMATUS (BOECK.) G. O. SARS.

(*Gobiosia armata* Boeck. Determination by means of specimens kindly sent by Prof. G. O. Sars).

1899 *June*: 65° N. 1° W. (500—550 metres); 67° N. 3° W. (500 metres)

July: 71° N. 21° W. (between 260 and 225 metres) 74° N. 18° W. (haul from 280 metres).

Temperature: 0.5 to -0.5.

Salinity: 34.71 to 35.02.

Plankton type. It occurs, according to G. O. Sars, on the Norwegian coasts, below 300 m. NANSSEN collected it in the Polar Basin, between 80° N. 134° E., 85° N. 76° E. and 84° N. 11° E., at 85° N. 76° E. at the surface. — *T.*

CLAUSOCALANUS ARCUICORNIS (DANA).

1898 *January*: 33° N. 31° W. to 48° N. 6° W.

February: 6°—5° S. 12°—9° E.; 48° N. 41° W.

March: area between 32° N. 31° W., 48° N. 18° W. and 40° N. 56° W.

April: area between the Azores, 47° N. 8° W., 50° N. 12° W. and 49° N. 22° W.

May: area between 38° N. 21° W., 43° N. 11° W., 49° N. 14° W., 50° N. 20° W. and 41° N. 60° W.

June: area between Madeira, 44° N. 16° W., 47° N. 41° W. and 34° N. 33° W.

July: Azores; 49° N. 22° W.; 44° N. 39° W. to 40° N. 67° W.

August: Azores; 45° N. 20° W. to 41° N. 65° W.

September: 33° N. 31° W.; Azores; 41° N. 20° W. to 47° N. 9° W.; 48° N. 29° W. to 41°—42° N. 56° W.

October: Madeira; 37° N. 26° W. to 43° N. 15° W.; 56° N. 31° W.; 48° N. 38° W.

November: 20° N. 23° W.; 34° N. 10° W.; 36° N. 14° W.; Azores; 45° N. 7° W.; area between 51° N. 20° W., 55° N. 36° W., 53° N. 50° W. and 40° N. 67° W.

December: 20° N. 16° W.; Azores; 25° N. 51° W.; 34° N. 38° W.; 38° N. 39° W.; 50° N. 20° W.; 48° N. 40° W.

- 1899 *January*: 32° N. 16° W. to 35° N. 9° W.
February: 32° N. 46° W.; 34° N. 40° W.
March: 30° N. 35° W. to 47° N. 8° W., rare.
April: area between 37° N. 10° W., 43° N. 15° W. and 41°
 N. 18° W., very common; 48° N. 9° W., rare.
May: 50° N. 33° W., rare; 33° S. 16° E. (common) to 25° S.
 7° E. (rather rare)
June: 20° S. 2° E. to 14° S. 7° E., rare.
October: 53° N. 31° W.; 49° N. 40° W., rare.
November: 51° N. 28° W., not rare.

Temperature: 17_{ss}, mean of 20 obs., max. 22_{ss}, min. 8. (Only such samples considered as contained this species abundantly).

Salinity: 35_{ss}, mean of 20 obs., max. 36_{ss}, min. 33_{ss}.

Plankton-type. This species is noted from the Pacific, along the west coast of S. America to 53° S. and from the Mediterranean. The total distribution in the Atlantic is, according to the above statements, from the west of S. Africa (Benguela current) to the Gulf of Guinea, Cape Verde, the Canaries towards Gibraltar and the Azores, between the Azores, the mouth of the English Channel and to the east of New York. The area of distribution was in March and April chiefly eastern, but in May it had advanced considerably towards the west. In October and November this area had greatly advanced to the north, above 55° N. In December and February this copepod was seen rarely on some isolated spots in the Sargasso Sea.

CLAUSOCALANUS FURCATUS (BRADY).

- 1897 *December* and
 1898 *January*: Azores to 7° N. 52° W.; Caribbean Sea, 25°—35°
 N. 74° W.
February: 5° S. 9° E.; Caribbean Sea to 34° N. 73° W.
March: 6° S. 4° W. to the Cape Verde Islands and the
 Azores, thence to 7°—9° N. 55°—59° W.; Caribbean Sea
 to 28° N. 74° W.
April: 7°—12° N. 53°—51° W.; Caribbean Sea to 27° N. 75° W.
May: area between 32° N. 36° W., 6° N. 56° W. and 20° N.
 80° W.; Caribbean Sea; 41° N. 65° W. to 41° N. 51° W.

- June*: 10° N. 58° W.; 24° N. 58° W. to 42° N. 33° W.; 23° N. 72° W.
- July*: 26° N. 48° W. to 21° N. 58° W.; Caribbean Sea; 25°—38° N. 74° W.; 41° N. 58° W.; Azores.
- August*: Caribbean Sea; 21° N. 58° W. to 38° N. 74° W.; 40° N. 66° W. to 42° N. 50° W.
- September*: 9°—12° N. 53°—51° W.; Caribbean Sea; 33°—38° N. 74° W.; 41° N. 65° W.; 46° N. 11° W. to 26° N. 39° W.; Madeira; Cape Verde Islands.
- October*: 21° S. 36° W.; Caribbean Sea; Bahamas; 30°—38° N. 74° W.; 42° N. 15° W. to 37° N. 27° W.
- November*: area between Rio Janeiro, 18° S. 31° W., 24° S. 29° W. and 26° S. 30° W.; 8° N. 28° W. to the Cape Verde Islands; 19° N. 58° W.; 29°—32° N. 43°—38° W., Azores; 36° N. 14° W.
- December*: 19° N. 58° W. to 28° N. 47° W.; Azores, Canaries.
- 1899 *January*: Canaries to 34° N. 12° W.
- February*: 34° N. 42° W.
- March*: 18° N. 45° W. to 24° N. 40° W.
- April*: 9° N. 59° W.; 32°—36° N. 75°—74° W.; 41° N. 17° W.
- May*: 33° N. 75° W.
- June*: 21° S. 3° E. to 9° N. 25° W.; 13° N. 52° W. to 27° N. 30° W.; Azores.
- July*: 11° N. 25° W.

Temperature: 23.9, mean of 69 obs., max. 28.2, min. 13.8.

Salinity: 35.81, mean of 66 obs., max. 37.48, min. 33.29.

Plankton-type. Noted from the Pacific and the Mediterranean.

It occurs in the whole tropical Atlantic, between 25° S. and 40° N., beyond which degree of latitude it precedes from May to August. It is one of the most common and characteristic forms of the Desmo-type. — D.

CLYTEMNESTRA ROSTRATA (BRADY).

1898 *March*: 10° N. 20° W.

August: 42° N. 48° W.

Temperature: 22.45 to 26.

Salinity: 33.86 (at the southeast of the Newfoundland Banks, probably anomalous).

Plankton-type. This species has been found in the Mediterranean, in the Atlantic at 5° S. 18° W., 27° S. 28° W., and 43° S. 56° W., in the Pacific, west of S. America, 3° S. 99° W., and in the Indian Ocean, 27° S. 87° E. — *D.*

COPILIA DENTICULATA CLAUS.

1898 *December:* Azores.

Temperature: 18.3.

Plankton-type. This species is found in the Mediterranean. It was seen at the Azores in Styli- and Desmo-plankton intermingled. — *S?* *D?*

COPILIA MIRABILIS DANA.

1898 *February:* 21° N. 74° W.

March: 6° S. 4° W.; 3° N. 16° W. to 23° N. 28° W.; 33° N. 29° W.; 14° N. 50° W.

1899 *April:* 9° N. 59° W.; 36° N. 74° W.

June: 15° N. 50° W.

Temperature: 24.3 mean of 11 obs., max. 27.3, min. 17.3.

Salinity: 35.36 mean of 10 obs., max. 36.03, min. 35.26.

Plankton-type. Noted from the Indian and Pacific Oceans. — *D.*

COPILIA QUADRATA DANA.

1898 *April:* 31° N. 75° W.

Temperature: 22.3.

Salinity: 36.03.

Plankton-type. Noted from the Mediterranean and the tropical Pacific. — *S.* or *D.*

CORYCÆUS ELONGATUS CLAUS.

1898 *November:* Canaries; Azores; 34° N. 10° W.

December: Azores.

Temperature: 18.3, mean of 5 obs., max. 21.3, min. 17.3.

Salinity: 36.26 to 36.03.

Plankton-type. Noted from the S. of Rio Janeiro and the Mediterranean. The Atlantic samples, in which I found this species, contained both Desmo- and Styliplankton. — *D* or *S*.

CORYCÆUS FLACCUS GIESB.

1899 *April*: 40° N. 16° W. (one female only).

Temperature: 15.

Salinity: 36.0.

Plankton-type. Noted from the Mediterranean and the tropical Pacific. — *S*.

CORYCÆUS LONGICAUDIS DANA.

1898 *January*: 1° S.—7° N. 22° W.; 11° N. 52° W. to 18° N. 46° W.; 25°—29° N. 74° W.

February: 5° S. 0°—9° E.; Caribbean Sea; 21°—30° N. 74° W.

March: 7° S. 17° W. to 31° N. 29° W., thence to 4° N. 59°

W., the Caribbean Sea and 28° N. 74° W.; 41° N. 60° W.

April: between 7° N. 55° W., 12° N. 51° W. and 11° N. 53° W.;

Caribbean Sea; 27°—31° N. 75° W.

May: 6° N. 56° W. to 29° N. 39° W.; 41° N. 63° W. to 41° N. 51° W.

June: area between 10° N. 53° W., 19° N. 63° W., 30° N. 52° W. and 29° N. 36° W.

July: 24° N. 54° W.; Caribbean Sea; 25°—38° N. 74° W.

August: Caribbean Sea; 22° N. 74° W. to 34° N. 73° W.;

41° N. 58° W. to 45° N. 43° W.

September: Cape Verde Islands to 8° N. 25° W.; 26° N. 40° W.

to 32° N. 33° W.; 9° N. 53° W.; Caribbean Sea; 23—38°

N. 74° W.; 40° N. 67° W. to 42° N. 57° W.; Azores.

October: 21° S. 36° W.; Caribbean Sea; 26° N. 76° W. to

34° N. 74° W.; Azores.

November: 26°—24° S. 30°—26° W.; 0° S. 31° W. to 20° N.

23° W.; 32° N. 38° W. to 19° N. 58° W.; 43° N. 64° W.;

Azores; Canaries.

December: 26° S. 45° W.; 14° S. 36° W.; Caribbean Sea;

area between 19° N. 58° W., 34° N. 38° W., 29° N. 36° W.

and 16° N. 48° W.; Azores; Canaries.

1899 *January*: Canaries.

February: 32° N. 47° W.

March: 21°—24° N. 43°—40° W.; Azores.

April: 28°—36° N. 75°—74° W.

June: 17° S. 2° W. to 6° N. 24° W.; 12° N. 52° W. to 24° N. 42° W.; Azores.

July: 11° N. 26° W. to 20° N. 34° W.

Temperature: 25.5, mean of 59 obs., max. 28.4, min. 19.

Salinity: 35.98, mean of 54 obs., max. 37.01, min. 34.05.

Plankton-type. Noted from the tropical Pacific, west of S. America. It occurs in the whole tropical Atlantic between 25° S. and 45° N. and is one of the most common and characteristic constituents of the Desmo-plankton. — *D.*

CORYCÆUS OBTUSUS DANA.

1898 *February*: Caribbean Sea.

March: 7° N. 55° W.; 7° N. 17° W.

June: 30° N. 52° W.

July: 38° N. 74° W.

September: Azores.

October: 21° S. 36° W.

November: Rio Janeiro; 20° N. 23° W.

December: Azores.

1899 *June*: 24° N. 42° W.

Temperature: 23.7, mean of 11 obs., max. 27.8, min. 17.8.

Salinity: 35.02, mean of 9 obs., max. 37.05, min. 31.82.

Plankton-type. Noted from the tropical Pacific and the Mediterranean. — *D.*

CORYCÆUS OVALIS CLAUDE.

1898 *January*: 18° N. 46° W.

March: 6° S. 4° W. to 3° N. 16° W.; 7° N. 55° W.; Azores; 32° N. 32° W.

April: 10° N. 52° W.; 23° N. 72° W.; 45° N. 41° W.

May: 7° N. 54° W.; 41° N. 65°—50° W.

June: 22° N. 60° W.

August: 42° N. 63° W.

September: 12° N. 27° W.; 25° N. 74° W.

October: 21° S. 36° W.; 37°—39° N. 27°—21° W.; 34° N. 74° W.

November: 0° S. 31° W.; 8° N. 28° W.; 17° N. 25° W.; 32° N. 38° W.; Azores.

December: 28° N. 47° W.; Azores.

1899 *March*: Azores.

April: 32°—36° N. 75°—74° W.

Temperature: 21.6, mean of 35 obs., max. 28, min. 9.

Salinity: 35.48, mean of 28 obs., max. 37.11, min. 28.50.

Plankton-type. Noted from the Mediterranean. — *D.*

CORYCÆUS ROSTRATUS CLAUS.

1898 *March*: Azores, common; 40° N. 56° W.

June: Azores; 35° N. 21° W.

July: round the Azores.

August: Azores; 40° N. 66° W. to 45° N. 40° W.

September: Cape Verde Islands; Madeira, common; Azores, common; 46° N. 89° W.

October: round the Azores, common; 39° N. 21° W.

November: Azores, common; 45° N. 29°—41° W.; 34°—36° N. 10°—14° W., common; 18° S. 31° W.

December: Canaries; 34° N. 38° W. to 42° N. 16° W. (common at the Azores); 44° N. 57° W.

1899 *January*: Canaries; Madeira; Gibraltar.

February: 34° N. 40° W.

March: 36° N. 29° W. to 44° N. 16° W., common to rare.

April: 41° N. 15°—18° W.

May: 33° S. 16° E. (common) to 29° S. 9° E. (rare).

June: 20° S. 2° E.; 36° N. 80° W.

Temperature: 19.6, mean of 18 obs., max. 28, min. 13.4.

Salinity: 35.98, mean of 18 obs., max. 36.50, min. 34.22, (only such samples considered as contained this species more or less abundantly).

Plankton-type. Noted from the Mediterranean. According to the above statements this species enters the Atlantic west of the Cape of Good Hope, appears near St. Helena, the Cape Verde Islands

and the Canaries. The principal area of distribution in the northern Atlantic is the area between the Canaries, Gibraltar and the Azores, whence it extends, north of 40° , towards the east of New York. — S.

CORYCÆUS SPECIOSUS Dana.

- 1897 *December* and
 1898 *January*: 7° N. 22° W.; 7° N. 53° W. to 16° N. 48° W.;
 32° N. 33° W.
February: 5° S. 4° E.— 9° W.; Caribbean Sea.
March: area between 6° S. 4° W., 1° S. 15° W. and 11° N.
 23° W.; area between 6° N. 55° W., 10° N. 53° W. and
 14° N. 50° W.; Caribbean Sea; 28° N. 74° W.
April: 7° N. 55° W. to 12° N. 51° W.; 27° N. 73° W. to 31° N.
 75° W.
May: area between 6° N. 56° W., 20° N. 60° W., 26° N. 52° W.
and 11° N. 52° W.; 41° N. 59° — 56° W.
June: 10° N. 53° W.; 19° N. 63° W.
July: 24° N. 54° W.; 25° — 33° N. 74° W.
August: 22° — 38° N. 74° W.; 42° N. 62° — 50° W.
September: 8° N. 25° W. to 18° N. 25° W.; 15° N. 49° W. to
 27° N. 36° W.; Caribbean Sea; 42° N. 57° W.
October: Caribbean Sea; 36° N. 76° W.
November: 26° S. 30° W.; 8° N. 28° W. to 13° N. 27° W.;
 22° N. 53° W. to 29° N. 43° W.; 40° N. 67° W.; 51° N. 20° W.
December: Canaries; Azores to 25° N. 52° W.; 29° N. 74° W.
 1899 *January*: 33° N. 15° W.
April: 32° N. 74° W.
May: 33° S. 16° E.
June: 19° S. 0° W. to 1° S. 21° W.; 12° N. 52° W. to 36° N.
 30° W.

Temperature: 24._a, mean of 86 obs., max. 28._a, min. 13._a.

Salinity: 35._{aa}, mean of 64 obs., max. 37._{aa}, min. 33._{aa}.

Plankton-type. Noted from the tropical Pacific, between 10° S. and 20° N., west of S. America to 137° E. It occurs in the Atlantic from about 30° S. to 40° N., but advances in May to November north of the last degree, and rare specimens may drift beyond 50° N. (November). — D.

CORYCÆUS VENUSTUS DANA.

- 1898 *January*: 21° N. 17° W.
February: 5° S. 4°–9° E.; 30° N. 74° W.
March: 4° S. 10° W.; 7° N. 17° W.; Azores: 40° N. 56° W.
October: Azores.
November: 42° N. 64° W.
December: Azores.
- 1899 *January*: Canaries.
May: 30° S. 11° E.

Temperature: 20.6, mean of 12 obs., max. 27.5, min. 11.

Salinity: 35.84, mean of 8 obs., max. 36.52, min. 33.93.

Plankton-type. Noted from the Mediterranean and the Pacific.

— S. or D.

EUCALANUS ELONGATUS (DANA).

- 1899 *April*: 33° N. 32° W., very rare.

Temperature: 17.4.

Salinity: 36.25.

Plankton-type. Noted from the Pacific, Gibraltar, the Mediterranean (GIESBR.), 60° N. 7° W. in August (DE SCOTT) and the Skagerak in February (MÉRIVILLIUS). — S

EUCALANUS SUBCRASSUS GIESBR.

- 1898 *February*: 5° S. 8° E.
March: 11° N. 20° W.

Temperature: 24.4 to 27.5.

Salinity: 35.26 to 33.93.

Plankton-type. Noted from the Pacific, W. of S. America. 3° S–10° N., Hongkong, Amoy, the Red Sea. — D. (N?)

EUCALANUS SUBTENUIS GIESBR.

- 1898 *February*: 6° S. 15° E., very rare.

Temperature: 26.1.

Salinity: 20.97.

Plankton-type. Noted from the western Pacific and the Cape Verde Islands. — S?

EUCHÆTA MARINA (PRESTANDREGA).

1898 *January*: 7°—12° N. 50°—53° W.; Caribbean Sea; 30° N. 34° W.

February: Caribbean Sea.

March: 1° S. 15° W. to the Cape Verde Islands; area between 10° N. 53° W., 17° N. 47° W. and 14° N. 50° W.; 28° N. 74° W.

April: 7° N. 55° W.; 12° N. 51° W.; Caribbean Sea.

May: 13° N. 51° W.; 26° N. 52° W.; Caribbean Sea.

June: 10° N. 53° W.; 19° N. 63° W.

August: Caribbean Sea.

September: 8°—12° N. 25°—27° W.; 26° N. 36°—39° W.

November: 26° S. 30° W.; 8° N. 28° W.; 22° N. 53° W.; 29°—32° N. 43°—38° W.; 51° N. 20° W.

December: Canaries; 18° N. 58° W. to 34° N. 38° W.

1899 *March*: 33° N. 32° W.

April: 32°—36° N. 75°—74° W.

May: 38° N. 74° W.

June: 7° S. 14° W. to 1° S. 21° W.; 7° N. 25° W.; 12° N. 52° W.

July: 11° N. 26° W.

Temperature: 24.5, mean of 52 obs., max. 28.5, min. 9.

Salinity: 35.95, mean of 39 obs., max. 37.34, min. 33.25.

Plankton-types. Noted from the Pacific and the Mediterranean.

It occurs in the Atlantic from 26° S. (38° S. Brady) to somewhat north of 30° N., but rare specimens may drift beyond 50° N. (November). — *D.*

EUCHÆTA NORVEGICA BOECK.

1898 *July*: 78° N. 1° E.—3° W. (deep sea hauls, Auriv.)

August: 77°—78° N. 12°—10° E. (deep sea hauls, Auriv.)

September: 72° N. 19° E. (deep sea haul, Auriv.)

1899 *June*: 67° N. 3° W., not rare between 500 and 200 metres;

75° N. 1° W., rare between 550 and 500 metres; 64° N. 0° E., haul from 200 metres, rare; 62° N. 1° E., haul from 150 metres, rare.

July: 74° N. 18° W., haul from 280 metres, rare; 72° N. 21° W., haul from 260 metres, rare; 71° N. 21° W., haul from 180 metres, rare.

September: 67° N. 3° W., between 500 and 100 metres, not rare.

Temperature: 2.8, mean of 8 obs., max. 6, min. 0.2.

Salinity: 35.12, mean of 8 obs., max. 35.29, min. 34.97.

Plankton-type. Noted from deep water in Daffin's Bay, the area between Greenland, Norway and Iceland, the Fürøe Channel and the Skagerak. NANSEN collected it in the Polar Basin, between 78° N. 136° E. and 84° N. 11° E., at 85° N. 76° E. at the surface.
— T.

EUCHÆTA SPINOSA (GIESSEN)

1898 *May*: 46° N. 38° W.; 41° N. 51° W.

November: 42° N. 64° W.

Temperature: 16.2, mean of 3 obs., max. 19, min. 14.

Salinity: 35.53 to 36.01.

Plankton-type. Noted from the Mediterranean. — S.?

EURICHELLA ROSTRATA (CLAUS).

1898 *March*: 45° N. 36° W.; 42° N. 42° W.; 46° N. 34° W. to 40° N. 64° W.

October: 44° N. 43° W.

December: 32° N. 16° W.

1899 *April*: 39°—40° N. 15°—16° W.

Temperature: 16.2, mean of 7 obs., max. 20, min. 13.

Salinity: 35.98, mean of 8 obs., max. 36.74, min. 35.24.

Plankton-type. Noted from the Mediterranean. — S.

EUTERPE ACUTIFRONS (DANA).

1898 *January*: 17° N. 21° W.; 6° N. 55° W.

February: 6° S. 12° E.

March: 7° N. 25° W.; 21° N. 17° W.; 49° N. 14° W.; 40° N. 56° W.

June: 40°—42° N. 10°—9° W.; 19° N. 63° W.

August: 41° N. 57° W.

September: 49° N. 3° W.; 41° N. 65° W.

November: 51° N. 1° W.; 42° N. 64° W.

1899 *January*: 29° N. 16° W.

April: 9° N. 59° W.

Temperature: 19.1, mean of 18 obs., max. 28, min. 11.

Salinity: 35.52 to 20.29.

Plankton-type. Noted from the Mediterranean, the North Sea and the mouth of the Rio Negro (40° S.). It is a nerctic form of very wide distribution, from the mouth of the Congo to the southern North Sea and from the Rio Negro to the S. of the Newfoundland Banks. — *Nt, No.*

LABIDOCERA ACUTIFRONS (DANA).

1898 *March:* 11° N. 20° W.; 16° N. 18° W.

Temperature: 20 to 24 s.

Salinity: 35.23.

Plankton-type. Noted from the tropical Pacific, western Mediterranean and the Atlantic, 23° S. to 18° N. — S. (or *Nt?*)

LABIDOCERA NERII (KRÖYER).

1898 *March:* 6° N. 22° W.; 7° N. 17° W.

Temperature: 22 to 27 s.

Salinity: 35.23.

Plankton-type. Noted from the eastern Atlantic 2°–8° N. 19°–25° W., and from Cape Finisterre. — S. (*Nt?*).

LEUCKARTIA FLAVICORNIS (CLAUDE).

1898 *March:* 32° N. 32° W.; Azores; 45° N. 36° W.; 40° N. 56° W.

July: Azores.

August: 22° N. 74° W.

September: 30° N. 35° W.

November: 34° N. 10° W.

December: 33° N. 38° W.

Temperature: 19 s, mean of 8 obs., max. 27 s, min. 11.

Salinity: 36.12, mean of 8 obs., max. 36.22, min. 34.25.

Plankton-type. Noted from the Canaries, the Mediterranean and the Tropical Pacific, west of America. — S. (*D?*)

LUBBOCKIA SQUILLIMANA (CLAUS).

1898 *March*: 29° N. 35° W.

Temperature: 19.1.

Salinity: 35.36.

Plankton-type. Noted from the tropical Pacific, Mediterranean and the region of Ascension. — S.?

MECYNOCERA CLAUSII (J. C. THOMAS).

1897 *December* and

1898 *January*: 34° N. 30° W. to 40° N. 11° W.; 23° N. 52° W.; 16° N. 48° W.; 32° N. 74° W.

February: 48°—50° N. 40°—31° W.; 16° N. 71° W. to 34° N. 74° W.

March: area between 23° N. 28° W., 28° N. 38° W. and the Azores; area between the Azores, 48° N. 6° W. and 49° N. 33° W.; 49° N. 33° W. to 40° N. 64° W.; 9° N. 53°—59° W.; 15° N. 49° W.; 32° N. 74° W.

April: 41° N. 19° W.; 45° N. 16° W.; 47° N. 29° W.; 47° N. 39° W.

May: 38° N. 21° W.; 41° N. 16° W.; 45° N. 43° W.; 43° N. 45° W.

June: Azores; 39° N. 39° W.; 45° N. 41° W.; 48° N. 33° W.

July and *August*: Azores.

September: 46° N. 39° W.; 43° N. 48° W.

November: 35° N. 10° W.; Azores; area between 51° N. 20° W., 50° N. 31° W., 40° N. 67° W. and 47° N. 41° W.

December: Azores; 43° N. 20° W.; 42°—43° N. 62°—57° W.

1899 *January*: 33° N. 15° W.

March: 30° N. 34° W. to the Azores; 46° N. 11° W.

April: 35° N. 74° W.

April: 25°—30° S. 7°—11° E.

Temperature: 16.8, mean of 79 obs., max. 28, min. 10.

Salinity: 35.27, mean of 49 obs., max. 37.35, min. 32.67.

Plankton-type. This species is noted from the tropical Pacific, the Mediterranean and the Canaries. The distribution of this species in the Atlantic is very interesting in several respects. It is remarkable that it was so abundant in 1898 and scarce in 1899.

From the occurrence in April 1899 it appears that it enters the Atlantic west of the Cape of Good Hope. In December 1897 to February 1898 it occurred both from the Azores to the European coast, in the Caribbean Sea and in the Florida Current. In March it appeared suddenly over a very wide area round the Sargasso Sea and across the whole Atlantic, from the Engl. Channel to the east of New York. Later it decreased in abundance, but in November it reappeared over the wide area between 40° and 50° N. from 20° W. towards New York. As it is impossible to account for these sudden changes in the distribution by surface currents, the most acceptable explanation seems to be that water, containing this species (or Styliplankton) arrived in the spring by a vertical movement to the surface, but in April and May was covered by another kind of water, that remained between 40° and 50° N. to November. That other kind of water cannot be any other than water containing Desmoplankton and arrived as a surface-current from the Florida Current and the Sargasso Sea. — S.

METRIDIA HIBERNICA (BRADY & ROBERTS)

1898 *February*: 50° N. 31° W.; 48° N. 41° W.

March: 47° N. 27° W. to 50° N. 9° W.

May: 42° N. 61° W.

June: 45° N. 41° W.

November: 52° N. 38° W.; 56° N. 26° W.

December: 50° N. 20° — 9° W.

1899 *March*: 62° N. 8° W.

June: 62° N. 0° $37'$ E., below 100 metres.

July: 56° N. 15° W., rare.

September: 62° N. 0° $40'$ — 1° E.

Temperature: 11.1, mean of 11 obs., max. 18.3, min. 6.

Salinity: 35.36, mean of 10 obs., max. 36.08, min. 32.06.

Plankton-type. Noted from Iceland, the Färöe Channel, the North Sea, the Skagerak and the west coast of Norway, at least to 71° N. It occurs in the Atlantic usually associated with Trichoplankton. — (T.) Ns.

METRIDIA LONGA LUBBOCK.

- 1898 *June*: 77° N. 27° E. (deep sea haul Auriv.)
July: 78° N. 1° E.—3° W. (deep sea hauls Auriv.)
August: 77°—79° N. 12°—10° E. (deep sea hauls Auriv.)
- 1899 *June*: 67° N. 3° W., from 500 to 200 metres, common; 65° N. 1° W., between 500 and 550 metres, rare; 64° N. 0° E., haul from 450 metres, rare.
July: 74° N. 18° W., haul from 280 metres, common; 72° N. 22° W., haul from 180 metres, common; 71° N. 21° W., not rare between 260 and 200 metres.
September: 67° E. 3° W., rare between 500 and 167 metres; 65° N. 1° W., surface rare.

Temperature: 0.7, mean of 8 obs., max. 2.5, min. —1°.

Salinity: 34.91, mean of 8 obs., max. 35.16, min. 34.59.

Plankton-type. Noted from Baffin's Bay, Spitzbergen, the Fårøe Channel, Norway and the Skagerak. NAXSEN collected it in the Polar Basin, between 78° N. 136° E. and 84° N. 11° E., at 85° N. 76° E. at the surface — *T*.

MICROSETELLA ATLANTICA BRADY & ROBERTS.²

- 1898 *January*: 12° S. 34° W. to 21° N. 17° W.; 7° N. 53° W.; Caribbean Sea; 29°—35° N. 74°—75° W.
February: Caribbean Sea; Bahamas to 34° N. 74° W.; 5° S. 9° E.
March: 6° S. 4° W. to 23° N. 27° W. and to 25° N. 16° W.; 7° N. 54° W. to the English Channel and thence to 40° N. 56° W. (or, practically the whole Atlantic from 5° S. to 50° N.)
April: 7° N. 55° W.; Caribbean Sea to 31° N. 75° W.; 49° N. 12° W. to 48° N. 5° W.; 60° N. 4°—19° W. to 63° N. 17° W.
May: area between 7° N. 54° W., 16° N. 71° W. and 28° N. 74° W.; SE. of the Azores; 41° N. 65° W.; 41° N. 58° W. to 50° N. 7° W.; 59° N. 16° W. to 60° N. 4° E.; 64° N. 7° E.

² Ostenfeld's data used.

June: area between 19° N. 63° W., 23° N. 42° W. and 36° N. 44° W.; 45° N. 41° W.; Azores; 48° N. 17° W. to 50° N. 12° W.; Scotland to S. Iceland.

July: 21° N. 58° W. to 26° N. 49° W.; 33° N. 74° W.; 41° 58° W.; Azores; area between 58° N. 36° W., S. Iceland and 62° N. 0° E. (maximum at 60° N. 21° W.)

August: 25° N. 74° W.; 40° N. 66° W. to 48° N. 31° W.; 56° N. 34° W.; 49° N. 16° W.; area between 62° N. 18° W., 61° N. 6° W., 62° N. 10° W. and S. Iceland, thence to Denmark's Sound and E. Greenland (65° N.); S. of Spitzbergen.

September: 8° N. 25° W.; 19° N. 27° W.; 15° N. 49° W. to 27° N. 35° W.; 33° N. 74° W.; Canaries; S. of the Azores; 42° N. 57° W.; 46° N. 14° W.; 47° N. 9° W.; area between 56° N. 27° W., 65° N. 36° W., N. Iceland and 60° N. 6° W.; 70° N. 20° E. to 74° N. 17° E.

October: 31° S. 36° W.; 26° N. 76° W.; 41° N. 59° W.; Azores; 55°-56° N. 39°-31° W.; 58° N. 48° W.; S. of Iceland to 60° N. 10° W.

November: 8° N. 28° W. to the Cape Verde Islands; 34° N. 10° W.; Azores; Cape Finisterre; 45° N. 7° W.; 49° N. 12° W.; along the south coast of Iceland to the Färões; 19° N. 58° W. to 26° N. 48° W.; 40° N. 67° W. to 42° N. 64° W.; 56° N. 36° W.

December: Azores; 50° N. 9° W.; S. Iceland to the Färøe Channel; Caribbean Sea; 19° N. 58° W. to 34° N. 28° W.; 43° N. 61° W.

1899 *January:* Canaries; Madeira; 41° N. 69° W.; 45° N. 49° W.; Färões.

February: 34° N. 40° W.

March: 44°-46° N. 16°-11° W., 62° N. 7° W. to 66° N. 20° W.

April: 28°-36° N. 75°-74° W.

June: 4° S. 19° W.; 9° N. 26° W.; 12° N. 52° W. to 21° N. 45° W.; 62°-65° N. 1° E.-1° W., rare in deep sea hauls from 550-200 metres; 67° N. 11° E.

July: 23° N. 36° W., very rare; 57° N. 23° W. to 56° N. 38° W.; 71°-72° N. 21°-22° W., very rare in deep sea hauls from 225 and 550 metres; 71° N. 3° E. rare.

August: 56° N. 23° W. to 56° N. 38° W., rare to common;
72°—74° N. 26°—31° E., rare.

September: 56° N. 24° W. to 53° N. 48° W., rare; 68° N. 6° W., not rare; 66° N. 3° W. rare between 300 and 187 metres; 61° N. 1° E., rare in a haul from 100 metres; 72°—73° N. 19° E., rare.

October: 52° N. 14° W. to 56° N. 38° W., midway common.

November: 51° N. 21°—28° W.; 47° N. 51° W., rare.

Temperature: 19.6, mean of 192 obs., max. 27.6, min. 0.5.

Salinity: 35.50, mean of 153 obs., max. 37.05, min. 31.96.

Plankton-type. Noted from the tropical Pacific (108° W. Equ. Guzm.), the Mediterranean, the North Sea and the Skagerrak. This species has of all copepods the widest distribution in the Atlantic, or from 31° S. to 74° N., entering in Desmo-, Styli- and Trichoplankton, but from the general distribution and the mean temperature it is apparent that it belongs essentially to the Styli-plankton. — It is worthy of note that this copepod was by far more abundant in 1898 than in 1899. In March 1898 it scarcely reached north of 50° but it appeared in April at Iceland, in August at Spitzbergen. In the last month it crossed the Denmark Sound for E. Greenland and was in September seen N. of Iceland. — S. (*D. T.*)

MIRACIA EFFERATA DANA.

1897 *December* and

1898 *January*: 7° N. 22° W.; 12° N. 50° W.; 18° N. 46° W.; 32° N. 33° W.

March: area between 1° S. 15° W., 10° N. 20° W., 14° N. 24° W. and 6° N. 22° W.; 14°—17° N. 50°—47° W.; Caribbean Sea.

April: 12° N. 51° W.; 27° N. 75° W.

May: 11°—13° N. 52°—51° W.

July: 41° N. 60° W.

September: 8° N. 25° W.; 27° N. 36° W.

October: 32° N. 74° W.

November: 19° N. 58° W.; 42° N. 64° W.

1899 *June*: 12° N. 52° W.

Temperature: 24.6, mean of 23 obs., max. 28, min. 16.2.

Salinity: 35.87, mean of 14 obs., max. 36.50, min. 35.

Plankton-type. Noted from the southern Pacific (40° S. 133° W.). It follows in the Atlantic the Equatorial Current from Africa to the north of S. America, enters the Caribbean Sea and the Florida Current. Like many other species of the æsma-type it advances in July beyond 40° N. in the western Atlantic. — *D.*

MONOPS BREVIS GIESER.

1898 *November*: Rio Janeiro, very rare, (2 ♂).

Temperature: 22.

Salinity: 33.51.

Plankton-type. Noted from W. Australia only. — *N.*

MONOPS PERSPICAX (DANA.)

1898 *March*: 10° N. 20° W.

August: 25° N. 74° W.

September: 12° N. 51° W.

Temperature: 27.1, mean of 3 obs., max. 28, min. 26.

Salinity: 36.21 and 36.21.

Plankton-type. Noted from the eastern equatorial Atlantic. From the above statements it is apparent that this species follows the Equatorial Current from Africa to S. America and enters the Antilles Current. — *D.*

OITHONA BREVICORNIS GIESER.

1898 *February*: 6° S. 12° E., mouth of Congo River.

Temperature: 26.2.

Salinity: 20.50.

Plankton-type. Noted from Hongkong only. — *N.*

OITHONA PLUNIFERA BAINB.

1898 *January*: 7° N. 53° W.; 25°—35° N. 74°—75° W.; 21° N. 17° W.

February: 13° N. 70° W. to 30° N. 74° W.; 5° S. 4° E.

March: 5° S. 4° W. to 31° N. 24° W.; 11°—21° N. 20°—18° W.; 12° N. 51° W. to 43° N. 17° W.; Caribbean Sea; 28° N. 74° W.; 40° N. 56° W.; 62° N. 2° E.

April: 10° N. 53° W.; 22° N. 72° W.; 31° N. 75° W.

May: area between 32° N. 37° W., 6° N. 56° W. and 23° N. 56° W.

June: 19° N. 63° W. to 25° N. 57° W.; 29° N. 34° W.; 33° N. 48° W.; 71° N. 21° E.

July: Caribbean Sea; 21° N. 58° W.; 33° N. 74° W.; 58° N. 0° W.; 61° N. 1° W.

August: 14° N. 70° W. to 33° N. 74° W.; Azores; 41° N. 57° W.

September: round Cape Verde Islands, common; rare at the following points: 17° N. 48° W.; 31° N. 33° W.; Azores; 53° N. 30° W. and 41° N. 65° W.

October: 21° S. 36° W.; Caribbean Sea; Azores; 39° N. 21° W.; 56° N. 31° W.

November: 22° N. 53° W.; 29° N. 43° W.; 32° N. 38° W.; Azores; area between 29° N. 19° W., 36° N. 14° W. and 34° N. 10° W.; 42° N. 63° W.; area 53° N. 50° W., 52° N. 38° W. and 56° N. 36° W.; 55° N. 14° W.

December: Caribbean Sea; 25° N. 52° W.; 28° N. 47° W.; Azores; Canaries; Gibraltar.

1899 *January:* 29° N. 16° W. to 35° N. 9° W.

March: 21° N. 43° W.; 30° N. 35° W.; 46° N. 11° W.; 62° N. 8° W.; 66° N. 20° W.

April: 32° N. 75° W.; 36° N. 74° W.

May: 33° S. 16° E. to 25° S. 7° E.; 50° N. 33° W.; 35° N. 75° W.; 61° N. 1° E., haul from 100 metres, rare.

June: 8° S. 13° W. to 6° S. 16° W.; 9° N. 25° W.; 12°—15° N. 52°—50° W.; 61° N. 1° E. to 67° N. 3° W., deep sea hauls, very rare.

July: 56° N. 38° W.; 71° N. 21° W., very rare.

September: 56° N. 23°—30° W. to 53° N. 31°—37° W., rare.

November: 51° N. 31° W., rare.

Temperature: 21.2, mean of 123 obs., max. 28.2, min. 0.2.

Salinity: 36.01, mean of 88 obs., max. 37.22, min. 33.26.

Plankton-type. Noted from the Mediterranean, Indian and Pacific. It has in the Atlantic a very wide range of distribution, both in Desmo- and Styli-plankton, from 33° S. to 66° N., but it occurs only very sparingly north of 40° N. — S. D.

OITHONA SIMILIS CLAUSS.

- 1898 *January*: 16° N. 18° W.; 43° N. 18° W.; 37° N. 73° W.
February: 34° N. 40° W.; 50° N. 10° W. to 50° N. 30° W., thence to 45° N. 50° W.; 34° N. 74° W.
March: area between the Azores, the English Channel, the Shetlands and 49° N. 33° W.; 43° N. 49° W. to 41° N. 70° W.; 63° N. 2° E. to 58° N. 6° E.; 71° N. 1° E.
April: area between the Azores, the English Channel and 39° N. 74° W.; Färöe Channel; 63° N. 17° W.; 73° N. 5° W.
May: area between the Azores, Cape Finisterre, the English Channel and 41° N. 58° W.; Färöes; Shetlands; 62° N. 2° E. to 58° N. 6° E.; 66° N. 9° E.; 68° N., 17° W. to 71° N. 15° W.; 77° N. 2° W.
June: 31° N. 17° W.; area between the Azores, Cape Finisterre, the English Channel, S.W. of Iceland and 45° N. 26° W.; 58° N. 2° W. to 62° N. 2° E.; 67° N. 10° E.; Beeren Island; 67°—68° N. 24°—23° W.
July: Azores; 50° N. 11° W. to 49° N. 22° W.; 42° N. 51° W. to 40° N. 69° W.; area between Westmannaö, 59° N. 2° E. and 67° N. 7° W., thence to 67° N. 22° W.; 78° N. 0° W.—7° E.
August: Azores; area between 49° N. 14° W., 56° N. 13° W., 56° N. 28° W. and 48° N. 24° W.; 44° N. 48° W. to 41° N. 65° W.; area between Westmannaö, the Hebrides, 60° N. 3° E. and N. Iceland; 72° N. 26° E.; Beeren Island; round Spitzbergen.
September: Azores; 43° N. 16° W. to the English Channel and Ireland; area between 48° N. 30° W. and 56° N. 20°—35° W.; 43° N. 48° W.; Färöes; Shetlands; Westmannaö, common; N. of Iceland; 71° N. 20° E.; Beeren Island to Spitzbergen.
October: Azores; area between 48° N. 24° W., the Hebrides and 54° N. 45° W.; 42° N. 50° W.; Färöes, not rare.

November: many spots on the area between 51° N. 20° W., 40° N. 67° W., 53° N. 50° W. and 56° N. 36° W.; Shetlands; Färöes.

December: Canaries; area between 43° N. 18° W., 50° N. 9° W. and 49° N. 30° W.; area between 46° — 42° N. 49° W. and 42° N. 63° W.; Färöes, common.

1899 *January*: area between the Canaries, Madeira and Gibraltar; 45° N. 49° W.; 40° — 41° N. 66° — 69° W.; Färöes, not rare.

February: 34° N. 40° W.; Färöes, rare.

March: 33° N. 32° W. to 48° N. 6° W.; 66° N. 14° — 20° W.

April: Färöes, very rare; Vestmannaö, rare.

May: 33° S. 16° E. to 25° S. 7° E.; 38° N. 14° W.; across the Atlantic from S.W. Ireland to Newfoundland; area between the Färöes, 56° N. 1° W. and the Skagerak.

June: 21° S. 3° E.; 5° S. 17° W.; 62° N. 2° E. to 69° N. 13° W.; Jan Mayen, rare.

July: area between 56° N. 15° W., 56° N. 38° W. and 43° N. 35° W., as a rule rare; 71° N. 21° W., rare; 72° N. 21° — 22° W., hauls from 180 and 200 metres, rare.

August: 55° N. 9° W. to 54° N. 46° W., most common midway; 52° N. 53° W., very common; 71° N. 23° W., very common; 73° N. 22° W., rare.

September: 56° N. 12° W. to 53° N. 51° W., common midway and N.E. of Newfoundland; 68° N. 8° — 3° W., rare; 66° — 60° N. 2° W.— 3° E., very common; 67° — 63° N. 3° W.— 2° E., deep-sea hauls from 500—100 metres, rare; 71° — 72° N. 15° — 16° W., very rare.

October: area between 56° N. 23° W., 58° N. 25° W. and 53° N. 48° W., common; 52° N. 14° W., not rare.

November: 51° N. 15° W. to 51° N. 39° W., not rare; area between 49° N. 40° W., 53° N. 43° W. and 47° N. 51° W., common.

Temperature: 12.5, mean of 78 obs., max. 22.5, min. 0.6. Only such samples considered as contained this species abundantly.

Salinity 35.06, mean of 78 obs., max. 36.23, min. 31.84.

Plankton-type. Noted from the Mediterranean. NANSSEN collected it at 78° N. 136° E. and I have seen it in a sample from Bering Sea. One of the most common Atlantic copepods. Its area

of distribution is eastern, from the Cape of Good Hope to the Azores, whence it extends towards the English Channel and New York, between 40° and 50° N. It is abundant in this area in the spring, becomes scarcer there during the summer, but reappears in the autumn (November). From 50° it advances far to the north, goes round Spitzbergen, along E. Greenland, at least to 73° N., and in Baffin's Bay at least to 75° . It is thus one of the most enduring of all the organisms which constitute the Styli-plankton. — S.

ONCÆA CONIFERA GIESBRE.

1898 *March*: Azores, very rare.

1899 *June*: 62° N. 1° E. to 67° N. 3° W., deep sea hauls from 400 to 550 metres, in strata 50 metres below the surface, more or less rare.

September: 71° N. 21° W., haul from 225 metres, rare.

Temperature: 0.5, mean of 8 obs., max. 2.5, min. — 1.6; at the Azores 15.5.

Salinity: 34.98, mean of 7 obs., max. 35.08, min. 34.74; (at the Azores 35.05).

Plankton-type. Noted from the tropical Pacific, the Mediterranean and the Karajakfjord on W. Greenland. NANSEN collected it rather plentifully north of the New Siberian Islands, 78° N. 136° E. (hauls from 50 metres). G. O. SÆMS mentions it from the S. coast of Norway. I noted it from the Red Sea and Indian Ocean. The occurrence in the Atlantic seems to prove that it belongs to the Tricho-plankton, although it occurs in the Mediterranean. It is very remarkable that it has never been seen in the Northern Atlantic at the surface. It enters the Atlantic probably from the Polar Basin, ultimately from the Pacific. — T?

ONCÆA MEDITERRANEA (CLAUS).¹

1898 *November*: 42° N. 64° W.

December: 40° N. 22° W.

1899 *March*: 33° N. 38° W.

¹ This species is probably not rare in the tropical Atlantic, but of all my notes, I will publish the above only, as I am afraid I have in other cases unfoundedly this species with *G. conata*.

Temperature: 16.2 to 17.5.

Salinity: 36.16 to 36.51.

Plankton-type. Noted from the Pacific (13° N.—3° S. 99°—132° W.) and the Mediterranean. TH. SCOTT mentions it from Franz Josef Land (5 metres, June 1897). — S. or D.

ONCÆA MEDIA GIESBR.

1898 *January:* 7° N. 22° W.

March: 6° S. 4° W. to 11° N. 20° W.

June: Azores; 10° N. 53° W.

July: 41° N. 58° W.

August: 41° N. 57°—59° W.

September: 12° N. 27° W.; Azores.

October: Azores.

November: Rio Janeiro; 0° S. 31° W.; 13° N. 27° W.; 33° N.

10° W.; Azores; 47° N. 41° W.; 42° N. 64° W.

December: 30° N. 16° W.; Azores.

1899 *January:* 29°—32° N. 16° W.

February: 34° N. 40° W.

March: 36° N. 39° W.; 41° N. 21° W.

April: 9° N. 59° W.; 36° N. 74° W.

May: 32°—33° S. 13°—16° E.

June: 8° S.—7° N. 13°—25° W.; 11° N. 26° W.; 15° N. 49° W.

Temperature: 22.3, mean of 43 obs., max. 28, min. 13.1.

Salinity: 35.73, mean of 29 obs., max. 36.26, min. 33.21.

Plankton-type. Noted from the tropical Pacific and the Mediterranean. — D.

ONCÆA MINUTA GIESBR.

1898 *March:* Azores; 45° N. 13° W.; 48° N. 18° W.; 58° N. 2° W.; 63° N. 2° E.

May: 68° N. 17° W.; 71° N. 15° W.

June: 44° N. 9° W.

July: 65° N. 1°—3° E.; 78° N. 1° E.—3° W. (deep sea hauls Auriv.)

August: 41° N. 57° W.; 60° N. 3° W.; 76°—78° N. 12°—11° E. 81° N. 23° E. (deep sea haul Auriv.)

September: 72°—73° N. 19° E.; 76° N. 15° E. (deep sea haul Auriv.)

November: Azores; 56° N. 23°—30° W.; 42° N. 63° W.

December: Azores.

1899 *March*: Azores; 44° N. 16° W.; 65° N. 13° W.

May: 61°—64° N. 6°—9° W.

June: 62°—67° N. 1° E.—3° W., hauls from 550 metres.

July: 72° N. 22° W., haul from 260 metres.

September: 66° N. 3° W., hauls from 500 and 200 metres.

October: between 52° N. 21° W., 53° N. 25° W. and 56° N. 23° W., not rare.

November: 51° N. 21°—34° W., rare; 49° N. 40° W., rare.

Temperature: *a*) in the northern Atlantic δ , mean of 35 obs., max. 12, min. — 0.5, *b*) in the temperate Atlantic 16.3, mean of 7 obs., max. 22, min. 11.

Salinity: *a*) in the northern Atlantic 35.69, mean of 36 obs., max. 35.43, min. 33.66, *b*) in the temperate Atlantic 35.83, mean of 5 obs., max. 36.69, min. 34.64.

Plankton-type. Noted from the Mediterranean. This species occurs only rarely in the temperate Atlantic, in the region of the Azores and there associated with arctic forms. In the northern Atlantic it is much more frequent and has been seen as far as 72° N. on the west and 78° N. on the east. There is thus more probability that it is an arctic than a temperate form. The occurrence near the Azores and in the Mediterranean must then be accounted for by arctic currents to these regions. Still, the salinity is higher than for Tricho-plankton as a rule. On the other hand this species occurs frequently in the northern Atlantic among masses of *Calanus finmarchicus*. — *T*?

ONCÆA SUBTILIS GIESBRE.

1898 *April*: 39° N. 24° W., common.

June: 46° N. 11° W., common.

September: 45°—47° N. 14°—9° E., scarce.

1899 *March*: 46° N. 11° W., common.

May: 32° S. 13° E., rare.

August: 48°—49° N. 13°—14° W.

October: 52° N. 14° W., rare.

Temperature: 13, max. 20, min. 12.

Salinity: 35.41 to 35.92.

Plankton-type. Noted from the Mediterranean. Its range of distribution in the Atlantic is eastern, from 32° S. to 52° N. — S.

ONCEA VENUSTA Philippi¹

1898 *May:* 6° N. 56° W.

July: 33° N. 74° W.

August: Azores: 41° N. 57°—58° W.

September: 18° N. 25° W.

October: Azores.

November: Azores; Rio Janeiro.

December: Azores.

1899 *March:* Azores to 21° N. 43° W.

May: 33° S. 16° E.

Temperature: 15. to 28.

Salinity: 35.32 to 37.32.

Plankton-type. Noted from the tropical Pacific, the Mediterranean and the Atlantic between 5° N.—20° S. 24°—38 W. — D. (S.?).

PARACALANUS ACULEATUS Giesbr.

1898 *January:* 6° N. 55° W.; 12° N. 50° W.

February: 26° N. 74° W.

March: 1° S. 15° W.; 40° N. 56° W.

May: 6° N. 56° W.; 41° N. 56° W.

August: 41° N. 57°—58° W.

November: 17° N. 25° W.; 19° N. 58° W.

December: 19° N. 58° W.

1899 *April:* 9° N. 59° W.

June: 7° N. 25° W.

Temperature: 23.9, mean of 14 obs., max. 28, min. 11.

Salinity: 35.31, mean of 11 obs., max. 36.32, min. 34.31.

¹ This species is probably not rare in the tropical Atlantic, but as I fear I have frequently confounded this species with the nearly allied *O. mediterranea* and *O. vestia*, I do not publish my older determinations.

Plankton-type. Noted from the Pacific, Indian Ocean and Red Sea. According to GIESBRECHT it occurs in the Atlantic between 3° — 8° N. 24° — 26° W., thus in the eastern tropical Atlantic. According to the above data it follows the Equatorial and Florida Currents and advances in the western Atlantic, during March—August, beyond 40° N. — *D.*

PARACALANUS PARVUS CLAUD.

- 1898 *January:* 12° N. 19° W.; 21° N. 17° W.; 6° N. 58° W.
February: 5° — 6° S. 4° — 12° E.; Caribbean Sea.
March: 4° S. 10° W. to 3° — 6° N. 16° — 22° W., thence along the African coast to 27° N.; Azores to 46° N. 34° W.; 7° N. 55° W.; Caribbean Sea; 42° N. 42° W. to 40° N. 50° W.
April: 42° N. 19° W. to 50° N. 10° — 3° W.; 6° N. 55° W.; Caribbean Sea; 45° N. 40° W.
May: 41° N. 16° W. to 49° N. 11° — 7° W.; 49° N. 23° W. to 41° N. 62° W.; 6° N. 56° W.
June: area between the Azores, 42° N. 9° W., the English Channel and 48° N. 35° W.; 19° N. 63° W.
July: Azores; 39° N. 23° W.; 48° — 50° N. 11° — 22° W.; 40° N. 69° W.
August: area between 48° N. 23° W., the English Channel and 56° N. 20° — 28° W.; 58° N. 5° W.; 60° N. 3° E.
September: area between 46° N. 11° W., the English Channel, 56° N. 27° W. and 48° N. 24° W.
October: 42° N. 15° W.; 50° N. 20° — 10° W.; 38° N. 74° W.
November: Rio Janeiro, abundant; 34° N. 10° W.; Azores; 45° N. 7° W.; 51° N. 20° — 1° W.; 56° N. 36° W.; 47° N. 42° W.; 42° N. 64° W.
December: 29° S. 49° W.; 44° N. 57° W.
- 1899 *January:* 29° N. 16° W.; Färöes, common.
March: 33° — 37° N. 32° — 26° W.; 48° N. 6° W.
April: 37° N. 9° W.; 48° N. 9° W. to 50° N. 5° W.; 9° N. 59° W.
May: 32° — 29° S. 13° — 9° E.; 57° N. 6° E.; 38° N. 74° W.
July: 56° N. 0° W. to 57° N. 4° E.; 61° N. 0° W.— 2° E.
August: 55° N. 9° — 26° W., rare; 60° N. 3° E.
September: 56° N. 24° — 33° W., not common.

October: 53° N. 14° W. (not rare) to 56° N. 25° W. (common).

November: 51° N. 21° W., rare.

Temperature: 15.2, mean of 30 obs., max. 28.2, min. 8. (Only such samples considered as contained this species in any abundance).

Salinity: 34.82, mean of 30 obs., max. 36.52, min. 31.91.

Plankton-type. Noted from the Indian, Pacific and Mediterranean. It occurs in the Atlantic both in the eastern and western part. In the east it goes west of the Cape of Good Hope, in the Gulf of Guinea to Cape Verde, the Azores, the English Channel, the Färöe Channel and the North Sea at least to 61° N. In the west it has been seen at Rio Janeiro, along the north coast of S. America and in the Caribbean Sea, besides above the Newfoundland Banks. — S.

PLEUROMMA ABDOMINALE (Linn).

1898 *January*: 16° N. 18° W.

February: 48° N. 41° W.; 50° N. 31° W.

March: 40° N. 56° W.

1899 *November*: 49° N. 40° W., rare.

Temperature: 13.7, mean of 4 obs., max. 20, min. 11.

Salinity: 35.17 (one observation).

Plankton-type. Noted from the Mediterranean, Indian and Pacific, in the Atlantic from the Canaries. — S.

PLEUROMMA GRACILE CLAUS

1898 *February*: 48°—50° N. 41°—31° W.

March: 47° N. 27° W. to 40° N. 64° W.; Azores.

May: 48° N. 30° W. to 41° N. 54° W.

June: 48° N. 33° W.

July: 48° N. 30° W.

September: 33° N. 31° W.; 35° N. 30° W.; 44° N. 16° W.

November: 48°—49° N. 29°—28° W.

1899 *January*: 48° N. 39° W.

November: 49° N. 40° W.

Temperature: 15.8, mean of 18 obs., max. 25.8, min. 11.

Salinity: 35.46, mean of 16 obs., max. 36.49, min. 34.13.

Plankton-type. Noted from the Mediterranean, Indian and Pacific. According to the above statements the area of distribution in the Atlantic is from the S. of the Azores to 40° – 50° N. 16° – 64° W., thence across the whole Atlantic. It appears there, midway between Europe and America, in the winter and spreads westwards, so that already in March, it reached nearly to the coast of N. America. It soon became rare in this region, but reappeared in September SW. and NE. of the Azores, in November midway between the Engl. Channel and New York. — S.

PONTELLINA PLUMATA DANA.

1898 *February*: 5° S. 2° E.
March: 2° N. 25° W.; 7° N. 17° W.; 11° N. 20° W.
September: Azores.

Temperature: 25.8, mean of 5 obs., max. 28, min. 21.7.

Salinity: 35.22, mean of 4 obs., max. 36.53, min. 34.12.

Plankton-type. Noted from the Cape of Good Hope, Cape Verde, 5° N. 24° – 44° W., the Mediterranean and the Pacific. — *D?* (*Nt.?*).

PSEUDOCALANUS ELONGATUS (BOECK.)

1898 *February*: 50° N. 10° W.; 45° N. 50° W.
March: Färöes; 41° – 40° N. 60° – 68° W.
April: 48° N. 5° W.; 50° N. 10° – 3° W.; Shetlands; Färöes.
May: 50° N. 11° W.; Färöes; Shetlands; 62° – 58° N. 4° E.; 40° N. 68° W.
June: Färöes; Shetlands; 58° N. 2° W.; 76° N. 20° E. 77° N. 27° E. (deep sea haul. Arriv.)
July: Färöes; Shetlands; 78° N. 1° E.— 3° W.; (deep sea haul. Arriv.)
August: Westmannaö; Färöes; 60° N. 3° E.; 80° N. 10° E.
September: Färöes; Rockall (57° N. 14° W.); 74° N. 19° E.; 76° N. 15° E. (deep sea haul. Arriv.)
October: Färöes; 59° N. 1° W.; 40° N. 67° W.
November: 51° N. 2° W.; S. Iceland; Färöes; 45° N. 50° W.
December: Färöes; 43° N. 81° W. to 47° N. 45° W.
1899 *January*: Färöes, common; 41° – 40° N. 69° – 66° W.
February: Färöes, common.

March: 66°—67° N. 20°—23° W., abundant; Färöes.

April: 50° N. 6° W.; Färöes, abundant.

May: N. and S. of Iceland, Färöes; 60°—61° N. 1° E.; 57° N. 3° E.; 58° N. 3°—9° E.

June: 68° N. 11° W.; 67° N. 3° W.; 65° N. 1° W.; 64°—62° N. 0°—2° E.

July: 74° N. 18° W.; 62°—61° N. 0° W.—2° E.; 56°—58° N. 0° W.—6° E.

August: 56° N. 14° W., not rare; 60° N. 3° E.; 76° N. 41° E.

September: 52° N. 55° W., not rare; 69° N. 13° W.; 67° N. 3° W.; 61° N. 1° E.; 74° N. 17° E.

November: 47° N. 51° W., not rare.

Temperature: 8.9, mean of 57 obs., max. 18.2, min. 0.

Salinity: 34.33, mean of 53 obs., max. 35.06, min. 31.77. (The above figures relate to the Atlantic only; it occurs in the Baltic in water with 6 salinity).

Plankton-type. Noted from Baffin's Bay, 76° N. 64° W., Davis's Strait, 70° N. 54° W., W. of Spitzbergen, 79° N. 6° W., the Baltic (to Åland) and the Gulf of Finland. NAXSEN collected it at 78° N. 136° E. — *Ng* (*Ns*, *T*).

RHINOCALANUS CORNUTUS DANA.

1898 *March*: 42° N. 42° W.

May: 43° N. 46° W.; 20° N. 60° W.

December: Azores.

June: 12° N. 52° W.

Temperature: 20.1, mean of 5 obs., max. 27.1, min. 16.

Salinity: 36.21, mean of 5 obs., max. 36.43, min. 36.06.

Plankton-type. Noted from the Gulf of Guinea, the Canaries and the Pacific — *D.* (and *S?*).

RHINOCALANUS NASUTUS GIEBER.

1898 *January*: 21° N. 17° W.

March: 6° N. 22° W.; 21° N. 18° W.; Azores; 46° N. 34° W.;

43° N. 41° W.; 40° N. 56° W.

April: 47° N. 31° W.; 31° N. 75° W.

May: 48° N. 30° W.; 41° N. 54° W.

Temperature: 15._s, mean of 12 obs., max. 22, min. 11.

Salinity: 35.₆₅, mean of 9 obs., max. 36.₆₉, min. 34.₁₆.

Plankton-type. Noted from the west of Magellan Straits to 6° N., of Gibraltar, in the Mediterranean and off Scotland. — S.

SAPPHIRINA GEMMA DANA.

1898 *March*: 7°—11° N. 17°—20° W.

Temperature: 24._s to 27._s.

Salinity: 35.₂₀ to 35.₂₅.

Plankton-type. This species has been found south of the Cape of Good Hope, in the Mediterranean and the Pacific. The plankton in which I found the above specimens was Desmo-plankton. — D.

SAPPHIRINA NIGROMACULATA CLAUS.

1898 *February*: 5°—6° S. 9°—13° W.

March: 3° N. 16° W.; 36° N. 29° W.

June: 25° N. 57° W.

August: 49° N. 23° W.; 44° N. 42° W.; 41° N. 58° W.

October: Azores.

Temperature: 23._s, mean of 9 obs., max. 28._s, min. 17._s.

Salinity: 33.₃₂, mean of 8 obs., max. 36.₅₆, min. 20.₂₆.

Plankton-type. Noted from the Mediterranean and the Pacific. According to the above data it has the distribution of the Desmo-plankton, but seems to keep more to the coasts than to the open sea. It follows the other Desmo-species in August to the area between 40°—50° N. — D.

SAPPHIRINA OPALINA DANA.

1898 *August*: 14° N. 70° W., very rare.

Temperature: 27._s.

Salinity: 34.₇₅.

Plankton-type. Noted from the Pacific, Gulf of Panama and the Mediterranean. — *D.*

SAPPHIRINA OVATOLANCEOLATA DANA.

1899 *April*: 15° S. 5° W., very rare.

Temperature: 23.

Salinity: 36.41.

Plankton-type. Noted from Rio Janeiro, 18°—20° S. 25°—38° W. and the Mediterranean. — *D.*

SAPPHIRINA SINUCAUDA BRADY.

1898 *March, September and October*: Azores.

Temperature: 17.3 to 21.9.

Salinity: 36.28 to 36.52.

Plankton-type. Noted from the Pacific. — *S?*

SAPPHIRINA STELLATA GIESBR.

1898 *March*: 16° N. 47° W.

April: 31° N. 75° W.

May: 20° N. 60° W.

Temperature: 24.4 to 27.1

Salinity: 36.41 to 36.46.

Plankton-type. Noted from the west of Australia and the Pacific. My specimens occurred in the Antilles and Florida Currents. — *D.*

SCOLECITHRIX DANÆ [LUBBOCK.]

1898 *February*: 5° S. 9° E.

March: 3° N. 16° W.; 7° N. 17° W.

November: 17° N. 25° W.

December: 34° N. 38° W.

Temperature: 25.6, mean of 5 obs., max. 28.2, min. 19.2.

Salinity: 35.23, mean of 5 obs., max. 36.56, min. 33.96.

Plankton-type. Noted from the Pacific, the Mediterranean and Atlantic, 18° S.—18° N. 38°—24° W. According to the above data it occurs west of Africa between 5° S. and 17° N. and SW. of the Azores. — *D.*

SETELLA GRACILIS DANA.

1897 *December* and

1898 *January*: 12° S. 34° W.; 26° N. 39° W. to 12° N. 50° W.; Caribbean Sea; 25°—29° N. 74° W.; 15° N. 16° W.

February: 5° S. 8°—4° E.; Caribbean Sea; 26°—30° N. 74° W.

March: area between 1° S. 27°—15° W. and 10° N. 20° W.;

Azores; 28° N. 38° W. to 9° N. 53°—59° W.; Caribbean Sea.

April: area between 7° N. 54° W., 10° N. 52° W. and 12° N. 51° W.; Caribbean Sea; 31° N. 75° W.

May: area between 6° N. 56° W.; 17° N. 50° W., 20° N. 52° W. and 20° N. 60° W.; 41° N. 51° W.

June: area between 10° N. 53° W., 23° N. 42° W., 30° N. 52° W. and 24° N. 58° W.

July: 24°—26° N. 54°—48° W.; Caribbean Sea; 33°—38° N. 74° W.; 40° N. 67° W. to 41° N. 58° W.

August: Caribbean Sea; 42° N. 62° W. to 42° N. 48° W.

September: 15°—17° N. 49°—48° W.; Caribbean Sea; 41° N. 65° W. to 46° N. 39° W.; Canaries; Cape Verde Islands.

October: Caribbean Sea; Bahamas; 34° N. 74° W.; 41° N. 59° W.

November: area between 18° S. 31° W., 9° S. 34° W. and 8° N. 28° W.; Cape Verde Islands; 22° N. 53° W. to 29°

N. 43° W.; 42° N. 63° W.; 47° N. 41° W.; 36° N. 14° W.

December: 29° S. 49° W.; 19° N. 58° W. to 28° N. 47° W.

1899 *March*: 21°—24° N. 40°—43° W.

April: 32° N. 75° W.

June: 12°—15° N. 52°—50° W.

Temperature: 24.3, mean of 92 obs., max. 28.4, min. 16.

Salinity: 35.66, mean of 66 obs., max. 38.44, min. 28.16.

Plankton-type. Noted from the Mediterranean and the Pacific. This species occurs in the warmest part of the Atlantic, between Africa and S. America. It occurred in the Sargasso Sea in January

to June to about 30° N., then it decreased considerably, but reappeared in November. It occurred in the Florida Current, during January and April, to about 30° , in July north of 40° N. to 58° W., in August to 48° W., in September to 39° W. In the last named month it appeared at the Canaries and the Cape Verde Islands. — *D.*

TEMORA LONGICORNIS (O. F. MÜLL.)

1898 *March*: 42° — 43° N. 42° — 41° W.; 40° — 41° N. 68° — 70° W.

April: 48° — 50° N. 5° — 3° W.

May: 49° N. 23° W.; S. Iceland; area between 58° — 59° N. 6° — 5° E.; 62° N. 5° — 2° E. and 64° N. 6° E.; 43° N. 43° W.

June: 40° — 44° N. 10° — 9° W.; S. Iceland; Färöes.

July: S. Iceland; Färöes; Shetlands; 59° N. 2° E.; 40° N. 69° W.

August: S. Iceland; Färöes; 58° N. 2° W.— 0° E.; 41° N. 73° W.

September: N., S. and E. of Iceland; Färöes; Shetlands; English Channel.

October: Färöes, abundant; 41° N. 59° W.

November: Färöes.

December: 42° N. 49° W.

1899 *May*: area between 63° N. 7° W., 60° N. 1° E. and 57° N. 6° E.

June: Westmannaö; 63° N. 1° E.

July: area between 57° — 60° N. 1° E. and 58° N. 6° E.

September: 72° N. 19° E.; 60° — 61° N. 3° — 1° E.

Temperature: 10.s, mean of 46 obs., max. 21, min. 6.6

Salinity: 34.12, mean of 42 obs., max. 36.21, min. 31.01.

Plankton-type. This species occurs from Iceland to the Färöes, the Shetlands, the British Islands, the English Channel, the North Sea and the Skagerak, the Baltic to Åland and the whole coast of Norway to 70° N. 20° E.; in the west above the Newfoundland Banks along the east coast of N. America. In the winter it may occur S. of 50° N. and in the spring along the Spanish Peninsula. — *Ns* (*T*).

TEMORA STYLIFERA (DANA).

1898 *January*: Azores; 16° N. 18° W.

February: 5° S. 4°—9° E.; Caribbean Sea.

March: 4° S. 10° W. to the Cape Verde Islands and 21° N. 18° W., thence to the Azores; 17° N. 47° W.; 7°—9° N. 55°—59° W.; 40° N. 56° W.; 42° N. 42° W.

April: 10° N. 52° W.

May: 6° N. 56° W.; 17° N. 50° W.; 41° N. 63°—56° W.

June: 10° N. 53° W.

July: 33°—38° N. 74° W.; 41° N. 58° W.

August: Caribbean Sea; 21° N. 74° W.; 38° N. 74° W.; 41° N. 58° W. to 42° N. 48° W.

September: 17° N. 48° W.; 42° N. 57° W.

November: Rio Janeiro; Cape Verde Islands; 36° N. 10° W.; 42° N. 64° W.

December: 34° N. 38° W.

Temperature: 22.₄, mean of 40 obs., max. 28.₁, min. 11.

Salinity: 34.₂₅, mean of 34 obs., max. 36.₇₃, min. 28.₁₆.

Plankton-type. Noted from the Mediterranean. It occurs, according to the above statements, along the coasts of the tropical and subtropical Atlantic, for which reason I have considered this species as belonging to the Styli-plankton of the tropical Atlantic, but the low mean salinity and its absence from the area between the Canaries and the Newfoundland Banks make it more probable that is a tropical, neritic form. — *Nt.*

TEMORA TURBINATA (DANA).

1898 *January*: 12°—13° N. 19°—18° W.

February: 6° S. 12° E.

March: 18° N. 18° W.

Temperature: 20—22.

Salinity: 20.₂₉, (one obs. only).

Plankton-type. This species is noted from the Sulu Sea, Hongkong and Amoy. — *Nt.*

THALESTRIS KROHNII (KRÖYER). G. O. Sars.

(Determination by G. O. Sars.)

1898 *March*: 63° N. 2° E., very rare.**Temperature:** 6.7.**Salinity:** 35.16.**Plankton-type.** Noted from the west coast of Norway, especially off Finnmark (G. O. Sars). My specimens occurred in a very scanty plankton, containing typical Tricho- and Styli-species. — *T?*

Chaetognata.¹

KROHNIA HAMATA (MORR.)

(STROBILMANN: D. Systematik d. Chaetognaten, Berl. 1892, pag. 20.)

- 1898 *July*: 72° N. 1° E. and 78° N. 1° E.—3° W.; (deep sea hauls. Auriv.)
August: 54° N. 47° W.; 77°—80° N. 13°—10° E., (deep sea hauls. Auriv.)
September: 56° N. 27°—36° W.
 1899 *June*: 67° N. 3° W., rare; 62°—67° N. 0° 37' E.—2° 52' W. from strata below 100 metres.
July: 71°—74° N. 21°—18° W., hauls from 280 metres; 53° N. 42° W., rare.
September: 62°—67° N. 0° 37' E.—2° 55' W., (below 50 metres and a haul from 500 to 25 metres).

Temperature: 10° to 11°.

Salinity: 34° to 35°.

Plankton-type. Noted from 51° S. 9° E. (depth 70 m.), the S. Equatorial and Guinea Currents, the Sargasso Sea and Florida Currents (deep water), Irminger sea and Baffin's Bay (Chun: D. Beziehungen zwischen dem arctischen und antarct. Plankton. Stuttg. 1897). — *T.*

SAGITTA ARCTICA Auriv.

(Plankton d. Baffins Bay u. Davis's Strait. Upsala 1896, pag. 188.)

- 1898 *July*: Spitzbergen; 78° N. 1° E.—3° W. (deep sea haul. Auriv.)
August: 81° N. 23° E. (deep sea haul. Auriv.)
September: 76° N. 15° E. (deep sea haul. Auriv.)
November: 60° N. 1° W.
 1899 *March*: 62° N. 7° W.
June: 65°—67° N. 1°—3° W., haul from 500 to 200 metres.

¹ See Steinhans, D. Verbr. d. Chaetognaten Kiel 1898 S., a paper, with which I became acquainted first when the above was in the press.

July: 71°—74° N. 21°—18° W., deep sea haul.

September: 67° N. 3° W., haul from 500 metres.

Temperature: 5.8 to 10 (4.3 to 6.3 Auriv.)

Salinity: 35.22 to 35.24 (33.23 to 34.98 Auriv.)

Plankton-type. Noted from Baffin's Bay, Davis's Strait and the Skagerak (surface in February, in deeper water at other periods).
— T.

SAGITTA BIPUNCTATA Quoy & GAIM.

(SCHROEDERMANN: D. Systematik d. Chætoognaten, Berlin 1892, pag. 16.)

1898 *January*: 12°—21° N. 19°—17° W.; 36° N. 27° W. to 46° N. 11° W.; 6° N. 55° W.

February: 5°—6° S. 9°—12° E.

March: 6° S. 4° W.; 7° N. 17° W. to Cape Verde Islands and 21° N. 18° W.; 36° N. 29° W. to 45° N. 13° W.; 49° N. 33° W.; Färöes.

April: Caribbean Sea; 34° N. 74° W.; 41° N. 19° W.

May: 32° N. 37° W. to 43° N. 11° W.; 58° N. 4° E.; 11° N. 52° W.; 23° N. 56° W.; 41° N. 63° W.

June: 33° N. 48° W.; Azores.

July: 59° N. 2° E.; 21° N. 58° W.; 38° N. 74° W.

August: Azores; S. Iceland; Färöes; 61° N. 4° E.

September: 8° N. 25° W.; Azores; 56° N. 21° W., abundant; Färöes.

October: Azores to 42° N. 15° W.; 57° N. 18° W.; Färöes; 34° N. 74° W.

November: area between Rio Janeiro, 26° S. 30° W. and 18° S. 31° W.; 34° N. 10° W.; Azores; 56° N. 17° W.; Färöes.

December: Azores; Färöes, common.

1899 *January*: Färöes.

March: Azores; 44° N. 16° W.

June: 17°—19° S. 2°—0° W.

August: 55°—56° N. 23°—28° W.

September: 56° N. 24°—30° W.

October: 53° N. 37° W.

November: 51° N. 21° W.; 49° N. 40° W.

Temperature: 19.4, mean of 66 obs., max. 27.3, min. 10.2

Salinity: 35.23, mean of 44 obs., max. 37.3, min. 32.73.

Plankton-type. This species appeared in June 1899 near St. Helena and was seen in November 1898 off Rio Janeiro. In the northern hemisphere it follows the coasts of both Africa and America, but occurs chiefly between the Azores and the Bay of Biscay. Its northern limit seems to be S. Iceland, the Färöes and western Norway. It occurs abundantly in the North Sea and the Skagerak. — S. (*Nm.*).

SAGITTA ENFLATA (GRASSI.)

(STRODTMANN: D. Systematik d. Chetognaten, Berlin 1892, pag. 18.)

1898 *March*: 3° 30' N. 16° W. to 11° N. 20° W., abundant.

Temperature: 24.6 to 28.2.

Salinity: 34.52 to 35.26.

Plankton-type. Noted from Madeira and the Mediterranean. Evidently a neritic form. — *N7*.

SAGITTA SERRATO-DENTATA (KROHN).

(STRODTMANN: D. Systematik d. Chetognaten, Berlin 1892, pag. 17 fig. 2.)

1898 *January*: 15° N. 18° W.

March: 6° S. 4° W. to 23° N. 28° W.

September: 12° N. 27° W.

November: 19° N. 58° W.

Temperature: 24.2, mean of 8 obs., max. 27.5, min. 20.

Salinity: 35.59, mean of 7 obs., max. 36.52, min. 34.52.

Plankton-type. Noted from the Mediterranean. — *D*.

Ctenophora.

BEROË CUCUMIS FABR.

(M. Sars: Beskr. og Iakttagelser. Bergen 1885, pag. 30—32. Pl. VI, fig. 15 a—d.)

1898 *July*: Spitzbergen; 78° N. 1° E. (deep sea haul, Auriv.)

September: Westmannaö.

1899 *June*: Jan Mayen; 74° N. 14° W.

July: 75° N. 18° W.

Temperature: 1.5, mean of 6 obs., max. 8.9, min. —0.9.

Salinity: 33.63, mean of 6 obs., max. 34.64, min. 32.65.

Plankton-type. This species is noted from Basins' Bay, 78° N., St. Lawrence Gulf, Bay of Massachusetts, the Shetlands, Scotland, Holland, Heligland and the Skagerak (AURIVILLIUS). — T. Ng.

Siphonophora.

VELELLA SPIRANS FÖRESKÅL.

(Gunn. Ergebnisse d. Plankton Exp. Siphonophoren, pag. 93).

1899 *August* (29th): 60° 55' N. 0° 20' W.

Temperature: 12.5.

Salinity: 35.11.

Plankton-type. Found by the Plankton-Expedition (Brandt Reisebeschr. Pl. VIII) in September in the Guinea current, W. of Africa, and in the S. Equatorial Current near S. America. Occurs in the Mediterranean and probably in the Pacific. — *B.*

Acraspeda.

CYANEA ARCTICA Pér. & Les.

(Ik. Syst. d. Medusen pag. 530.)

1899 *July*: 74° N. 18° W. (file J. Arwinsson).

Plankton-type. Noted from Spitzbergen, Greenland and the Atlantic coast of North America to New York. — *T. (Ns)*.

Craspedota.

AGLANTHA DIGITALE (O. F. MÜLL.)¹

(Bk. Syst. d. Medusen pag. 272, Pl. XVI, fig. 5, 6.)

- 1898 *May*: 57° N. 25° W. to 60° N. 7° W., rare to common.
June: 50° N. 8°—9° W.; 60° N. 14° W.
July: 78° N. 3° W. (deep sea haul).
August: 65° N. 33° W., not rare; 62° N. 18° W., rare.
- 1899 *June*: 64° N. 0° E. (deep sea haul); 67° N. 3° W. (deep sea haul).
July: 74° N. 18° W. (deep sea haul).
September: 61° N. 1° E., not rare; 63° N. 1° E. rare; 67° N. 3° W. (deep sea haul).

Temperature: 9.7, mean of 7 obs.

Salinity: 35.33, mean of 7 obs., max. 35.57, min. 35.24.

Plankton-type. This species seems to occur in the Northern Pacific (*A. Kamtschatica* BRANDT). It is noted from Baffin's Bay, Davis's Strait, Newfoundland to about 42° N., from the Shetlands and Norway. — *T.*

CODONIUM PRINCEPS HRL.

(System de Medusen 1 p. 13 Pl. 1 fig. 1, 2, 1879.)

- 1898 *August*: 78°—80° N. 27°—11° E. (AURIVILLIUS).
 1899 *June*: 64° N. 0° E. (fide J. ARWIDSSON).
September: 74° N. 18° E.

Temperature: 1 to 3.5.

Salinity: 32.36 to 34.02.

Plankton-type. — *T.*

¹ Ostenfeld's data used.

PECTYLLIS ARCTICA HÄCKEL.

(Syst. d. Medusen I pag. 206).

1898 *July*: 78° N. 19° E. (AURIVILLIUS).1899 *July*: 75°—72° N. 17°—22° W. (hauls from 180 and 350 metres).*August*: 71°—74° N. 23°—25° W. (hauls from 70 and 135 metres).**Plankton-type.** Noted from Greenland (72° N. 51°—55° W. Auriv.) and Halifax (haul from 2,500 m.)**Remark.** The above data for 1899 have been communicated by J. AURIVILLIUS.

STEENSTRUPIA GALANTHUS HÄCKEL.

(Syst. d. Medusen pag. 31.)

1898 *June*: Färöes.*July* and *August*: Westmannaö.**Temperature:** 7.3 to 10.3.**Salinity:** 34.03 to 35.03.**Plankton-type.** Noted from the British coasts, east and west, the Shetlands and Heligoland. — Ns.

TIARA PILEATA L. AGASS.

(HÄCKEL, Syst. d. Medusen pag. 58 Pl. III fig. 6—8.)

1898 *September*: 61° N. 1° E. (haul from 100 and 25 metres).**Plankton-type.** Noted from the Mediterranean and the Atlantic coasts of France, Gt. Britain and Norway. — S. (Nv.)

Zoantharia.

ARACHNACTIS ALBIDA M. SARS.¹

(Vanhöffen: Biblioth. zool. 1885 XX Pl. 1)

1898 *August*: 60° N 4° W.; 61° N. 0° W., common.

September: 60° N. 6° W.; 60° N. 3° W., not rare.

1899 *September*: 62° N. 1° E., rare.

Temperature: 12.1, mean of 4 obs., max. 13, min. 10.1.

Salinity: 35.17, mean of 4 obs., max. 35.17, min. 35.24.

Plankton-type. This species is only known to exist from about 56° N. 20° W. to 61° 50' N. 5° 20' E. The mean temperature and salinity agree with the numbers for Stylii-plankton, but as long as the distribution is not better known, the plankton-type may be undecided.

¹ Ostenfeld's data used.

Ciliata.

AMPHORELLA AMPHORA (CLAP. & LACHM.) ENTZ.¹

(v. DADAY *Milch. zool. stat. Neapel*, Vol. VII, 1887, pag. 535, Pl. XVIII fig. 4.
JØRGENSEN *Bergens Mus. Aarbog* 1899, pag. 12)

- 1897 *December*: 34° N. 30° W.; 39° N. 24° W.; 42° N. 50° W.
 1898 *February*: 35° N. 73° W.
 March: 32° N. 74° W.
 April: 42° N. 47° W.
 June: 37° N. 25° W. to 50° N. 12° W.
 August: S. of Iceland; 44° N. 42° W.; 40° N. 66° W.
 September: 46° N. 11° W.; N. and SW. of Iceland; 41° N.
 65° W.
 October: 57° N. 27° W. to the Färöe Channel.
 November: 34° N. 10° W.; 56° N. 23° W.; 48° N. 29° W.;
 47°—48° N. 41° W.; Färöe Channel.
 December: 49° N. 30°—35° W.
 1899 *January*: 31° N. 16° W.
 March: 37° N. 26° W.
 April: 41° N. 17°—18° W.
 June: 20° S. 1° E. to 4° S. 19° W.
 July: 45°—48° N. 31°—25° W.
 November: 51° N. 28° W.

Temperature: 16.3, mean of 36 obs., max. 26.7, min. 7.

Salinity: 35.70, mean of 30 obs., max. 36.59, min. 33.72.

Plankton-type. Noted from the Mediterranean. Its distribution in the Atlantic is on the whole an eastern one, from the W. of S. Africa to Iceland, but it has nevertheless been seen, although very seldom, in the western area. — S.

¹ Ostenfeld's data for *Tintinnus quadricinctus* included.

AMPHORELLA GANYMEDES ENTZ.

(*Tietianus gan.* Entz. Mitt. Zool. Stat. Neapel. Vol. V. 1834. pag. 409, Pl. XXIV fig. 17, 18. *Asph. gan.* v. Dad. l. c. Vol. VII pag. 589, Pl. XVIII fig. 18.)

- 1898 *March*: 41° N. 21° W.; 45° N. 13° W.
April: 41° N. 19° W.; 48° N. 29° W.
May: 50° N. 14° W. to 42° N. 61° W.
June: 50° N. 12° W.; 44° N. 9° W.
August: 49° N. 14° W. to 48° N. 24° W.
September: Azores to the Engl. Channel; 50° N. 11° W.
November: 46°—49° N. 7°—12° W.; 48° N. 41° W. to 43° N. 61° W.
December: 50° N. 20° W. to 41° N. 66° W.
- 1899 *March*: 30° N. 35° W.
April: 42° N. 18° W.; 36° N. 74° W.
May: 30° N. 35° W.
June: 20° S. 2° E. to 4° S. 19° W.
July: 48° N. 23° W. to 45° N. 31° W.

Temperature: 16.01, mean of 41 obs., max. 22.1, min. 10 (exceptional cases 26.1 and 5).

Salinity: 35.38, mean of 35 obs., max. 36.88, min. 32.01.

Plankton-type. Noted from the Mediterranean. The distribution in the Atlantic is on the whole eastern, from the W. of S. Africa to the Azores, the Bay of Biscay and the mouth of the Engl. Channel, thence (from May to December) across the Atlantic towards New York. Not seen N. of 50° N. — S.

AMPHORELLA STEENSTRUPH (CLAP. & LACHS.)

(JÖRGENSEN Bergens Mus. Aarbog 1899 No 2, pag. 12 Pl. I fig. 3.)

- 1898 *March*: 41° N. 21° W.; 32° N. 74° W.
April: 44° N. 46° W.; 42° N. 47° W.
May: 50° N. 14° W. to 48° N. 33° W.; 42° N. 61° W.
June: 50° N. 12° W.; 48°—45° N. 33°—41° W.
July: 49° N. 22° W.; 41° N. 58° W. to 40° N. 69° W.
August: 49° N. 13° W.; 48° N. 37° W. to 41° N. 65° W.
September: 48° N. 7° W.; 48°—47° N. 24°—33° W.

November: 45° N. 7° W.; 40°—48° N. 31°—41° W.; 43°—42°
61°—64° W.

December: 48°—49° N. 40°—30° W.; 43° N. 61° W.

1899 *January*: 35° N. 9° W.; 40° N. 63° W.

March: 44° N. 16° W.; 37° N. 26° W.

April: 44° N. 15° W.

May: 50° N. 33° W.

June: 20° S. 1° E.; 3° S. 20° W.

July: 45°—40° N. 31°—38° W.; 48° N. 23° W.

September: 59° N. 5° E.

November: 51° N. 13° W. to 56° N. 24° W.

Temperature: 16.₅₀, mean of 47 obs., max. 27.₂, min. 8.

Salinity: 35.₁₁, mean of 43 obs., max. 36.₄₇, min. 31.₈₁.

Plankton-type. Noted from the Mediterranean. It has been found, once, in the Florida Current, and, once, S E. of St. Helena. Its principal area of distribution is between 40° and 50° N., across the Atlantic. — S.

AMPHORELLA SUBULATA (Esb.)

(v. DADAY *Mith. Zool. St. Neapel* Vol. VII 1887 p. 53E Pl. XVIII fig. 7.)

1898 *June*: 40° N. 10° W.

September: 59° N. 1° W.; 49° N. 3° W.

Temperature: 11.₈ to 17.₂.

Salinity: 35.₃₇ to 35.₄₆ (evidently anomalous).

Plankton-type. This species is found in the Black Sea, the Mediterranean, the White Sea and the Baltic, (from Kiel to the Gulf of Finland and Kopparstenarna). Its rare occurrence in the ocean and its geographical distribution prove it to be a neritic form. — Ns and Nn.

AMPHORELLA VITREA (BRANDT).

(*Tintinnus vitreus* Brandt *Bibl. Zool.* 1896 p. 54 Pl. III (f. 8, 9.)

1899 *August*: 80° N. 16° E.

Temperature: — 0.₃.

Salinity: 25.₅₆.

Plankton-type. Noted from W. Greenland. — N_g.

CODONELLA AMPULLA Fol.

(*Petalotricha amp.* v. Dal. Mith. Zool. Stat. Neapel Vol. VII, 1887, pag. 673
Pl. XXI fig. 7-12, 14, 17, 18)

1897 *December*: 45°—43° N. 13°—18° W.

1898 *February*: 34° N. 74° W.

March: 32° N. 32° W.; 12° N. 51° W.; 32° N. 74° W.

May: 43° N. 43° W.

July and September: Azores.

November: 50° N. 31° W. to 47° N. 41° W.

December: area between 34° N. 38° W., 44° N. 10° W., 50°
N. 9° W. and 50° N. 20° W.; 43° N. 57° W.

1899 *January*: 48° N. 39° W.

May: 25° S. 7° E.

June: 17° S. 2° W.

November: 49° N. 40° W.; 51° N. 34° W.

Temperature: 16.39, mean of 19 obs., max. 25.3, min. 10.

Salinity: 35.32, mean of 14 obs., max. 36.39, min. 34.24.

Plankton-type. Noted from the Mediterranean. Its distribution in the Atlantic is essentially eastern, from the west of S. Africa to 50° N., but it has been found, although rarely, N. of S. America and in the Florida Current. — S.

CODONELLA CASSIS (HKL.)

(*Cyrtarocystis cassis* Fol. Arch. sc. phys. nat. 3 ser. Vol. V, pag. 22, 1881 Pl. I
fig. 6 — v. Daday Mith. Zool. Stat. Neapel Vol. VII, 1887, pag. 580
Pl. XXI fig. 9)

1898 *January*: 35° N. 74° W.

February: 26°—30° N. 74° W.

March: area between the Canaries, 41° N. 21°—23° W., 28°
N. 38° W. and 23° N. 27° W.; 15° N. 49° W.

April: 41° N. 19° W.; 12° N. 51° W.; 27° N. 75° W.

May: 26° N. 42° W.; 46° N. 35° W. to 41° N. 51° W.

July: 33° N. 74° W.

October: Azores; 21° S. 36° W.

November: 51° N. 20° W.; area between the Canaries, 36° N.
14° W. and 26° N. 48° W.; 18°—19° S. 31° W.

December: Azores to 25° N. 51° W.

- 1899 *February*: 32° N. 47° W.
March: 36°—37° N. 29°—26° W.
May: 35° N. 75° W.
June: 14° S. 7° W.

Temperature: 19.₅₆, mean of 45 obs., max. 25.₅, min. 11.₁.

Salinity: 36.₅₁, mean of 34 obs., max. 37.₁₅, min. 35.₀₆.

Plankton-type. This species is found in the Mediterranean and occurs also in the Indian Ocean. It occurs in the Atlantic, more frequently in the eastern than in the western area, and especially between the Canaries, the Azores and the middle of the Sargasso Sea. Its northern limit is (in May) about 40°—45°, exceptionally 50°. — *D. (S.)*.

CODONELLA LAGENULA (CLAP & LAGON).

(Ertz. *Mith. Zool. Stat. Neapel*, Vol. V, 1884 pag. 419 Pl. XXIV fig. 11, 15, 16
C. galea Hkl. *Dietyocysta polymorpha* Ertz? *Codonella perforata* Ertz?)

- 1897 *December* and
 1898 *January*: 46° N. 11° W. to 7° N. 53° W.; 32° N. 74° W.
February: 26°—34° N. 73°—74° W.
March: Canaries; 41° N. 20° W. to 17° N. 47° W.; 28° N. 74° W.
April: 10°—15° N. 53°—49° W.
May: area between 17° N. 50° W., 21° N. 48° W. and 28° N. 47° W.; 48° N. 25° W. to 31° N. 56° W.
June: area between the Azores, 47° N. 32° W. and 30° N. 36°—52° W.
July: area between 40° N. 22° W., 41° N. 17° W. and 26° N. 48° W.; 40° N. 57° W.
August: mouth of the English Channel to the Newfoundland Banks; 40° N. 66° W.
September: area between the Azores, 46° N. 11° W. and 49° N. 21° W.
October: 48° N. 38° W.
November: Cape Verde Islands to the Canaries; area between the Azores, 26° N. 48° W. and 48° N. 29°—41° W.
December: Canaries; Azores; 50° N. 20° W.

- 1899 *January*: Canaries; 48° N. 39° W.
February: 32°—34° N. 47°—49° W.
March: round the Azores; 24° N. 40° W.
April: 38° N. 11° W.; 42° N. 18° W.; 32° N. 75° W.
June: 18° N. 46° W. to 36° N. 29° W.; 20° S. 2° E. to 3° S. 20° W.
October: 52° N. 21° W.
November: 51° N. 21° W.

Temperature: 20.27, mean of 94 obs., max. 28, min. 11.

Salinity: 35.21, mean of 60 obs., max. 37.50, min. 33.26.

Plankton-type. This species occurs in the Mediterranean and in the Indian Ocean. It is more frequent in the eastern than in the western Atlantic. Rare specimens may drift as far north as Bergen (JÖRGENSEN). — D. S.

CODONELLA MORCHELLA CL.

(Öfvers. af Kongl. Sv. Vetensk. Akad. Föreländ. 1899 n. 10 pag. 989.)

- 1898 *February*: 13° N. 70° W.
August: 41° N. 57° W.
September: 41° N. 65° W.
November: 36° N. 14° W.

Temperature: 17.3 to 26.1.

Salinity: 34.13 to 36.04.

Plankton-type. This species occurs in the Red Sea and Indian Ocean. — S. (D).

CODONELLA ORTHOCERAS HILL.

(C. DADAY: Mittl. Zool. Stat. Neapel Vol. VI, 1896, pag. 494, Pl. XXV, fig. 12.
Codonella annulata v. Dad. l. c. Vol. VII pag. 571 Pl. XX, fig. 21.)

- 1897 *December*: 12° N. 50° W.
 1898 *January*: 11° N. 20° W.; 15° N. 74° W.
February: Caribbean Sea; 21° N. 74° W. to 34° N. 78° W.
March: Canaries; Caribbean Sea.
August: 41°—42° N. 50°—51° W.
October: 42° N. 50° W.; 40° N. 67° W.

November: 36° N. 14° W.; 48°—50° N. 26°—20° W.; 42° N. 64° W.

December: Azores; 34° N. 38° W.

1899 *January*: Canaries.

June: 19° S. 1° W.

Temperature: 20.68, mean of 21 obs., max. 26.8, min. 16.8.

Salinity: 35.88, mean of 10 obs., max. 36.39, min. 32.51.

Plankton-type. Noted from the Canaries and the Mediterranean.

I have found it in a collection from Aden. It enters the Atlantic W. of S. Africa and occurs in the northern hemisphere round the Sargasso Sea. Its northern limit is about 50° N. — S.

CODONELLA PUSILLA C.L.

(Ötters, af Kongl. Sv. Vetensk. Akad. Förh. 1899 n. 10 pag. 370).

1898 *October*: 41° N. 67° W.

November: 43° N. 51° W.; 51° N. 20° W. to 50° N. 31° W.

December: 45° N. 51° W. to 42° N. 63° W.

1899 *January*: 40° N. 66° W.

April: 48° N. 13° W.

November: 51° N. 21° W.

Temperature: 9 to 14 (exceptionally 5).

Salinity: 35 to 35.72 (eastern Atlantic) or 32.61 to 33.88 (western Atlantic).

Plankton-type. — S.

CODONELLA VENTRICOSA (CLAP. & LACHM.)¹

(*Natinnus ventricosa* Entz. Mitth. Zool. Stat. Neapel Vol. V, 1884, pag. 413,

Pl. XXIV fig. 34).

1898 *June*: 40° N. 10° W.; 60° N. 8° W.

August: 50°—54° N. 10°—5° W.; 60° N. 2°—3° W.; Färöes; 40° N. 67° W.

September: 49°—50° N. 3°—10° W.; SW. of Iceland.

October: 43° N. 10°—20° W.

November: 51° N. 1°—10° W.; 36° N. 14° W.

December: 41° N. 66° W.

¹ Ostenfeld's data used.

1899 *March*: 49° N. 9° W.; 66° N. 19° W. to 65° N. 24° W.

April: 50° N. 6° W.

Temperature: 11.8, mean of 24 obs., max. 24, min. —1.2.

Salinity: 35.15, mean of 24 obs., max. 36.54, min. 34.12 (common).

Plankton-type. Noted from the Mediterranean. It occurs in the Atlantic from Gibraltar and the coast of Portugal to the Engl. Channel, Scotland and Iceland (passing round this island) as well as in the North Sea, the White Sea and the western Baltic. It occurs also E. of New York. — *Nm. Ns.*

CYTTAROCYLIS ACUMINATA v. DAD.

(Mitt. Zool. Stat. Neapel. Vol. VII, 1887, pag. 578 Pl. XII, fig. 33.)

1898 *January*: 24° N. 40° W. to 7° N. 53° W.

February: Caribbean Sea; 13° N. 70° W. to 30° N. 74° W.

March: 28° N. 74° W.; Azores to 7° N. 55° W.; 23°—26° N. 28°—29° W.

April: 10° N. 53° W.; 27° N. 75° W.

May: area between 29° N. 39° W., 6° N. 56° W. and 23° N. 56° W.; 43° N. 45° W. to 42° N. 61° W.

June: Canaries; area between the Azores, 36° N. 44° W., 29° N. 60° W. and 23° N. 42° W.; 42° N. 50° W.

July: Azores; 25° N. 48° W. to 31° N. 39° W.; 41° N. 48° W. to 40° N. 67° W.

August: Azores; 48° N. 34° W. to 41° N. 65° W.

September: area between 31° N. 33° W., 50° N. 11° W. and 46° N. 39° W.

October: Azores; 21° S. 36° W.

November: 24°—26° S. 29°—30° W.; 5° S. 33° W. to the Canaries; Azores; 26° N. 48° W.; 48° N. 29° W. to 42° N. 64° W.

December: S. of Rio Janeiro; Canaries; Azores; 34° N. 38° W.; Caribbean Sea.

1899 *January*: Canaries.

May: 29° S. 9° E. to 24° S. 7° E.

June: 24° S. 6° E. to 10° S. 11° W.; 21° N. 45° W.

July: 25° N. 37° W.; 45° N. 31° W.

Temperature: 22.4, mean of 101 obs., max. 27.2, min. 9.7.

Salinity: 35.55, mean of 78 obs., max. 37.43, min. 33.26.

Plankton-type. This species occurs in the Mediterranean and the Indian ocean. Its range of distribution in the Atlantic is between 29° S. and (in May to November) 40°—50° N. It is stationary at the Azores. — *D. S.*

CYTTAROCYLIS AMOR CL.

(Öfvers. K. Sv. Vetensk. Akad. Förel. 1839 n. 10, pag. 979.)

1897 *December* and

1898 *January:* 7° N. 53° W. to 18° N. 46° W.; 26°—35° N. 74° W.; 32° N. 33° W.

February: Caribbean Sea; Antilles Current.

March: Caribbean Sea; 41° N. 21° W.

April: 7°—10° N. 55°—51° W.

May: 27° N. 48° W.; 32° N. 36° W.; 45° N. 42° W.

June: the Canaries and the Azores to 42° N. 50° W.; 50° N. 12° W.; 30° N. 52° W.

July: 29°—26° N. 44°—48° W.; 40° N. 67° W.

August: 40° N. 59°—66° W.

September: 33°—35° N. 31°—30° W.; 17°—20° N. 48°—45° W.; Bahamas; 42° N. 57° W.

October: Azores; 41°—42° N. 59°—50° W.

November: Canaries to 5° S. 33° W.

December: Canaries; Caribbean Sea.

1899 *April:* 32°—36° N. 75°—74° W.

June: 12°—21° N. 52°—45° W.; 3° S. 20° W. to 19° S. 1° W.

July: S.W. of the Cape Verde Islands.

Temperature: 23.2, mean of 65 obs., max. 28, min. 13.2, exceptionally 11.5.

Salinity: 36.09, mean of 43 obs., max. 37.05, min. 34.08, exceptionally 32.21.

Plankton-type. This species occurs in the Indian Ocean. — *D.*

CYTTAROCYLIS (?) CALYPTRA Gr.

(*Triniaus*? Gr. Kongl. Sv. Vetensk. Akad. Handl. Vol. XXXII n. 3, pag. 24.
Pl. I fig. 2.)

1898 *August*: 76° N, 11° E.

Temperature: 5.1.

Salinity: 35.01.

Plankton-type. This species was found very sparingly among Styli-plankton. — S.?

CYTTAROCYLIS DENTICULATA (EBB.)¹

C. denticulata, *C. neelis*, *C. gigantea*, *C. ebentata* BRANDT Bibl. Zool. H. 20 Lfg. 2. 1896. *C. elegans*, *C. obtusangula* Oстенf. Zool. Anzeiger Vol. XXII n. 601 pag. 437 *C. d. v. obtusa* Auriv. Conf. JØRGENSEN; Bergens Museums Aarhog 1899.)

1898 *January and February*: 37° N, 75° W.

March: 61° N, 11°—26° W.

April: NW. and S. of Iceland; Färöe Channel; Shetlands; N. of Rockall; 59° N, 22°—28° W.; 57°—58° N, 43°—50° W.; 42° N, 47° W. to 43° N, 50 W.

May: between Jan Mayen and Greenland; S. of Iceland; Färöes; 58° N, 2°—5° E. to 66° N, 9° E.; area between Scotland, 63° N, 38° W. and 57° N, 28° W.; 42° N, 50° W. to 40° N, 72° W.

June: N. and S. of Iceland; Färöes to 62° N, 2° E.; N. Scotland to the north of Rockall; 67° N, 10° E. to Tromsøe; Beeren Island; S. and S.E. of Spitzbergen; 57° N, 34°—38° W.; S. of Cape Farewell to Disco.

July: 77°—78° N, 0° W.—7° E.; round Iceland; Iceland to the Färöes; Färöe Channel to the Shetlands and to 59° N, 21° W.; Irminger Sea; 57° N, 47° W.

August: round Iceland; Iceland to the Färöes and the Shetlands; Irish Channel; E. of Greenland (70° to 66° N.); Denmark's Sound, Davis's Strait to Disco; 42° N, 48° W. to 52° N, 55° W.

September: round Iceland, thence to the Färöes and Scotland; 71°—76° N, 20°—0° E.; Denmark's Sound; 55° N, 35° W.; W. Greenland from 65° N. to Disco; Davis's Strait.

¹ Ostenfeld's data used.

October: Iceland to the Färöes and Scotland; 57°—58° N. 27°—32° W. to Greenland and Davis's Strait; 43° N. 50° W. to 41° N. 67° W.

November: S. Iceland to the Färöes, the Shetlands and Scotland; 51° N. 20° W., common; 60° N. 34° W.; 55° N. 36° W. to 40° N. 67° W.

December: N. of Scotland, 48° N. 40° W. to 43° N. 61° W.¹

1899 *January:* Färöes, rare; 40° N. 66° W. to 41° N. 69° W.

March: 64° N. 10° W.

May: 60° N. 4° W. to 64° N. 10° W., rare to common; 66° N. 24° W., rare; 47° N. 57° W.

June: Jan Mayen and 70° N. 13° W., not common; 67° N. 3° W. (rare) to 63° N. 1° E. (very common); 62° N. 2° E., very common; 64°—66° N. 7°—10° E.; 70° N. 20° E. to Beeren Island; 78° N. 12° E.

July: 73° N. 21° W., rare; 80° N. 14° E., rare; 71° N. 32° E.; 57° N. 31° W.

August: 73° N. 22°—24° W., rare; 72° N. 26° E. to 76° N. 41° E.; 80° N. 51° 30' E., rare; 54° N. 46° W.; 52° N. 53° W.

September: 80° N. 16° E. to 79° N. 10° E. and thence to 72° N. 19° E., as a rule common; 56° N. 38° W. to 52° N. 55° W., more or less rare.

October: 54° N. 45° W., not rare.

November: 53° N. 43° W. to 47° N. 51° W., rare.

Temperature: 8.5, mean of 63 obs., max. 14, min. 2.7 (only such samples as contained this species abundantly have been considered).

Salinity: 34.74, mean of 63 obs., max. 35.99, min. 34.96.

Plankton-type. This species occurs in the Bering Sea. The somewhat high salinity indicates that this species occurs both in Tricho- and Chæto-plankton. — *T. (C.)*

¹ Misprint in my paper: Öfvers. 1839 p. 796, where 33° N. is given.

CYTTAROCYLIS HEBE Cl.

(Öfvers. Kongl. Vet. Akad. Förh. 1859 n. 10 pag. 971.)

- 1898 *January*: 32°—35° N. 74° W.
February: 26°—30° N. 74° W.
March: 28°—32° N. 74° W.
April: 27°—31° N. 75° W.
May: 28°—29° N. 47°—39° W.; 43° N. 43°—44° W.
June: 23° N. 42° W.; 29° N. 36° W.; Azores; 48° N. 33° W.
July: 29° N. 43° W. to the Azores; 41° N. 17° W.; 48° N. 30° W.; 42° N. 48° W. to 40° N. 67° W.
August: Azores; 50° N. 10° W.; 44° N. 42° W. to 40° N. 67° W.
September: 27° N. 36° W. to 48° N. 7° W.; 48° N. 30° W.; 46° N. 39° W.; 42° N. 57° W.; 41° N. 65° W.
October: 41°—42° N. 59°—50° W.
November: 26°—24° S. 29°—30° W.; 5° S. 33° W.; 43° N. 61° W.; 42° N. 64° W.; 47°—48° N. 41°—29° W.; Canaries; 24° N. 21° W.
December: 22° N. 56° W.
- 1899 *March*: 24° N. 40° W.; 35° N. 16° W.
April: 32° N. 75° W.
May: 24° S. 7° E.; 35° N. 76° W.
June: 24° S. 6° E.; 21°—24° N. 45°—43° W.; Azores.
July: 36° N. 39° W. to 46° N. 29° W.
November: 51° N. 21° W., rare.

Temperature: 21.2, mean of 88 obs., max. 28, min. 10.

Salinity: 35.52, mean of 71 obs., max. 37.02, min. 32.51.

Plankton-type. This species occurs in the Red Sea and in the Indian Ocean. In the Atlantic it occurred in the tropical and subtropical region, in the winter and spring (June) to about 35°—40° N. In July—September it had advanced beyond 40° N. towards Nova Scotia and Newfoundland, in August—September towards the English Channel. In November it was seen in the region of the Canaries. — *D.*

CYTTAROCYLIS HEBE VAR. APOPHYSATA Cl.

(Öfvers. af Kongl. Sv. Vetensk. Akad. Förh. 1899 n. 10 pag. 971.)

1897 *December*: and

1898 *January*: 17°—15° S. 38°—37° W.; 7° N. 22° W.; 11° N. 52° W. to 32° N. 33° W.; Caribbean Sea; 32°—36° N. 74° W.

February: Caribbean Sea; Bahamas.

March: 3°—6° N. 24°—22° W.; 9°—10° N. 53°—59° W. to 22° N. 43° W.

April: 7°—12° N. 53°—51° W.; Caribbean Sea.

May: area between 11° N. 52° W., 28° N. 42° W. and 26° N. 52° W.; 42° N. 61° W. to 45° N. 42° W.; 48° N. 26°—30° W.

June: Madeira; Azores; 25° N. 52° W.

July: 25°—38° N. 74° W.; 40° N. 67° W.; Azores.

August: 22°—38° N. 74° W.; 40° N. 66° W. to 42° N. 56° W.; Azores.

September: 8°—18° N. 25° W.; 9° N. 53° W.; 41° N. 65° W.; Azores; 44°—46° N. 10°—14° W.

October: Caribbean Sea; 26°—30° N. 76°—74° W.; 41° N. 59° W.

November: 9° S. 34° W.; 4° N. 30° W.; 17° N. 26° W.; 19° N. 58° W.

December: 26° S. 45° W.; 14° S. 26° W.; Caribbean Sea; 28° N. 47° W.

1899 *March*: 18°—21° N. 45°—43° W.

June: 14°—11° S. 6°—10° W.; 12°—15° N. 52°—50° W.; 27° N. 39° W.

July: 23° N. 36° W.; 38° N. 39° W.

Temperature: 23.7, mean of 84 obs., max. 28.8, min. 9.1.

Salinity: 35.98, mean of 62 obs., max. 38.51, min. 32.56.

Plankton-type: D.

CYTTAROCYLIS NORVEGICA (v. DAD.)¹

(JÖRGENSEN: Bergens Museums Aarhog 1899 n. 11 pag. 28 Pl. 1 fig. 10).

- 1898 *April*: 43° N. 50° W.; 63° N. 18° W.; 66° N. 24° W.
May: 45° N. 52° W.; 68° N. 21° W.; 63° N. 17° W.
June: S.E. Iceland to Scotland; 62° N. 2° 30' E.; 57° N. 34° W. to S.W. of Greenland; Davis's Strait to Disco.
July: S. Iceland to the Färöes and 61° N. 4° W.; 60° N. 4° 8' W.; 57° N. 47° W.
August: round Spitzbergen; S. Iceland to the Shetlands; E. Greenland.
September: Spitzbergen to Bearen Island; 58° N. 39° W. to S.W. of Greenland; W. Greenland to Disco.
October: 61°—62° N. 5°—7° W.; 57° N. 27° W.; 58° N. 48° W.
November: 48°—52° N. 49°—64° W.
December: 43° N. 61° W. to 52° N. 49° W. and to 45° N. 53° W.

- 1899 *January*: 40°—41° N. 66°—69° W.
March: 65° N. 24° W.
May: 61° N. 5°—6° and 20° W.
June: 72°—75° N. 19°—17° E.
July: 75° N. 14° E.; 74° N. 20° W.; 52° N. 54° W.
September: 73°—78° N. 19°—12° E.; 54° N. 48° W.; 47° N. 51° W.

Temperature: 5 a, mean of 45 obs., max. 16, min. 0.2.

Salinity: 34.21, mean of 44 obs., max. 35.27, min. 31.06, exceptionally 28.51.

Plankton-type. Arctic species. — *T. (Ns. Ny)*

CYTTAROCYLIS SERRATA (MOELL.)

(JÖRGENSEN: Bergens Museums Aarhog 1899 N. 2. Pl. 1 fig. 11—12. *Ptychoeolis Ehrenbergii* Cl. Kongl. Vet. Akad. Handl. Vol. XXXII n. 8 pag. 16).

- 1898 *January*: 12° N. 19° W.
June: 40°—42° N. 10°—9° W.
August: 58° N. 7° W.
 1899 *May*: 33° S. 16° E.

¹ Ostenfeld's data used.

Temperature: 16.4, mean of 5 obs., max. 22, min. 12.

Salinity: 34.88 to 35.51.

Plankton-type. The rare occurrence of this species in the ocean, where it is always to be seen near the coasts, indicates that it is a neritic form. The above statements show that it occurs along the eastern coasts, from the Cape of Good Hope to Scotland. — *Nm.*

CYTTAROCYLIS SIMPLEX CL.

(Öfvers. af Kongl. Sv. Vet. Akad. Förh. 1899 n. 10 pag. 972).

1897 *December:* 19° N. 45° W.; 32° N. 33° W.

1898 *April:* 31° N. 75° W.

June: 37° N. 29° W.; 30° N. 52° W.; 10° N. 53° W.

July: 33° N. 74° W.

August: 42° N. 62° W.

September: 56° N. 12° W.; 41° N. 65° W.

October: 41° N. 67° W.

November: 56° N. 23° W.; 50° N. 31° W.; 41°—43° N. 69°—61° W.

1899 *June:* 20° S. 1° E.

Temperature: 19.3, mean of 16 obs., max. 27.2, min. 10.8.

Salinity: 36.22, mean of 14 obs., max. 36.71, min. 32.69.

Plankton-type. *D.*

CYTTAROCYLIS TREFORTI v. DAD.¹

(Mith. Zool. Stat. Neapel Vol. VII 1887 pag. 579 Pl. XXI fig. 1).

1897 *December:* 32° N. 33° W. to 45° N. 13° W.

1898 *January:* 27° N. 37° W.; 46° N. 11° W.; 25°—32° N. 74° W.

February: 26°—30° N. 74° W.

March: 25° N. 41° W.; 28° N. 74° W.; 43°—45° N. 48°—36° W.

May: 43° N. 11° W.; 50° N. 14° W.; 41° N. 56° W.

June: 44° N. 9° W.

July: 48° N. 30° W.; 26° N. 48° W.; 21° N. 58° W.

August: Azores; 48° N. 24° W.; 56° N. 20° W.; 40° N. 66° W.

¹ The Atlantic form differs from the Mediterranean in the absence of the apophysis on the apical spine.

September: 50° N. 9° W. to 56° N. 14° W.; 38° N. 74° W.

October: 56° N. 25° W.; 42° N. 50° W.; 41° N. 59° W.

November: 45° N. 7° W.; 48° N. 29° W.; 47°—48° N. 41° W.;
43° N. 61° W.

December: Azores; 38° N. 29° W.; 41° N. 66° W.

1899 March: 47° N. 8° W.

April: 44° N. 15° W.; 32° N. 75° W.

May: 51° N. 14° W.; 25° S. 7° E.

September: 56° N. 24° W.; 57° N. 16° W. (very abundant).

October: 56° N. 15° W. (rare).

November: 51° N. 21° W.

Temperature: 17.45, mean of 47 obs., max. 27.5, min. 8.

Salinity: 35.45, mean of 31 obs., max. 37.91, min. 32.51.

Plankton-type. Noted from the Mediterranean. As this species has been seen W. of S. Africa, it probably enters the Atlantic W. of the Cape of Good Hope. In the northern hemisphere it has been only rarely met with in the Sargasso Sea. The principal areas of distribution are the Antilles and Florida Currents and from 40° N. 65° W. to the Azores and the European coast to about 50° N. Beyond this limit rare specimens may drift to 60° N. The abundant occurrence in September 1899 at 57° is therefore a remarkable exception. — *S. (D.)*

DICTYOCYSTA ELEGANS Ehrh.¹

(MORRIS: Fünfte Ber. der Komm. z. Wissensch. Unters. d. Deutschen Meere Pt VIII fig. 28. *D. nitens* Ritz. Mith. d. Zool. Staf. zu Neapel Vol. VI, 1886, Pl. XIV fig. 22. *D. tempium* Ems. l. c. Pl. XIV fig. 18—21, 23; v. DABAY Mith. d. Zool. Staf. zu Neapel Vol. VII, 1887, Pl. XXI fig. 8, 9.)

1898 January: 41° N. 21° W. to 46° N. 11° W.; 61° N. 8° W.,
very rare, 32°—35° N. 74° W.

February: 63° N. 17° W.; 30°—34° N. 74°—78° W.

March: 28° N. 38° W. to 48° N. 6° W.; 49° N. 33° W.; 62°
N. 2° E.

April: area between the Azores, the Engl. Channel and 46° N.
43° W.

¹ Osenfeld's data used.

May: area between 40° N. 16° W., 50° N. 7° W. and 42° N. 61° W.; 60° N. 10° W.; S. of Iceland.

June: 39° N. 39° W.; 44° N. 16° W.; 50° N. 12° W.

July: 48° N. 30° W.; 49° N. 22° W.; 59° N. 23° W.; 42° N. 48° W. to 40° N. 69° W.

August: 50° N. 12° W. to 49° N. 20° W.; 56° N. 20° W.; Färöe Channel; SW. of the Färöes; W., SW. and S. of Iceland; 44° N. 48° W. to 40° N. 67° W.

September: area between 47° N. 7° — 9° W., 48° N. 24° W., 56° N. 36° W., 60° N. 26° W., the Shetlands and 57° N. 12° W.; S. and N. of Iceland.

October: area between 58° N. 35° W., SW. Iceland, N. Scotland, NW. Iceland and 56° N. 31° W. (maximum at 57° — 60° N. 27° — 21° W.); 41° N. 59° W.

November: Cape Verde Islands; area between 55° — 56° N. 21° — 23° W., 49° N. 31° W., 53° N. 49° W. and 47° N. 41° W.; S. Iceland towards the Shetlands, rare; 42° N. 61° W. to 41° N. 69° W.

December: 48° N. 19° W. to 40° — 41° N. 66° W.

1899 *January*: area between the Canaries, Madeira and Gibraltar; at some few points between 50° N. 20° W. and 41° N. 69° W.

March: 30° N. 35° W.; 35° N. 16° W.; 46° N. 11° W., everywhere rare.

April: area between 41° N. 17° W., 47° N. 8° W. and 42° N. 18° W.

May: 25° S. 7° E.; 30° N. 35° W.; 50° N. 33° W.; 51° N. 14° W.

June: 20° S. 2° E. to 4° S. 19° W.

July: 12° — 14° N. 27° — 28° W.

September: 57° N. 16° W. to 56° N. 30° W., rare.

October: area between 52° — 56° N. 14° — 15° W. and 53° N. 37° W., rare.

November: 51° N. 13° — 28° W., not rare; 52° N. 43° — 48° W., rare.

Temperature: 13.2 , mean of 16 obs., max. 22 , min. 7.2 (only such samples considered as contained this species to any amount).

Salinity: 35.38 , mean of 16 obs., max. 36.0 , min. 34.56 .

Plankton-type. This species occurs in the Mediterranean the Red Sea and Indian Ocean. It enters the Atlantic west of S. Africa and has been seen to the region of Ascension, Cape Verde, Canaries and the Azores. In April (1898) it reached 46° N., in May it touched S. Iceland. It was seen in September N. of Iceland. — S.

DICTYOCYSTA MITRA HKL.

(V. DADAY: *Mith. d. zool. Stat. Neapel* Vol. VI, 1886, Pl. XXV fig. 16).

1897 *December* and

1898 *January*: 32° N. 33° W. to 43° N. 18° W.

March: area between 45° N. 36° W., 44° N. 17° W., the Canaries and 30° N. 35° W.

April: 48° N. 29° W.

May: area between 43° N. 45° W., 49° N. 17° W. and 38° N. 21° W.

June: 48° N. 33° W.; 37° N. 26° W.

July: 38° N. 25° — 26° W.

August: Azores; 40° N. 66° W.

September: 48° N. 24° W.; 42° N. 57° W. to 41° N. 65° W.

October: 41° N. 59° W.

November: 34° N. 10° W.; 48° N. 29° W. to 42° N. 64° W.

December: 49° N. 30° W. to 41° N. 66° W.

1899 *January*: 45° N. 49° W.

March: 33° N. 32° W.

May: 35° N. 76° W.; 25° S. 7° E.

June: 20° S. 2° E. to 14° S. 6° W.

October: 53° N. 37° W., rare.

November: 51° N. 34° W., rare.

Temperature: 17.50, mean of 50 obs., max. 23, min. 8.

Salinity: 35.50, mean of 36 obs., max. 36.68, min. 33.00.

Plankton-type. This species occurs in the Benguela Current, W. of S. Africa, and its principal area of distribution in the northern hemisphere is between the Canaries, the Azores, S.W. of Ireland and the Newfoundland Banks. — S.

FUNGELLA ARCTICA Cl.

(Kongl. Sv. Vetensk. Akad. Handl. Vol. XXXII n. 3 pag. 22, Pl. 1, fig. 1.
Vanhöffen: Fauna und Flora Grönlands. Pl. VI, fig. 1—2 (Statoblast!).

1898 *August*: 80° N. 17° E.

Temperature: 3.5.

Salinity: 33.50.

Plankton-type. This organism has been found by Vanhöffen in Karajakfjord (West Greenland), and by me on the coasts of Denmark, Holland and England. — *Ng*?

LEPROTINTINNUS BRANDTII (NORDQVIST).

(Cl. Öfvers. af Kongl. Sv. Vet. Akad. Förh. 1899 n. 10, pag. 973).

1898 *March*: 7° N. 55° W., abundant.

Temperature: 25.0

Plankton-type. This species occurs in the Baltic, where Nordqvist found it in the Bay of Bothnia to 61° 8' N. and in the Gulf of Finland (September, October), and Aurivillius at Sydostbrodden (September). Most Baltic species are of arctic origin, and the occurrence of this species N. of South America is thus very remarkable. It is therefore questionable to what type this species belongs, but in any case it is a *arctic* form.

PORELLA APICULATA Cl.

(Öfvers. Kongl. Vetensk. Akad. Förh. 1899 n. 10, pag. 973).

1899 *June*: 20° S. 2° E.

Temperature: 20.7.

Salinity: 36.01.

Plankton-type: *S*?

PSYCHOCYLIS ACUTA BRANDT¹.

(Biblioth. zool. Heft 20, 1896, pag. 59, Pl. III fig. 16. Pl. *acuta* *var. acuta*,
Jørgens. Bergens Museums aarbog, 1899, n. 2, Pl. I fig. 9).

1898 *March*: 58° N. 6° E.

May: 60° N. 31° W.

¹ Ostentfeld's data for *P. acuta* used.

June: S. and S.E. of Iceland; 67° N. 10° E.; 57° N. 42° W.

July: along the S. coast of Iceland to the Färöes; 60° N. 17° W. to 57° N. 47° W.

August: S.W. and S. of Iceland; Färöes to 61° N. 4° W.; 54° N. 5° W.; W. of Spitzbergen; 60° N. 53° W.

September: N. of Iceland; 65° N. 36° W. to the S. of Iceland; 56° N. 26° W.; between Spitzbergen and Norway.

October: along the S. coast of Iceland to the Färöes and 61° N. 5° W.; area between 58° N. 32° W., 57° N. 42° W. and 54° N. 45° W.; 41° N. 67° W.

November: S. Iceland to the Färöes; Färöe Channel; 51° N. 20° W.; area between 53° N. 31°—49° W., 56° N. 36° W. and 46° N. 46° W., very common; 42° N. 64° W. to 41° N. 69° W.

December: Färöes; 48° N. 40° W. to 51° N. 66° W.

1899 *January*: 40°—41° N. 66°—69° W.

July: 57° N. 31° W.

August: 55° N. 26° W., rare.

September: 72° N. 19° E., very rare; 55° N. 30° W. to 53° N. 51° W., rare to common.

October: 53°—56° N. 37°—38° W., common; 54° N. 45° W.; not rare.

November: 49° N. 40° W. to 52° N. 48° W., as a rule, rare.

Temperature: 9, mean of 68 obs., max. 18.5, min. 5.5.

Salinity: 34.51, mean of 64 obs., max. 35.35, min. 31.69.

Plankton-type. The principal area of distribution is the area between Iceland, Scotland and Greenland, whence it spreads to the North Sea and the Scandinavian coasts as well as to the Newfoundland Banks. It is then to be considered a boreal, although not strictly an arctic form. — *Ns* (*T*).

PTYCHOCYLIS ARCTICA BRANDY.

(Biblioth. zool. Helt. 20, 1886, pag. 61, Pl. III, fig. 17).

1898 *January*: 37° N. 73° W.

November: 48° N. 49° W.

1899 *July*: 75° N. 49° E.

August: 71° N. 23° W.

Temperature: 2.0 to 9.4.

Salinity: 32.38, one obs.

Plankton-type: *N*₉.

PTYCHOCYLIS OBTUSA BRANDT¹.

(Bibl. zool. Hefl. 20, 1893, pag. 59, Pl. III, fig. 15. P. DRYGALSKU BRANDT
I. c. fig. 14).

1898 *April:* 73° N. 5° W.; 57° N. 43° W.; 62° N. 50° W.; 43° N.
50° W.

May: 71° N. 14° W.

June: area between 74° N. 23° E., 77° N. 17° E. and 77° N.
27° E.

August: round Spitzbergen.

September: Beeren Island; N. of Iceland; Disco.

November: 51° N. 20° W.; 49° N. 22° W.; 52° N. 37° W. to
45° N. 52° W.

December: 42° N. 49°—63° W.

1899 *January:* 45° N. 49° W. to 43° N. 57° W.

March: 66° N. 24° W.

June: 69°—70° N. 18° W.; Tromsø to the west of Spitz-
bergen.

July: 74° N. 20° W.; 79°—80° N. 10°—14° E.

August: 72° N. 26° E. to 78° N. 47° E.

September: 81° N. 16° E. to 79° N. 10° E., thence to 73° N.
18° E.; 52° N. 55° W., rare.

Temperature: 3.3, mean of 19 obs., max. 11.0; min. — 0.9.

Salinity: 33.30, mean of 19 obs., max. 35.08, min. 32.01.

Plankton-type. This species is decidedly arctic, and the low mean salinity indicates that it is essentially a neritic form. It is therefore very remarkable that it was found in November as far south in the eastern Atlantic as 50° N. 20°—22° W. — *N*₉.

¹ Ostenfeld's data used.

TINTINNOPSIS BEROIDEA STEIN¹.

(JÖRGENSEN: Bergens museums aarbog 1899 n. 2, Pl. I, fig. 5.
T. beroidea nov. *acuminata* v. *Dad.*, *Auric.*, Cl.)

- 1898 *January*: 6° N. 55° W.
February: 34° N. 73° W.
May: 60° N. 10° W.
July: 60° N. 3° W.
August: 47° N. 39° W.; 48° N. 30° W.; 55° N. 5° W.; 64° N.
 21° W.; 40° N. 67° W.
October: Vestmannaö to 63° N. 12° W.; 59° N. 3° W.; 44° N.
 43° W. to 41° N. 59° W.
November: N. of Scotland; 56° N. 26° W.
 1899 *March*: 49° N. 9° W.
April: 49° N. 7° W.

Temperature: 8 to 25.

Salinity: 32.50 to 35.03.

Plankton-type. This species is evidently a neritic form of wide distribution — *Ns.* in the northern Atlantic.

TINTINNOPSIS CAMPANULA (EHR.)

(*Tintinnus camp.* Cap. & Lachm. *Études sur les infus.* pag. 207, Pl. VIII, fig. 9.
Tintinnopsis cincta v. *Darby* *Mith. d. Zool. Stat. zu Neapel*, Vol. VII, 1887,
 Pl. XX, fig. 6-8).

- 1898 *August*: 54° N. 5° W.
September: 9° N. 53° W.
November: 51° N. 1° W.

Temperature: 13.5 to 28.

Salinity: 34.55 to 34.55.

Plankton-type. This species is found in the Mediterranean and Adriatic, southern North Sea, southwestern Baltic and the Bermudas (Plankt. Exp.). It scarcely occurs in the open ocean and therefore belongs to the neritic plankton. — *Nm* (*Nt*).

¹ Ostenfeld's data used.

TINTINNOPSIS KARAJACENSIS BRANDL.

(Bibl. zool. Hefl. 20, 1896, Pl. III, fig. 5).

1898 *September*: 69° N. 53° W. (Ostenfeld).1899 *September*: 81° N. 16° E., not rare.**Temperature**: 2.; (Ostenf.).**Salinity**: 32.33 (Ostenf.).**Plankton-type**. *Ny.*TINTINNUS ACUMINATUS CLAP & LACHM.²(*T. Möbi* Brandl. *T. saccatus* Brandl, Bibl. zool. 1896, pag. 51, fig. 12.

JÖRGENSEN, Bergens Mus. aarbog 1899, n. 2, pag. 8).

1898 *March*: 37° N. 74° W.*April*: 59° N. 22° W.; 62° N. 2° E.*May*: 58° N. 21° W.*June*: 60° N. 4° W.*July*: S. of Iceland to 63° N. 14° W.; Shetlands.*August*: Denmark's Sound; S.E. of Iceland; Färöe Channel; W. and N. of Spitzbergen.*September*: W. of Iceland to Greenland; 55° N. 55° W.; Färöe Channel; 76° N. 13° E.*October*: area between S. Iceland, 56° N. 12° W. and 58° N. 32° W.*November*: S. Iceland to 60° N. 4° W.; 56° N. 23°—36° W.; 47° N. 41° W. to 41° N. 69° W.*December*: 42° N. 49° W. and 46° N. 50° W. to 41° N. 66° W.1899 *January*: 45° N. 50° W. to 41° N. 69° W.*March*: 62° N. 8° W.*September*: 73° N. 18° E.; 80° N. 13° E.**Temperature**: 9.3, mean of 28 obs., max. 14.4, min. 3.34, exceptionally 23.**Salinity**: 34.03, mean of 27 obs., max. 35.43, min. 31.28.**Plankton-type**. This species is a boreal, but not strictly an arctic form. Its principal area of distribution is the Irminger Sea.
— *T* (*Ns*).² Ostenfeld's data for *T. Möbi* and *T. saccatus* used.

TINTINNUS FRAKNOI V. DADAY.

(Mith. d. zool. Stat. zu Neapel, Vol. VII, 1887, pag. 528, Pl. XVIII, fig. 1)

1897 *December* and

1898 *January*: 7° N. 53° W.; Caribbean Sea; 22° N. 42° W.; 43°—45° N. 18°—13° W.

February: Caribbean Sea; Bahamas.

March: area between 5° N. 24° W., Cape Verde and Cape Verde Islands; Canaries; Azores to 45° N. 13° W.; 23° N. 42° W. to 14° N. 50° W.; Caribbean Sea; 28°—32° N. 74° W.

April: 7° N. 55° W. to 10° N. 53° W.; 27° N. 75° W.; 41° N. 19° W.; 47° N. 40° W.

May: area between the Azores, 41° N. 16° W., 49° N. 23° W. and 48° N. 33° W.; 41° N. 51° W.

June: Canaries; Azores; Cape Finisterre; 42°—45° N. 50°—41° W.; 23° N. 42° W. to 30°—33° N. 51°—48° W.

July: area between de Azores, 41° N. 17° W., 49° N. 22° W. and 40° N. 67° W.; 25° N. 48° W.; Caribbean Sea.

August: Azores; abundantly across the whole Atlantic from the English Channel to 40° N. 66° W.; Shetlands, very rare.

September: Madeira; Azores; 46° N. 11° W.; 48° N. 24° W., common; 56° N. 12° W.; 66° N. 18° W., rare; 41° N. 65° W.; 25°—29° N. 74° W.

October: Azores; 56° N. 10°—24° W.; 41° N. 59° W.

November: 24° S. 29° W. to 4° N. 30° W.; Cape Verde Islands to the Canaries and Cape Finisterre; Azores; 56° N. 22° W.; 48° N. 29° W.; 47°—48° N. 41° W.; 40°—42° N. 67°—64° W.; 19° N. 57° W. to 29° N. 43° W.

December: 26° S. 44° W. to 14° S. 36° W.; 19°—25° N. 58°—52° W.

1899 *February*: 32° N. 47° W.

March: 21° N. 43° W.

June: 15° S. 5° W.; 5° S. 17° W.; 12° N. 52° W. to 18° N. 47° W.

July: 12° N. 27° W.; 28°—35° N. 40° W.; 44° N. 31°—33° W.; 48° N. 23°—25° W.

August: 48° N. 20° W.

November: 51° N. 13° W., rare.

Temperature: 20.7, mean of 138 obs., max. 27.4, min. 7.

Salinity: 35.88, mean of 108 obs., max. 38.54, min. 32.44.

Plankton-type. This species occurs in the Mediterranean, the Red Sea and the Indian Ocean. It is common in the tropical and subtropical Atlantic, at least from 28° S. to 50° N., and rare specimens may drift towards Scotland and Iceland, even north of Iceland (September 1898). Its principal area of distribution is between Cape Verde, the Eng. Channel and New York. In July and August 1898 it was seen between 40°—50° N. across the whole Atlantic. — S (D).

TINTINNUS LUSUS UNDE¹ ENTZ¹.

(v. DANA: *Mith. d. zool. Stat. zu Neapel* Vol. VII, 1887, Pl. XVIII fig. 3, 14.

T. sulcidensus Ostl. *Zool. Anzeiger* 1889, pag. 437. —

Slightly distinct from *T. Prokne*).

1898 *March:* 45° N. 15° W.

June: 50° N. 12° W.

August: 61° N. 6° W.; 63° N. 31°—33° W.

September: Färöe Channel; round the Shetlands.

October: between Rockall and the Hebrides; Färöe Channel; Shetlands.

November: 45° N. 50° W. to 40° N. 69° W.

December: 48° N. 40° W. to 42° N. 63° W.

1899 *November:* 51° N. 28° W., rare.

Temperature: 11, max. 13.2, min. 5.

Salinity: 35.33, max. 35.06, min. 32.01.

Plankton-type. Noted from the Mediterranean. — S.

TINTINNUS PELLUCIDUS CL².

(Kongl. Sv. Vet. Akad. *Handl.* Vol. XXXII n. 3, pag. 24, Pl. 1, fig. 5).

1898 *August:* 80°—81° N. 10°—23° E.

1899 *August and September:* W. and N. of Spitzbergen; 74° N. 18° E. to 75° N. 38° E.

Temperature: 2.1, mean of 7 obs., max. 4.6, min. 0.7.

Salinity: 33.23, mean of 7 obs., max. 34.50, min. 32.64.

Plankton-type. Ng.

¹ Ostenfeld's data used.

² Since the above was written I have been convinced that this species is the same as *T. bottinicus* Nordq., or *Leprotintinnus bottinicus* Jørgens., but without foreign agglutinated bodies. The genus *Leprotintinnus* is thus inadmissible.

UNDELLA CAUDATA (Ostrf).¹

(*Tintinnus caudatus* Ostf. Zool. Anzeig. Vol. XXII, 1899, pag. 437. *Undella pellucida*, JÖRGENSEN. Bergens Museums aarbog 1899, n. 2, Pl. 1, fig. 7-8.)

1897 *December*: 43° N. 18° W.

1898 *March*: 41° N. 21° W.; 45° N. 13° W.; 49° N. 33° W.

April: 39° N. 34° W.; 41° N. 19° W.; 49° N. 22° W.

May: 50° N. 14°-23° W.; 41° N. 59° W.; 42° N. 61° W.

June: 42° N. 50° W.

August: 48°-49° N. 20°-30° W.

October: 57°-58° N. 25°-32° W.

November: 0° S. 31° W.; area between 45° N. 7° W., 49° N. 32° W. and 58° N. 29° W.; 63° N. 19° W. to 62° N. 8° W.

December: 30° N. 16° W.; 49° N. 20°-35° W.; W. of the Färöes; 44° N. 57° W.

1899 *January*: 33° N. 15° W.; 49° N. 20° W. to 45° N. 49° W.

April: 46° N. 13° W.

June: 14°-15° S. 6°-5° W.

October: 56°-53° N. 31° W.

November: 51° N. 21° and 28° W.

Temperature: 14.7, mean of 38 obs., max. 26.2, min. 10.

Salinity: 35.48, mean of 32 obs., max. 36.48, min. 32.72.

Plankton-type. This species has been seen in the southern hemisphere near St. Helena and Fernando Nona. In the northern hemisphere its area of distribution is eastern, from the Canaries and Azores towards Iceland and the Färöe Channel; from there rare specimens may drift to Norway, where JÖRGENSEN has found this species at Bergen (June, August, November) — S.

UNDELLA CLAPAREDII (ENTZ).

(*Tint. Clap.* Entz. Mitt. d. zool. Stat zu Neapel. Vol. VI, 1896, pag. 202 Pl. XIV, fig. 10-11.)

1897 *December* and

1898 *January*: Azores to 7° N. 53° W.; 25° N. 74° W.

February: 13° N. 70° W. to 30° N. 74° W.

March: Caribbean Sea; 32° N. 74° W.; 10° N. 20° W.; Azores; 49° N. 33° W.

April: 10° N. 53° W.; 50° N. 9° W.; 47° N. 40° W.

May: 27° N. 48° W.; 48° N. 25° W. to 42° N. 45° W.

¹ Ostenfeld's data used.

November: 48°—50° N. 41°—31° N. to 36° N. 14° W.; 5° S. 33° W.

December: Canaries; Azores; 49° N. 27°—35° W.; Caribbean Sea.

1899 *January*: Canaries to 35° N. 9° W.; 48°—45° N. 39°—49° W.

February: 34° N. 40° W.

March: 43° N. 16° W. to 36° N. 29° W.; 18° N. 45° W.

April: 40°—44° N. 16°—15° W.

June: 20° S. 1° E. to 4° S. 19° W.; 21° N. 45° W. to 12° N. 51° W.

July: 11°—15° N. 26°—29° W., 25°—28° N. 37°—40° W.

Temperature: 20.75, mean of 68 obs., max. 27.4, min. 10.4.

Salinity: 35.34, mean of 51 obs., max. 37.45, min. 34.38.

Plankton-type. This species occurs in the Mediterranean and in the Red Sea. It belongs to the tropical and subtropical Atlantic, from at least 20° S. to about 50° N. (November, December). — S. and D.

UNDELLA HEROS Cl.

(Öfvers. Kongl. Vetensk. Akad. Förh. 1839 n. 11, pag. 374.)

1898 *February*: 30° N. 74° W.

May: 41° N. 51° W.

November: 42° N. 64° W.; 51° N. 20° W.

December: 34° N. 33° W.

1899 *November*: 49° N. 40° W.

Temperature: 17.4, mean of 5 obs., max. 21.4, min. 14.

Salinity: 35.56, mean of 3 obs., max. 36.52, min. 35.

Plankton-type. D. or S.

UNDELLA HYALINA v. DADAY.

(Mith. d. Zool. Stat. Neapel, Vol. VII. 1887, pag. 564, Pl. XVIII, fig. 17.)

1898 *October*: Azores

November: Azores; Canaries; 34°—36° N. 10°—14° W.

December: Azores.

1899 *January*: Canaries.

March: Azores.

Temperature: 18.15, mean of 13 obs., max. 21.5, min. 16.1.

Salinity: 36.41, mean of 7 obs., max. 36.61, min. 36.29.

Plankton-type. This species occurs in the area between the Canaries, the Azores and Gibraltar as well as in the Mediterranean.
— S.

UNDELLA PARADOXA Cl.

(Öfvers. Kongl. Vetensk. Akad. Förh. 1869, n. 10, pag. 974).

1898 *February:* 34° N. 73° W.

1899 *January:* 33° N. 15° W.

Temperature: 18.5 to 20.

Salinity: 36.34.

Plankton-type. D. or S.

UNDELLA (?) URCEOLATA (ÖSTF.)

(*Diatanus* nrc. Ostent. Zool. Anzeiger, Vol. XXII, n. 601 1899, pag. 437)

1898 *March:* 45° N. 16° W.

October: 57° N. 27° W.

1899 *November:* 51° N. 21°—34° W., rare.

Temperature: 11.5.

Salinity: 35.15.

Plankton-type. S.

Radiolaria.

ACANTHOCHIASMA FUSIFORME Hkt.

Mon. Pl. XIX, fig. 8.

- 1898 *January*: 27° N. 37° W.
February: 26° N. 74° W.
March: 23° N. 28° W.; round the Azores; area between 45° N. 36° W., 49° N. 33° W. and 49° N. 18° W.; 41° N. 56° W.; 62° N. 11° W.
April: 47° N. 40° W.
May: 38° N. 21° W.
June: 44° N. 9° W.
October: Azores; 57° N. 18° W.
November: 29° N. 43° W.; Azores; 52° N. 38° W.; 55° N. 14° W. to 56° N. 23° W.
December: Azores; 47° N. 45° W.
- 1899 *January*: 33° N. 37° W.; 45° N. 49° W.; 48° N. 39° W.
February: 34° N. 40° W.
March: 30° N. 35° W.; 49° N. 9° W.; 64° N. 11° W.; 66° N. 14° W.
June: 5° S. 17° W.
September: 66° N. 2° W.
October: 56° N. 23° W.
November: 51° N. 21°—28° W.

Temperature: 14.3, mean of 37 obs., max. 27.3, min. 6, exceptionally 0.3.

Salinity: 35.79, mean of 27 obs., max. 37.30, min. 33.01.

Plankton-type. The principal area of distribution is between the Azores, the Newfoundland Banks and the Færøe Channel, (November to March). Found in the Mediterranean and the Pacific. — S.

ACANTHOCHIASMA KROHNII Hkl.

(Monogr. Pl. XIX, fig. 7.)

1897 *December* and1898 *January*: 27°—29° N. 37°—36° W.; 44°—43° N. 17°—11° W.;
7° N. 54° W.; 29°—35° N. 74° W.*February*: 5°—6° S. 12°—4° E.; 26° N. 74° W.*March*: 6°—4° S. 4°—10° W.; area between 23° N. 28° W.,
the Azores, 55° N. 12° W. and 46° N. 12° W.; 12° N. 51° W.;
40° N. 56° W.*April*: 41° N. 19° W.; 47° N. 34° W.; 7° N. 55° W.*May*: area between 38° N. 21° W., 41° N. 16° W. and 46° N.
30° W.; 21°—23° N. 48°—45° W.*June*: 36° N. 43° W.*July*: 26° N. 48° W.; 34° N. 33° W.; 40° N. 69° W.*September*: 20°—33° N. 74° W.; 72° N. 19° E., deep sea haul
from 250 metres.*October*: 56° N. 12° W.; 26° N. 75° W.*November*: 33° N. 10° W.; Azores; area between 50° N. 31°
W., 56° N. 22°—30° W. and 53° N. 50° W.*December*: Azores.1899 *January*: 29° N. 16° W.*March*: 46° N. 11° W.*April*: 32° N. 75° W.*June*: 17° S. 2° W.; 18° N. 47° W.*September*: 63° N. 1° E.; 56° N. 24° W.*November*: 49° N. 40° W.**Temperature**: 18.₄, mean of 54 obs., max. 28.₂, min. 7.₁.**Salinity**: 35.₇₅, mean of 39 obs., max. 37.₁₁, min. 31.₅₁, ex-
ceptionally 20.₂₅.**Plankton-type**. Noted from the Mediterranean, Indian and
Pacific. This species occurred in the Gulf of Guinea and in March
from Cape Verde to about 55° N. Later it became rarer in this
region, but reappeared in November at several spots between 50°
and 56° N. It occurs, as a rule very scantily, in the Sargasso Sea,
the Caribbean Sea and Florida current. — *S (D)*.

ACANTHOCORYS UNBELLIFERA HRL.

(Monogr. Pl. VI, fig. 12).

1898 *March*: 49° N. 18° W.; 53° N. 20° W.*August*: 76°—80° N. 15°—10° E., in deep sea hauls from 400—500 m.*September*: 66° N. 18° W.; 72°—76° N. 10°—15° E., in deep sea hauls from 230—325 m.**Temperature:** 8.3—11.**Salinity:** 35.25 to 35.50.**Plankton-type.** HÄCKER mentions this species from the Mediterranean and the Azores. — 5.

ACANTHOMETRON CATERVATUM HRL.

(Chal. pag. 745. *Acanthonia pectinifolia* (HALL) ANT. *Acanthometra pallida* Clap & Jørgen. I include under the above name all *Acanthometra* with thin, needle-shaped spines of equal or nearly equal breadth and with a basal leaf-cross, either all are of the same length or four larger than the others).1898 *February*: 5° S. 0°—4° E., common.*March*: 4°—6° S. 10°—4° W.; area between the Azores, 43° N. 41° W., 53° N. 20° W. and 40° N. 18° W.; 62°—63° N. 2°—4° E.*April*: 41° N. 19° W.*May*: 46°—48° N. 31°—26° W.; 41° N. 51°—56° W.; 62° N. 2° E.*July*: 40°—41° N. 60°—65° W.; 49° N. 17° W.; 62° N. 0°—4° W.; 78° N. 1° E., haul from 500 m.*August*: 48°—49° N. 6°—20° W.; 56° N. 30°—28° W.; 60° N. 3° W.*September*: Azores, area between 56° N. 27° W., S. Iceland, 60° N. 2° E. and 56° N. 12° W.; N. of Iceland; 70° N. 21° E. to 76° N. 15° E., common on some spots.*October*: Azores; 56° N. 10°—13° and 31° W.*November*: Azores, very common; 35° N. 14° W.; area between 51° N. 20° W., 56° N. 26° W. and the Shetlands; area between 53° N. 50° W., 47° N. 41° W. and 45° N. 49° W.; 44° N. 55° W. to 40° N. 67° W.*December*: Azores; 42° N. 63° W.

1899 *June*: 25°—14° S. 7° E.—7° W.; 62° N. 2° E.

July: 45° N. 31° W.; 62° N. 0° W.

August: 55° N. 9°—26° W.; 60° N. 3° E.

September: 56° N. 12°—24° W., as a rule rare, 67° N. 3° W. to 60° N. 3° E.

October: 56° N. 15°—31° W., rare.

November: 51° N. 21° W., rare.

Temperature: 14.3, mean of 79 obs., max. 28, min. 5.1.

Salinity: 36.20, mean of 69 obs., max. 36.50, min. 31.80.

Plankton-type. Typical Styli-plankton form with essentially eastern distribution, ranging from 25° S. to Spitzbergen. S.

ACANTHOMETRON DOLICHOSCION HUG.

(Monogr. Pl. XVIII, fig. 3 a. b.)

1898 *June*: 23° N. 42° W.

Temperature: 25.

Salinity: 36.02.

Plankton-type. D.

ACANTHOMETRON PELLUCIDUM J. MÖLLER.

(*A. elasticum* Hantz., Org. d. Radial. Pl. 1, fig. 2. I include under the above name all *Acanthometra* with thin, needle-shaped spines of equal or nearly equal thickness and without a basal leaf-cross. The above name may thus comprise *Acanthometra fusca* and *A. pellucida* JON. MÖLLER and *A. elasticum* HUG.)

1898 *January*: 17°—15° S. 38°—37° W.; 4° S. 29° W.; 7° N. 22° W.; 7°—11° N. 53°—52° W.; Caribbean Sea; 44°—46° N. 17°—11° W.

February: 5°—5° S. 12°—4° E.; Caribbean Sea; 26° N. 74° W.

March: 6°—4° S. 4°—10° W.; 1° S. 27° W. to 23° N. 17° W.; area between the Azores, 43° N. 17° W. and 47° N. 27° W.; 30° N. 35° W.; 25° N. 41° W. to 9° N. 59° W.; Caribbean Sea; 28°—32° N. 74° W.; 40° N. 64° W.

April: 7° N. 56° W. to 15° N. 49° W.; 27° N. 75° W.; 41° N. 58° W.; 44° N. 45° W.; 46° N. 16° W.; 41° N. 19° W.

May: area between 6° N. 56° W., 32° N. 37° W. and 20° N. 60° W.; 38° N. 21° W.; 41° N. 16° W.; 48° N. 33° W.; Friaes.

June: area between 10° N. 53° W., 19° N. 63° W., 45° N. 26° W. and the Azores; 40° — 44° N. 10° — 9° W.; 62° N. 2° E.

July: 25° — 26° N. 54° — 48° W.; 33° — 38° N. 74° W.; 41° N. 60° W.; area between 31° N. 39° W., 42° N. 36° W. and 49° N. 22° W.

August: 22° N. 74° W. to 34° N. 73° W.; 41° N. 58° W. to 42° N. 48° W.; Azores; 76° N. 11° E.

September: 9° N. 53° W.; 20° — 29° N. 74° W.; area between 30° N. 35° W., 47° N. 9° W. and 48° N. 29° W.; 20° N. 45° W.

October: 26° N. 76° W.; Azores; 55° N. 39° W.

November: 19° S. 31° W.; 4° N. 30° W.; 24° N. 21° W.; 34° N. 10° W.; 45° N. 7° W.; 60° N. 1° W.; Färöes; 29° N. 43° W.; 47° N. 41° W.; 53° N. 50° W.

December: 26° S. 45° W.; 19° — 25° N. 58° — 52° W.; Canaries; Azores; Färöes.

1899 *January*: Färöes.

February: 34° N. 40° W.; Färöes.

June: 20° — 7° S. 2° E.— 14° W.

September: 67° N. 3° W.; 56° N. 23° and 30° W.

November: 51° N. 13° and 21° W.

Temperature: 21.1, mean of 165 obs., max. 28.2, min. 4.2.

Salinity: 35.22, mean of 118 obs., max. 37.17, min. 32.22, exceptionally 20.29.

Plankton-type. Noted from the Mediterranean, Indian and Pacific. According to the above statements it occurs at least from 26° S. to 46° N., rare between that degree and 50° N. Beyond the last named limit rare specimens only were carried to the Färöes, western Norway and Spitzbergen. — S. and D.

ACANTHONIA CUSPIDATA Hbk.

Monogr. pag. 383, Pl. XVIII, fig. 11. Under this name I include all *Acanthonetra* with four-winged spines and basal leafcross.

1898 *January*: 44° N. 17° W.; 32° N. 74° W.

February: 5° S. 9° — 4° E.; 15° N. 71° W.

March: 6°—4° S. 4°—10° W.; 11° N. 20° W. to 23° N. 28° W.; area between the Azores, 49° N. 18° W., 43° N. 17° W. and 35° N. 28° W.; 9° N. 59° W.; 28° N. 74° W.

April: area between 41° N. 19° W., 50° N. 12° W. and 49° N. 22° W.; 44° N. 45° W.; 41° N. 58° W.; 42° N. 51° W.; 31° N. 75° W.

May: 30° N. 27° W.; 41° N. 16° W.; 50° N. 14° W.; 46° N. 38° W. to 41° N. 51° W.; area between 26° N. 42° W., 26° N. 52° W. and 20° N. 60° W.; Caribbean Sea.

June: 45° N. 26° W.; area between 33° N. 48° W., 40° N. 37° W. and 37° N. 23° W.; 23° N. 43° W.; 19° N. 63° W.

July: 34°—37° N. 33°—25° W.; 40° N. 22° W.; 45° N. 42° W.; 41° N. 58° W.; 21° N. 58° W.; 33°—38° N. 74° W.

August: Azores; rare at some points between 50° N. 12° W. and 41° N. 58° W.; 56° N. 20° W.; Caribbean Sea; Bahamas.

September: Cape Verde Islands; Azores; area between 48° N. 7° W., 46° N. 11° W., 48° N. 23° W., 56° N. 21° W. and 57° N. 14° W.; 33°—38° N. 74° W.

October: area between 56° N. 10°—20° W. and 57° N. 18° W.; area between the Azores, 42° N. 15° W. and 50° N. 20° W.; 21° S. 36° W.; Caribbean Sea.

November: 24° S. 29° W.; 4° N. 30° W. to 13° N. 27° W.; 19° N. 57° W.; 22° N. 53° W.; 32° N. 38° W.; Azores; 34° N. 10° W.; 47°—48° N. 41° W.; 56° N. 17°—23° W.

December: 26° S. 45° W.; Porto Rico; 25° N. 52° W.; 42° N. 17° W.; Azores; Canaries.

1899 *January:* 29° N. 16° W.; 34° N. 12° W.

April: 32°—36° N. 75°—74° W.

May: 33° S. 16° E.

June: 25° S. 7° E.; 6° S. 16° W.; 12° N. 52° W.

September: 56° N. 23° W.

October: 56° N. 23° W.; 52° N. 21° W.; 53° N. 25° W.

November: 51° N. 28° and 34° W.

Temperature: 20.1, mean of 121 obs., max. 28.5, min. 10.4.

Salinity: 35.55, mean of 103 obs., max. 37.00, min. 33.20.

Plankton-type. Noted from the Mediterranean and the Pacific.

— S. and D.

ACANTHONIA MÜLLERI HKT.

(Monogr. pag. 379 Pl. XV fig. 3; XVIII fig. 9.)

- 1898 *February*: 5° S. 9° E.
March: Azores; 41° N. 23° W.; 49° N. 18° W.
April: 41° N. 19° W.; 47° N. 40° W.; 50° N. 10° W.
May: 48° N. 30° W.; 59° N. 14° W.; 61°—62° N. 1° W.—2° E.
August: 49° N. 14° W.
September: 56°—57° N. 21°—14° W.; 60° N. 3° W.; 72°—76° N. 19°—16° E.
October: 56° N. 12° W.
November: 52° N. 33° W.; 56° N. 17°—23° W.
December: Azores; 44° N. 57° W.
- 1899 *January*: Canaries; 48° N. 39° W.
March: 49° N. 0° W., common.
April: 49° N. 7° W., rare.
June: 62° N. 1° E.
August: 56° N. 14° W., rare.
September: 56°—57° N. 17°—16° W., more or less rare; 56° N. 23° W., rare; 53° N. 25° W., rare.
November: 51° N. 28° W., rare.

Temperature: 12.6, mean of 28 obs., max. 27.3, min. 0.5.**Salinity:** 35.37, mean of 27 obs., max. 36.59, min. 32.12.**Plankton-type.** Noted from the Mediterranean. Its range of distribution is essentially eastern, from 5° S. to the north of Norway. — S.

ACANTHONIA MULTISPINA J. MÜLL.

(Abh. 1868 p. VII, fig. 6—9.)

- 1898
- March*
- : 45° N. 40° W.

Temperature: 14.**Salinity:** 35.61.**Plankton-type.** MÜLLER found this species at Messina. HÄCKEL mentions it from 3° N. 15° W. — Probably S.

ACANTHOSPHERA ACUFERA Hkl.

(Monog. pag. 366 Pl. XIV fig. 1.)

1898 *March*: 40° N. 56° W.*April*: 41° N. 49° W.**Temperature**: 11° to 13._s.**Salinity**: 35.₁₇ to 35.₃₉.**Plankton-type**. HÄCKEL mentions this species from the Mediterranean and from 33° N. 36° W. My specimen occurred in Styli-plankton. — S.

ACANTHOSPHERA CASTANEA Hkl.

(Chall. pag. 211. Pl. XXVI fig. 3.)

1899 *January*: 45° N. 49° W., very rare.**Temperature**: 12.**Salinity**: 35.₅₄.**Plankton-type**. HÄCKEL mentions this species from the X. Pacific — ?

ACANTHOSPHERA TENUISSIMA Hkl.

(Monog. pag. 351 Pl. IX fig. 2.)

1898 *February*: 26° N. 74° W.*May*: Azores; 50° N. 14° W.*July*: 25° N. 74° W.; 41° N. 60° W.*November*: Azores; 47° N. 41° W.1899 *March*: Azores.**Temperature**: 19.₁, mean of 8 obs., max. 27.₈, min. 13.₂.**Salinity**: 35.₆₀, mean of 5 obs., max. 36.₃₀, min. 35.₁₇.**Plankton-type**. Noted from the Mediterranean and the Canaries. According to the above data it occurs rarely in the Styli-plankton of the eastern and western warmer Atlantic. — S.

ACANTHOSPHERA TRICHOPHORA Gr.

(K. Sv. V. Akad. Handl. Vol. XXXIV n. 1 p. 15 Pl. V fig. 3.)

1898 *November*: 60° N. 31° W.**Temperature**: 14.**Salinity**: 35.22.**Plankton-type**: S. ?**ACROSPHÆRA INFLATA** HekL.

(Gbstl. pag. 101 Pl. V fig. 7.)

1898 *November*: 26° S. 46° W.**Temperature**: 24.2.**Salinity**: 37.11.**Plankton-type**. Hæckel mentions this species from 36° N. 50° W. — D.**ACROSPHÆRA SPINOSA** HekL.

(Monog. pag. 536 Pl. XXXIV fig. 12, 13.)

1898 *February*: 26°—35° N. 74°—73° W.*March*: 30° N. 35° W.*April*: 45° N. 41° W.; 50° N. 12° W.*May*: 21° N. 48° W.; 32° N. 37° W. to 38° N. 21° W.*June*: area between 24° N. 58° W., 39° N. 39° W., 42° N. 20° W., the Canaries and 23° N. 42° W.*July*: 39°—36° N. 23°—28° W.; 31° N. 74° W.*August*: Azores.*September*: 20° N. 45° W.; 26° N. 39° W.; 35° N. 30° W.*October*: 21° S. 36° W.; Azores.*November*: 24° N. 20° W.; Cape Verde Islands; 22°—29° N. 53°—43° W.; 50° N. 12° W.*December*: 41° N. 66° W.1899 *February*: 32° N. 47° W.*July*: 40° N. 38° W.**Temperature**: 21.25, mean of 41 obs., max. 27.1, min. 12.**Salinity**: 36.11, mean of 32 obs., max. 37.22, min. 34.40.

Plankton-type. Noted from the Mediterranean and the Canaries. From the above data it appears that this species occurs in the whole tropical Atlantic, at least from 21° S. to 40° N., beyond which limit rare specimens may be conveyed to the SW. of Ireland (50° N.) — *D.*

ACTINOMMA ORCADOPHORUM Hkl.

(Chail. pag. 265 Pl. XXIX fig. 7, 8.)

1808 *December*: 26° N. 53° W.

Temperature: 24.5.

Salinity: 37.17.

Plankton-type. Noted from the central Pacific — *D.*

ACTINOMMA BOREALE Cl.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXII, 3, pag. 16 Pl. I fig. 3.)

1808 *March*: 62° N. 2° E.

July: 78° N. 3° W., deep sea haul.

August: 77°–80° N. 12°–10° E., deep sea haul.

September: 72°–76° N. 10°–15° E., deep sea haul.

November: 56° N. 36° W., surface.

1809 *January*: 48° N. 30° W., surface.

September: 67° N. 3° E., deep sea haul.

Temperature (surface): 7.5 to 11.

Salinity (surface): 35.00 to 35.08.

Plankton-type. ?

ACTINOMMA SOL Cl.¹

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 p. 5 Pl. V fig. 2.)

1809 *January*: 45° N. 40° W.

Temperature: 12.

Salinity: 35.04.

Plankton-type: S. ?

¹ Since the above was written, I found this form to be the same as *Criogomina rubescens* Hkl.

AMPHIHYMENIUM ELEGANS CL.

(K. Sv. Vol. Akad. Vol. XXXIV n. 1 pag. 6 Pl. V fig. 1.)

1898 *December*: 25° N. 52° W.**Temperature**: 24.5.**Salinity**: 37.1.**Plankton-type**. D.

AMPHILONCHE BELONOIDES HBL.

(Monog. pag. 302 Pl. XVI fig. 6; XVII fig. 21 — *A. caecata* HBL.
Charl. pag. 787 Pl. CXXXII fig. 4.)1897 *December* and1898 *January*: 53°—46° N. 18°—41° W.; 7° N. 22° W.; 18° N. 46° W. to 7° N. 53° W.; 25°—32° N. 74° W.*February*: 5° S. 4° E.; Caribbean Sea, 21° N. 74° W.*March*: 7° N. 21° W.; 23° N. 28° W.; 25° N. 16° W.; 36° N. 29° W. to 41° N. 23° W.; 12° N. 51° W. to 9° N. 59° W.; Caribbean Sea; 32° N. 74° W.*April*: 41° N. 19° W.; 45° N. 41° W.*May*: area between the Azores, 46° N. 31° W., 43° N. 43° W. and 26° N. 42° W.*June*: Azores; 28°—30° N. 52° W.*July*: Azores; 41° N. 60° W. to 42° N. 48° W.*August*: Azores; 41° N. 65° W. to 44° N. 42° W.*September*: 43° N. 48° W.; 46° N. 39° W.*October*: 57° N. 18° W.*November*: 18°—19° S. 31° W.; area between 40° N. 67° W.; 56° N. 36° W. and 51° N. 20° W.*December*: 29° S. 49° W.; 43° N. 61° W. to 44° N. 57° W.; 49° N. 35° W.1899 *January*: Canaries.*February*: 32° N. 47° W.*March*: 35°—36° N. 16°—29° W.*April*: 28° N. 75° W.*June*: 20° S. 1° E.; 18° S. 1° W.; 27° N. 39° W.*September*: 56° N. 30° W.*October*: 53° N. 31° W.*November*: 49°—52° N. 40°—18° W.

Temperature: 19.5, mean of 88 obs., max. 28, min. 8.

Salinity: 35.13, mean of 58 obs., max. 38.26, min. 32.08.

Plankton-type. This species belongs to the tropical Atlantic and occurred in March S. of 40° N. In May it advanced in the central Atlantic beyond 45° N. In July to December (maximum in November) it occurred from the E. of New York, between 50° and 55°, towards the Irminger Sea. Rare specimens were in October drifted nearly to Rockall. It is found in the Mediterranean and the Pacific.
D.

AMPHILONCHE DIODON Hbr.,

(Uchid. pag. 788 Pl. CXXXII fig. 3.)

- 1898 *January:* 44° N. 17° W.
March: 9° N. 59° W.; 12° N. 51° W.
April: 7° N. 55° W.
May: 11° N. 52° W.
June: 19° N. 63° W.
September: 25°–29° N. 74° W.
October: 16° N. 70° W.
November: 17° N. 25° W.
December: 18° N. 67° W.
 1899 *April:* 28°–36° N. 75°–74° W.
June: 12° N. 52° W.

Temperature: 24.7, mean of 15 obs., max. 28.2, min. 14.2.

Salinity: 35.61, mean of 12 obs., max. 36.42, min. 34.88.

Plankton-type. The principal area of distribution is off the north coast of S. America, the Caribbean Sea and Florida Current to 36° N. It is rarer on the east, where it occurs in the winter. Huxst. mentions it from 11° N. 18° W. (April) — *D.*

AMPHILONCHE ELONGATA (Müll.),

(Hux. Monogr. pag. 302 Pl. XVIII fig. 22.)

- 1897 *December:* 12° N. 50° W. to 43° N. 18° W.
 1898 *January:* 17° S. 38° W.; 7°–18° N. 53°–46° W.; Caribbean Sea; 29°–35° N. 74° W.; 7° N. 22° W.; 44° N. 17° W.
February: Caribbean Sea; 26°–34° N. 74°–73° W.

March: 6° S. 4° W. to 1° S. 15° W.; Cape Verde Islands; 26° N. 29° W.; 41° N. 23° W. to 9° N. 53°—59° W.; Caribbean Sea; 28° N. 74° W.; 41° N. 56° W.; 45° N. 40° W.; 49° N. 18° W.

April: 10° N. 43° W.; 25° N. 41° W.; 27° N. 75° W.; 47° N. 40° W.

May: 23° N. 45° and 56° W.; 20° N. 60° W.

June: 45° N. 26° W.

July: Azores.

August: Azores; 40° N. 66° W.

September: Cape Verde Islands; Azores.

October: Azores; 54° N. 45° W.

November: 26°—19° S. 30°—31° W.; Cape Verde Islands; 34° N. 10° W.; Azores; 42° N. 64° W.

December: 26° S. 45° W.; Canaries; Azores; 18° N. 67° W.

1890 *March:* 35° N. 16° W.

April: 28°—32° N. 74° W.

May: 35° N. 74° W.

June: 20° S. 2° E. to 6° S. 16° W.; 15° N. 50° W.

July: 45°—48° N. 31°—25° W.

September: 56° N. 31° W.

Temperature: 21.5, mean of 78 obs., max. 28, min. 11.

Salinity: 35.75 mean of 38 obs., max., 37.41, min. 34.71.

Temperature: This species occurs, according to HÄCKEL, in the Mediterranean, the Indian and Pacific Oceans. It occurs, according to the above data over the whole tropical Atlantic to about 40° N., sparingly beyond this degree nearly to 50° N. — *D.*

AMPHILONCHE OVATA (MÜLL.).

(Abh. d. Berl. Akad. 1858 pag. 47 Pl. VII fig. 10; IX fig. 4. — The above name may include *A. conica* HÄK. or comprises such forms as have relatively little different, not winged or angular, spines with a basal leaf-cross. They seem to me to be very nearly akin to *Asynthoucton scabra*, which differs in having spines of equal length.)

1898 *January:* 12°—11° N. 50°—52° W.

February: 13° N. 17° W.

March: 6° S. 4° W.; 12° N. 50° W. to 9° N. 59° W.; Caribbean Sea; 35° N. 28° W.

- April*: 25° N. 42° W.; 7° N. 55° W.; 23° N. 72° W. to 34° N. 74° W.
May: area between 20° N. 60° W., 30° N. 42°—36° W. and 21° N. 48° W.
June: off Madeira; 10° N. 53° W.; area between 22° N. 60° W., 37° N. 41° W., 29° N. 36° W. and 23° N. 42° W.
July: Azores; 29° N. 44° W. to 21° N. 58° W.; Caribbean Sea; 23°—33° N. 74° W.; 41° N. 58° W.; 44° N. 39° W.
August: Caribbean Sea; 22°—25° N. 74° W.; 40° N. 66° W. to 45° N. 43° W.
September: Caribbean Sea; 25°—33° N. 74° W.; 20° N. 45° W.; 30° N. 31° W. to the Azores; 45° N. 14° W.
October: 26° N. 76° W.; 42° N. 15° W.
November: 0° N. 31° W. to 20° N. 23° W.; 22° N. 53° W.; 26° N. 48° W.; 34° N. 33° W.; 35° N. 14° W.; 51° N. 20° W.
December: 26° N. 45° W.; 14° N. 36° W.; 19° N. 58° W.; 25° N. 52° W.
- 1899 *January*: 32° N. 16° W.,
March: 21° N. 43° W.,
May: 25° S. 7° E.
June: 30° S. 1° E. to 3° S. 20° W.; 21° N. 45° W.,
July: 11° N. 26° W.,
November: 51° N. 34° W.

Temperature: 24.2, mean of 97 obs., max. 28.2, min. 14.

Salinity: 36.7, mean of 84 obs., max. 37.2, min. 33.8.

Plankton-type. Occurs in the Mediterranean and Pacific (Hkl) and according to the above data over the whole tropical Atlantic, to about 40° N., in July to September, rarely later, between 40° and 50° N. — *D.*

AMPHILONCHE TENUIS Hkl.

(Monogr. pag. 389 Pl. XVI fig. 1, XVIII fig. 16.)

- 1898 *March*: 10° N. 54° W.; 9° N. 59° W.,
April: 7° N. 55° W.,
May: 29° N. 39° W.; 38° N. 21° W.; 44° N. 51° W.,
June: 19° N. 63° W.,
July: 26° N. 48° W.; 15° N. 71° W.

August: 44° N. 42° W.

October: Azores.

1899 *April*: 52° N. 75° W.

Temperature: 23., mean of 12 obs., max. 28, min. 17.2.

Salinity: 36.19, mean of 16 obs., max. 37.62, min. 35.68.

Plankton-type. HECKEL mentions this species from the Mediterranean, the Canaries and the Azores. According to the above data this species occurs principally north of S. America, in the Caribbean Sea, rarer in the eastern Atlantic. — *D.*

AMPHILONCHE TETRAPTERA HXL.¹

(Monogr. pag. 391 Pl. XVI fig. 5; XVIII fig. 20.)

1897 *December* and

1898 *January*: 17° S. 38° W.; 4° S. 29° W.; 7° N. 22° W.; 7° N. 53° W. to 32° N. 33° W.; 45° N. 13° W.; 32° N. 74° W.

February: Caribbean Sea and Florida current to 34° N. 73° W.

March: area between 6° S. 4° W., 39° N. 25° W. and 9° N. 59° W.; 28° N. 74° W.; 45° N. 13° W.

April: 7° N. 55° W. to 15° N. 49° W.; 31° N. 75° W.

May: area between 20° N. 60° W., 26° N. 52° W., 32° N. 36° W. and 23° N. 46° W.; Caribbean Sea; 31° N. 75° W.; 41° N. 59°—51° W.; 56° N. 14° W.; Azores.

June: area between 19° N. 63° W., 23° N. 42° W. and 33° N. 48° W.; Azores; Madeira.

July: from the Azores to the Caribbean Sea; 40°—41° N. 69°—60° W.

August: Caribbean Sea; 40° N. 66° W. to 44° N. 42° W.; 48° N. 24° W.; Azores.

September: 12° N. 27° W.; 30° N. 35° W.; 17° N. 48° W.; Caribbean Sea; 25°—38° N. 74° W.; 42° N. 57° W.; area between the Azores, 46° N. 39° W., and 56° N. 21°—12° W.; 65° N. 18° W.

¹ Under this name I include all forms of *Amphilonche* which have four-winged large spines, not having in most cases examined, whether the spines have a basal leaf-cross or not; thus the above name may comprise also *A. heterocantha* HXL. and perhaps *Amphilonche acuminata* HXL.

October: 28° N. 76° W.; 56° N. 29°—40° W.; Azores.

November: 0° S. 31° W. to 20° N. 23° W.; 49° N. 58° W. to 26° N. 48° W.; 40° N. 67° W.; 53° N. 14° W.; 45° N. 7° W.;

Azores: 36° N. 14° W.

December: some points between Porto Rico and the Azores

1899 *January*: 33° N. 15° W.; 35° N. 9° W.

March: Azores.

April: 46° N. 9° W.; 28°—36° N. 75°—74° W.

June: St. Helena to 3° S. 20° W.; 15° N. 49° W.

September: 56° N. 26° W.

Temperature: 22.₅₁, mean of 155 obs., max. 28.₄, min. 7.

Salinity: 35.₅₆, mean of 101 obs., max. 37.₁₄, min. 31.₈₁.

Plankton-type. According to HECKEL *A. tetraptera* occurs in the Mediterranean, off Sierra Leone, at the Canaries and the Azores, *A. heteracantha* in the Mediterranean and the Pacific. It appears from the above statements that the four-winged *Amphilanthe* forms occur in the Desmo-plankton of the Atlantic to about 40° N. From May to September (maximum in August) they advanced beyond that degree, and rare specimens were carried in September to November towards the Engl. Channel and Rockall, in November to January to the Bay of Biscay, Gibraltar and the Canaries. — *D.*

ANTHOCYRTIDIUM CINERARIA Hekl.

(Chall. pag. 1278 Pl. LXII fig. 16.)

1898 *December*: 25° N. 52° W.

Temperature: 24.₂.

Salinity: 37.₁₂.

Plankton-type. Noted from the central Pacific. — *D.*

ANTHOCYRTIUM ANTHEMIS Hekl.

(Chall. pag. 1297. Cl. K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. III f. 12)

1898 *March*: 63° N. 3° E.

Temperature: 6.₇.

Salinity: 35.₁₆.

Plankton-type. Noted from the north Pacific, 35° N. 170° E. abyssal. — I found one specimen only in a very poor sample containing Tricho-plankton. — ?

ARACHNOCORYS POLYPTERA Hkl.

(Chall. pag. 1267.)

1898 *February*: 21° N, 74° W.**Temperature:** 25.1.**Plankton-type.** Noted from the S. Pacific. — *D.*

ARCHICIRCUS PRIMORALIDIS Hkl.

(Chall. pag. 942 Pl. LXXXI fig. 1.)

1898 *December*: 18° N, 67° W.**Temperature:** 26.5.**Salinity:** 36.55.**Plankton-type.** Noted from the central Pacific (abysmal).
D? *S?*

ASTROLONCHE SERRATA Hkl.

(*Xiphocentrotus serratus* Hkl., Monogr. Pl. XVIII fig. 3; XVIII fig. 14.)1898 *March*: 39° N, 29° W.**Temperature:** 15.5.**Salinity:** 35.55.**Plankton-type.** Occurs in the Mediterranean, Atlantic and Pacific. — My specimens were found in Styli-plankton. — *S.*

AULACANTHA LÆVISSIMA Hkl.

(Cl. Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 27 Pl. I fig. 7.)

1898 *August*: 78° N, 3° W. (deep sea haul).**Plankton-type.** Found in the Færøe Channel. — *S.?*

AULACANTHA SCOLYMANTHA Hkl.

(Monogr. pag. 263 Pl. II fig. 1, 2; IV fig. 1-5.)

1898 *November*: 40° N, 12° W.; 50° N, 31° W.*December*: 43° N, 57° W.

1899 *April*: 41° N. 17° W.*October*: 52° N. 21° W.**Temperature:** 13.8, mean of 4 obs., max. 14.3, min. 13.**Salinity:** 35.03, mean of 3 obs., max. 35.35, min. 34.64.**Plankton-type.** According to Hæckel, the most common of all *Acalantheida*, occurring outside the Atlantic in the Mediterranean, Indian and Pacific Oceans. It is remarkable that I have found it so rarely, always in Styli-plankton. — S.**AULODENDRON ANTARCTICUM** HkL.

(Chall. pag. 1689 Pl. CV fig. 5.)

1898 *July*: 78° N. 3° W. (deep sea haul).**Plankton-type.** Noted from Kerguelen. — ?**AULOSCENA SPECTABILIS** HkL.

(Chall. pag. 1628 Pl. CX fig. 8, B.)

1898 *July*: 78° N. 3° W. (deep sea haul).1899 *June*: 67° N. 3° W. (deep sea haul).**Plankton-type.** Noted from the Antarctic Ocean. — ?**AULOSPHÆRA CRUCIATA** HkL.

(Chall. pag. 1624 Pl. CIX fig. 10.)

1899 *January*: 45° N. 49° W.**Temperature:** 12.**Salinity:** 35.34.**Plankton-type.** Noted from the Mediterranean, the Canaries and the Caribbean Sea. — S? D?**BELONOZOOM ATLANTICUM** HkL.

(Chall. pag. 40.)

1898 *October* and *November*: Azores.**Temperature:** 19.3 to 20.**Plankton-type.** Hæckel mentions this species from 3° N. 15° W. (April). — Probably S.

BEROETTA MELO Cl.

(Kongl. Sc. Vet. Akad. Handl. Vol. XXXU n. 3 pag. 27 Pl. 1 fig. 8.)

1898 *July*: 78° N. 3° W. (deep sea haul).

Plankton-type: ?

BOTRYOPYLE SETOSA Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXU n. 3 pag. 27 Pl. 1 fig. 10.)

1898 *August and September*: 76°—78° N. 15° E. 3° W. (deep sea hauls from 325 m. and more)1899 *January*: 45° N. 59° W. (temperature 12, salinity 35.54)*July*: 71°—72° N. 21°—22° W. (hauls from 180 m. and more).

Plankton-type. ?

CALLIMITRA EMMÆ Hkt.

(Chall. pag. 1218 Pl. LXIII fig. 3, 4.)

1897 *December* and1898 *January*: 12° N. 50° W.; 32° N. 74° W.*February*: Caribbean Sea; 21°—30° N. 74° W.*March*: Caribbean Sea; 15° N. 49° W.; 18° N. 46° W.*May*: 23° N. 56° W.*September*: 33° N. 74° W.*November*: 22° N. 53° W.*December*: 14° S. 36° W.; 18° N. 67° W.**Temperature**: 26.1, mean of 12 obs., max. 26.8, min. 19.2.**Salinity**: 36.12, mean of 5 obs., max. 36.58, min. 34.58.**Plankton-type.** Found in the abyssal central Pacific. According to the above data this species occurs east of tropical America. — *D.*

CERIASPIS FAVOSA Hkt.

(Chall. pag. 821 Pl. CXXXVIII fig. 6.)

1898 *March*: 4° S. 10° W.*December*: 18° N. 67° W.

1899 *April*: 36° N. 74° W.

Temperature: 22.1 to 26.3.

Salinity: 34.88 to 36.21.

Plankton-type: *D*?

CHALLENGERIA HARSTONII J. MURRAY.

(Chall. Report, Narrative I pag. 226 A, fig. 14 a.)

1898 *July*: 78° N. 3° W. (deep sea haul).

August: 80° N. 10° E. (deep sea haul).

September: 76° N. 15° E.

Plankton-type. Noted from the east of Japan, abyssal.

CHALLENGERIA TRIDENS Hkl.

(Möbius *Fünfte Ber. d. Kieler Comen.* Pl. VIII fig. 43—44.)

1898 *July*: 78° N. 3° W. (deep sea haul).

August: 63° N. 15° W.; 78° N. 12° E.; 80° N. 10° E. (deep sea haul).

September: 65° N. 36° W.; 76° N. 13° E.; 72°—76° N. 19°—15° E. (deep sea hauls).

October: 64° N. 21° W.

November: 63° N. 15° W.; 56° N. 30° and 35° W.

1899 *November*: 52° N. 48° W.

Temperature: 7.6, mean of 6 obs., max. 10.8 min. 6.

Salinity: 35.61, mean of 6 obs., max. 35.41, min. 35.60.

Plankton-type. Noted from the Färöe Channel. The area of distribution is, according to the above statements, essentially northern, from 52° to 80° N. The mean salinity is higher than for Tricho-plankton. — ?

CHALLENGERIA XIPHODON Hkl.

(Möbius: *Fünfte Ber. d. Kieler Commiss.*, 1887, Pl. VIII fig. 41—42.)

1897 *December* and

1898 *January*: Cape Verde Islands; Canaries; 34° N. 30° W. to 41° N. 22° W.

March: Cape Verde Islands; 32° N. 32° W.

April: 51° N. 19° W.

July: 62° N. 0° W.

September: 66° N. 18° W.

November: 34° N. 10° W.; many points in the area between 53° N. 50° W., 47° N. 40° W., 56° N. 23° W. and 55° N. 14° W.

December: Azores; 42° N. 16° W.

1899 *January*: 45° N. 49° W.

February: 32° N. 47° W.; 34° N. 40° W.

March: 36°–37° N. 29°–26° W.

November: 51° N. 28° W.; 49° N. 40° W.

Temperature: 14.19, mean of 29 obs., max. 19.8, min. 7.

Salinity: 35.61, mean of 20 obs., max. 36.46, min. 33.78.

Plankton-type. The distribution is eastern, from Cape Verde to N. Iceland. — S.

CHALLENGERON BREVISPIA CL.

[R. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. III fig. 14, 15.]

1898 *March*: 63° N. 2° E.

Temperature: 6.7.

Salinity: 35.16.

Plankton-type: T. ?

CHALLENGERON CHANNERI J. MURRAY.

[Chal. Report. Narrative I pag. 226 Pl. A. fig. 13.]

1899 *January*: 48° N. 42° W., very rare.

Temperature: 12.

Salinity: 35.51.

Plankton-type. Noted from the E. of Japan (abysmal).

CHALLENGERON NATHORSTII A.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 28 Pl. I fig. 93)

1898 *August and September*: 80°—72° N. 10°—19° E. (deep sea hauls from 230 m. and more).*November*: 56° N. 30° W.1899 *March*: 64° N. 12° W.**Temperature**: 6.4 to 9.3.**Salinity**: 35.01 to 35.29.**Plankton-type**: ?

CHOENICOSPHERA MURRAYANA HXL.

(Chall. pag. 102 Pl. VIII fig. 4.)

1898 *November*: 29° N. 19° W.; 55° N. 17° W.1899 *November*: 51° N. 21° W.**Temperature**: 11.8 to 21.5.**Salinity**: 35.22 to 36.47.**Plankton-type**. Noted from the Färöe Channel. — S.

CLATHROCYCLAS COSCINODISCUS HXL.

(Chall. pag. 1389 Pl. LVIII fig. 3, 4.)

1898 *November*: 53°—56° N. 50°—36° W.**Temperature**: 7.2 to 7.3.**Salinity**: 34.56 to 35.06.**Plankton-type**. Found in the central Pacific, abyssal. My specimens occurred in Styli- and Tricho-plankton intermingled.

CLATHROCYCLAS DANAES HXL.

(Chall. pag. 1388 Pl. LIX fig. 13, 14.)

1898 *November*: 56° N. 30° W.**Temperature**: 9.6.**Salinity**: 35.01.**Plankton-type**. Noted from the Canaries. My specimens occurred in Styli-plankton.

CENOSPHÆRA INERMIS H&L.

(Heliosph. in, Monogr. pag. 351 Pl. IX fig. L)

1898 *January*: 11° N. 52° W.*September*: 33° N. 74° W.**Temperature**: 25 to 26.₁.**Salinity**: 36.₂₅**Plankton-type**. Found in the Mediterranean, Indian and Pacific. — *D.* ?**CLADOCOCCUS ARBORESCENS** M&L.

(Abh. d. Berl. Akad. 1898 pag. 31 Pl. I fig. 2.)

1898 *March*: Cape Verde Islands.**Temperature**: 23.**Salinity**: 35.₁₈.**Plankton-type**. Noted from the Canaries and the Mediterranean. — My specimen was found in Styli-plankton.**CLADOCOCCUS BIFURCUS** H&L.

(Monogr. pag. 368 Pl. XIII fig. 7, 8.)

1898 *March*: 43° N. 17° W.; 49° N. 18° W.**Temperature**: 11 to 12.₈.**Salinity**: 35.₆₅ to 36.₁₆**Plankton-type**. Noted from the Mediterranean, the Canaries and the Azores. — *S.*, with eastern distribution.**CLADOCOCCUS VIMINALIS** H&L.

(Monogr. pag. 369 Pl. XIV fig. 2, 3.)

1898 *April*: 47° N. 32° W.*May*: 26° N. 42° W.**Temperature**: 15 to 23.₁.**Salinity**: 36.₇₅ to 37.₅₆.**Plankton-type**. Found in the Mediterranean. — *S.* *D.* ?

CLATHROCANIUM MINUTUM Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. IV fig. 9.)

1898 *October*: 21° S. 36° W.**Temperature:** 22.**Salinity:** 37.25.**Plankton-type.** *D.*

COELODASEA SPONGIOSA HXL.

(Chall. pag. 1739.)

1898 *March*: 49° N. 18° W.**Temperature:** 11.**Salinity:** 35.55.**Plankton-type.** Noted from the equatorial Atlantic, abyssal. My specimen was found in Styli- and Tricho-plankton intermingled.

COELODENDRUM RAMOSISSIMUM HXL.

(Monogr. pag. 363 Pl. XII fig. 1-3.)

1898 *January*: 47° N. 11° W.*March*: 41° N. 60° W.*April*: 41° N. 19° W.; 48° N. 8° W.; 50° N. 12° W.*November*: 50° N. 31° W.*December*: 47° N. 45° W.**Temperature:** 12.5, mean of 7 obs., max. 14, min. 6.**Salinity:** 35.55, mean of 5 obs., max. 35.51, min. 35.51.**Plankton-type.** Occurs in the Mediterranean, Indian and Pacific. According to the above data it belongs to Styliplankton with eastern distribution. — S.

COLLOSPHÆRA HUXLEYI J. MOLL.

(Hxl. Monogr. pag. 684 Pl. XXXIV fig. 1, 2 — *C. globularis* and *C. tuberosa* included.)1898 *January*: 36° N. 27° W.; 32° N. 74° W.*February*: 21° N. 74° W. to 34° N. 73° W.

March: 14° N. 50° W.; Cape Verde Islands; 26° N. 39° W.; 30° N. 35° W.; Azores.

May: 23° N. 45°—56° W.; 26° N. 42° W.

June: area between 16° N. 48° W., 27° N. 55° W. and 40° N. 37° W.

July: 26° N. 48° W.; 33° N. 74° W.; 40° N. 67° W.

August: 40° N. 67° W. to 50° N. 10° W.

September: 26° N. 39° W.; 41° N. 65° W.; 48°—50° N. 29°—11° W.

October: 21° S. 36° W.

November: 26° S. 30° W. to 5° S. 33° W.; 50° N. 21° W.

December: 22°—25° N. 56°—52° W.; Caribbean Sea; 41° N. 66° W.

1899 *February*: 32°—34° N. 47°—40° W.

May: 50° N. 33° W.

June: Azores.

Temperature: 22.8, mean of 47 obs., max. 28, min. 14.

Salinity: 35.84, mean of 43 obs., max. 37.11, min. 32.89.

Plankton-type. Tropical Atlantic to 40° N., between 40°—50° N. from New York to the Engl. Channel in July—September (max. Aug.) — *D*.

COLLOZOU INERME (J. MüLL.)

(Hkt., Monogr. pag. 322 Pl. XXXV — *C. dipusoides* Hkt. included.)

1898 *January*: 33° N. 31° W.

March: Azores; 48° N. 6° W.

April: 45° N. 16° W.; 48° N. 8° W.; 50° N. 12° W.

May: 41° N. 51° W.

June: Azores; 71°—72° N. 21°—23° E.

July: Azores; 72° N. 3° W. (AUGIV.)

August: 60° N. 4° W.

September: Cape Verde Islands; Azores; Madeira; 56° N. 12° W.; 60° N. 2°—11° W.

October: 21° S. 36° W.; Azores; 42° N. 15° W.

November: Azores.

December: Azores.

1899 *February*: 32° N. 47° W.

April: 46°—48° N. 13°—9° W.

May: 50°—51° N. 33°—26° W.

June: 65°—67° N. 1°—3° W.

July: 62° N. 0° W.; 71° N. 21° W.

September: 56° N. 24° W.; 61° N. 1° E.; 68° N. 8° W.

Temperature: 16.7, mean of 33 obs., max. 25.4, min. 6.1. ⁴

Salinity: 35.74, mean of 2½ obs., max. 37.21, min. 34.52.

Plankton-type. According to HÄCKEL, cosmopolitan. It appears from the above data that it belongs to the Styli-plankton of the eastern Atlantic. — S.

COROCALYPTRA ELISABETHÆ Hckl.

(Chall. Pl. LIX fig. 10.)

1898 *February*: 21° N. 74° W.

November: 56° N. 23° W.

Temperature: 25.1, and 10.3.

Salinity: 35.42.

Plankton-type. Noted from the tropical Atlantic, 0° S. 14° W. — D.

CROMYOMMA ZONASTER (Ems.)

(*Acanthosphaera* zon. Ems. Abh. d. Berl. Akad. 1872 pag. 285 Pl. II fig. 2.)

1898 *September*: 73° N. 19° E. (deep sea haul).

Plankton-type. Noted from Greenland — ?

CYPHONIUM CERATOSPYRIS Hckl.

(Monog. pag. 443 Pl. XXII pag. 14—16.)

1898 *February*: 16° N. 71° W.

Temperature: 20.7.

Plankton-type. Noted from the Canaries and the Mediterranean — S. ? D. ?

CYPHONIUM PROFUNDUM Hkl.

(*Climacostopora prof.* Ehrh. Abh. d. Berl. Akad. 1872 Pl. VIII fig. 3; X fig. 5.)

1898 *January*: 7° N. 22° W.; 7° N. 53° W.; 32° N. 74° W.

March: 6° S. 4° W.; 9° N. 53°—59° W.; 12°—14° N. 51°—59° W.

May: 23° N. 56° W.; 29° N. 39° W.; 28° N. 47° W.; 41° N. 59° W.

June: 22° N. 60° W. to 30° N. 52° W.

July: 21° N. 58° W.; 26° N. 48° W.; 29°—33° N. 74° W.

August: 25° N. 74° W.

September: 23° N. 42° W.; 33° N. 31° W.; 33° N. 74° W.

October: 21° S. 36° W.; 26° N. 76° W.

November: 4° N. 30° W.; 36° N. 14° W.; 19° N. 58° W.

December: 23° N. 52° W.

Temperature: 25.5, mean of 32 obs., max. 28, min. 17.5.

Salinity: 36.55, mean of 25 obs., max. 37.51, min. 34.55.

Plankton-type: *D*.

CYRTOCALPIS AMPHORA Hkl.

(Monogr. pag. 286 Pl. V fig. 2, *C. obliqua* and *C. ovata*, which I do not consider as distinct species, included.)

1898 *February*: 26°—34° N. 74°—73° W.

May: 41° N. 51° W.

July: 31° N. 39° W.

November: 26° N. 48° W.

December: 18° N. 67° W.

1899 *February*: 32° N. 47° W.

Temperature: 23.5, mean of 6 obs., max. 26.5, min. 19.5.

Salinity: 36.39, max. 37.51, min. 34.55.

Plankton-type. Found in the Mediterranean, Atlantic and Pacific. — *D*.

¹ Seems to me to be nothing but the interior shells of *Panartus*, *Psiponartus* etc.

DICTYOCEPHALUS CYLINDRICUS Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. IV fig. 10.)

1898 *February*: 15° N., 71° W.**Temperature**: 27.**Plankton-type**. — *D.*

DICTYOCERAS NEGLECTUM Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. IV fig. 8.)

1898 *January*: 11° N., 52° W.; 15° N., 70° W.*March*: 32° N., 32° W.; 12°—17° N., 51°—47° W.*May*: 26° N., 42° W.; 26° N., 39° W.*June*: 30°—31° N., 52°—50° W.*September*: 9° N., 53° W.; 33° N., 74° W.*October*: 15° N., 70° W.; 26° N., 76° W.*November*: 19° N., 58° W.*December*: 19°—22° N., 58°—56° W.**Temperature**: 25.1 mean of 16 obs., max. 28.2, min. 18.2.**Salinity**: 36.00, mean of 14 obs., max., 37.18, min. 34.02.**Plankton-type**: *D.*DICTYOCHA STAPEDIA Hkl.¹

(Chal. pag. 1561 Pl. CI fig. 11—12.)

1898 *January*: 32° N., 74° W.*February*: 32° N., 74° W.*March*: 7°—12° N., 65°—50° W.; 41° N., 21°—23° W. to 44° N., 17° W.*April*: 49° N., 22° W.*July*: 60° N., 23° W.*September*: 49° N., 3° W.; 56°—57° N., 28°—14° W.; 60° N., 3°—4° W.*October*: 56° N., 29° W. to 62° N., 7° W. and 60° N., 3° W.*November*: 40° N., 68° W.; 45° N., 50° W.; 56° N., 36° and 23° W.; 59° N., 2° W.¹ Ostensfeld's data for *D. fovea* used. Questionable whether a radiolaria or a silicoflagellate.

December: 55° N. 50° W.

1899 *January*: 45° N. 49° W.

February: 32° N. 47° W.

April: 44° N. 15° W.; 48° N. 9° W.

July: 57° N. 31° W.

Temperature: 14.5, mean of 26 obs., max. 26, min. 7.5.

Salinity: 35.01, mean of 19 obs., max. 36.0, min. 32.20.

Plankton-type: Found in the Indian and Pacific Oceans. S. ?

DICTYOPHIMUS GRACILIPES Bail.

(Glebe Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 26 Pl. II fig. 2.)

1898 *August* (July—September): 76° N. 15° E. to 80° N. 10° E. and
78° N. 3° W. (deep sea hauls from 325 m. and more.)

November: 56° N. 23°—36° W.

1899 *January*: 45°—48° N. 49°—39° W.

July: 71° N. 21° W. (deep sea haul from 225 m.)

September: 67° N. 3° W. (deep sea haul from 500 m.)

November: 51° N. 21° W.

Temperature: 10.5, mean of 5 obs., max. 12, min. 7.5 (surface).

Salinity: 35.55, mean of 5 obs., max. 35.55, min. 35.00.

Plankton type. Noted from the north Pacific and Kamtschatka. — ?

DIPLOCONUS FASCES Hkt.

(Monogr. pag. 405 Pl. XX fig. 7, 8.)

1898 *January*: 7° N. 53° W. to 14° N. 49° W.; 32° N. 74° W.

February: 5° S. 9° E.; 26°—30° N. 74° W.

March: 4° S. 10° W.; Canaries; 30°—32° N. 35°—32° W.;
9° N. 59° W.; 28° N. 74° W.

April: 10° N. 53° W. to 15° N. 49° W.

May: 28° N. 47° W. to 29° N. 39° W.

July: 19° N. 63° W. to 21° N. 58° W.; 29° N. 44° W. to 34°
N. 33° W.

August: 34° N. 73° W.

September: 12° N. 27° W.; Madeira; Azores; 33° N. 74° W.

October: Azores; 34° N. 74° W.

November: 4° N. 30° W.; 22° N. 53° W. to 29° N. 43° W.; Azores.

December: 29° S. 49° W.; 18° N. 67° W.; 36° N. 6° W.

1898 *January*: 35° N. 9° W.

March: 30° N. 35° W.

April: 32° N. 75° W.

May: 25° S. 7° E.

June: 14° S. 6° W. to 4° S. 18° W.; 21° N. 45° W.

July: 11°—12° N. 26°—27° W.

Temperature: 23._s, mean of 53 obs., max. 28, min. 16.

Salinity: 36._{ss}, mean of 38 obs., max. 37._{ss}, min. 33._{ss}.

Plankton-type. Found in the Mediterranean. — *D.*

DIPLOSPHÆRA DICTYOTA Hbk.

(Chall. pag. 247.)

1898 *December*: Azores.

Plankton-type. Noted from the Canaries. — *S.* 2

DORATASPIS.

Specimens of *Dorataspis* have been found in many samples from the tropical Atlantic, but as I am not convinced of the correctness of the determinations, I prefer to leave out all my notes about this genus.

ELAPHOCOCCUS CERVICORNIS Hbk.

(Monogr. pag. 370 Pl. XIV fig. 4-6.)

1898 *February*: 30° N. 74° W.

November: Azores.

Temperature: 18._s to 20._s.

Plankton-type. According to Hæckel, cosmopolitan, Mediterranean, Indian, Pacific. My specimens were found in Dermo- and Styli-plankton intermingled.

EUCHITONIA ECHINATA HBL.

(Chall. pag. 596 Pl. XLIII fig. 11.)

1898 *January*: 7° N. 53° W.; 7° N. 22° W.*December*: 18° N. 67° W.**Temperature**: 26.4 to 28.**Salinity**: 34.88.**Plankton-type**. HECKEL mentions this species from 38° N. 146° W., abyssal.

EUCHITONIA ELEGANS (EUM.)

(*Pteroclis eleg.* Eum. Abh. d. Berl. Akad. 1872 Pl. VIII fig. 3.)1897 *December*: 12° N. 50° W.1898 *November*: 19° N. 58° W.**Temperature**: 26.5 to 27.5.**Salinity**: 35.89.**Plankton-type**. Found in the Philippine Sea. — *D.*

EUCHITONIA MÜLLERI HBL.

(Monogr. pag. 538 Pl. XXX fig. 5-10.)

1898 *January*: 7°-12° N. 53°-50° W.*March*: 49° N. 16° W.; 41° N. 23° W.*May*: 41° N. 51°-54° W.*September*: 9° N. 53° W.*October*: 26° N. 76° W.*November*: 19° N. 58° W.*December*: 18°-19° N. 67°-58° W.; 34° N. 38° W.; 49° N. 30° W.1899 *March*: 47° N. 8° W.**Temperature**: 20.5, mean of 14 obs., max. 28, min. 11.**Salinity**: 35.85, mean of 13 obs., max. 36.02, min. 34.65.**Plankton-type**. Occurs in all Seas. HBL. — *D.*

EUCHITONIA TRIANGULUM (EHR.)

(Stylocelis Ehr. Abh. d. Berl. Akad. 1872. Pl. VIII fig. 9.)

1898 *October*: 21° S. 36° W.1899 *January*: 45° N. 49° W.*June*: 14° S. 6° W.**Temperature**: 19, mean of 3 obs., max. 23, min. 12.**Salinity**: 36.18 N., mean of 3 obs., max. 37.21, min. 35.51.**Plankton-type**. Noted from the Pacific and the Azores. — *D.*?**EUCHITONIA YPSILOIDES** Hbk.

(Chall. pag. 536.)

1898 *December*: 18° N. 67° W.**Temperature**: 26.5.**Salinity**: 34.55.**Plankton-type**. Noted from the Mediterranean and the Canaries. — My specimen was found in Styli- and Desmo-plankton intermingled.**EUCYRTIDIUM CIENKOWSKII** Hbk.

(Chall. pag. 1493 Pl. LXXX fig. 9.)

1898 *February*: 16° N. 71° W.*March*: 8°—9° N. 59° W.*December*: 19° N. 58° W.**Temperature**: 26.5, max. 27, min. 26.**Salinity**: 35.50 to 35.55.**Plankton-type**. Found in the South-Pacific, abyssal. — *D.***EUCYRTIDIUM SCALARINUM** Hbk.

(Chall. pag. 1494.)

1897 *December*: 12° N. 50° W.; 32° N. 33° W.1898 *February*: 26° N. 74° W.*September*: 9° N. 53° W.; 15° N. 71° W.*December*: 18° N. 67° W.

- Temperature:** 2 $\frac{1}{2}$ s, mean of 6 obs., max. 28, min. 19.
Salinity: 34.48, mean of 3 obs., max. 34.96, min. 34.01.
Plankton-type: Found in the N. Atlantic, 36° N. 50° W.

EUCYRTIDIUM TROPEZIANUM (J. MÜLL.)

Lithonotus trop. MÜLL., *Abh. d. Berl. Akad.* 1858 pag. 42, Pl. VI fig. 4-6.)

1897 *December* and

1898 *January:* 7° N. 53° W.; 25°-32° N. 74° W.; 43° N. 17° W.;
 32° N. 33° W.; 20° N. 36° W.

March: 32° N. 32° W.; 41° N. 23° W.; 45° N. 13° W.

May: 26° N. 52° W.; 41° N. 59° W.; 32° N. 36° W.

June: 22° N. 60° W.; 25° N. 57° W.

July: 21° N. 58° W.; 24° N. 54° W.; 26° N. 48° W.; 31° N.
 30° W.

August: 22°-25° N. 74° W.

September: 15° N. 71° W.; 20° N. 74° W.

October: 21° S. 36° W.; Azores.

November: 19° N. 58° W.; 22° N. 53° W.; 29° N. 43° W.

December: 18° N. 67° W.; 19° N. 58° W.; 25° N. 52° W.;
 41° N. 66° W.

Temperature: 23.5, mean of 31 obs., max. 28.5, min. 11.5.

Salinity: 36.15, mean of 24 obs., max. 37.17, min. 34.02.

Plankton-type. Noted from the Mediterranean. — *D.*

EUCORONIS CHALLENGERI HUXL.

(*Chsl.* pag. 378 Pl. LXXXII fig. 4.)

1898 *January:* 7° N. 53° W.

February: 16° N. 71° W.

July: 21° N. 58° W.

September: 15° N. 70° W.

December: 41° N. 66° W.

Temperature: 23, mean of 5 obs., max. 28.4, min. 12.

Salinity: 34.66 and 34.63 (doubtless anomalous).

Plankton-type. Occurs in the Pacific and Indian Oceans. —
 My specimens are all from the western tropical Atlantic. — *D.*

EUCORONIS NEPHROSPYRIS Hkt.

(Chall. pag. 977 Pl. LXXXII fig. 5.)

1898 *November*: 19° N. 58° W.
December: 18° N. 67° W.

Temperature: 26.8.**Salinity**: 34.88 to 35.22.**Plankton-type.** Occurs in the Mediterranean and Indian Ocean. — *D.***EUPHYSETTA LUCANI** BERGERT.

(Ergebn. d. Plankton Expedition A. Pl. VI fig. 8.)

1899 *January*: 45° N. 49° W., very rare**Temperature**: 12.**Salinity**: 35.51.**Plankton-type.** The sample in which this species was found, contained chiefly Tricho-plankton and some Styli-plankton.**EUPHYSETTA NATHORSTII** Cr.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 29 Pl. II fig. 3.)

1898 *July*: 78° N. 3° W. (deep sea haul).**Plankton-type**: ?**EUPHYSETTA PUSILLA** Cr.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. III fig. 16.)

1899 *January*: 45° N. 49° W.**Temperature**: 12.**Salinity**: 35.51.**Plankton-type** ?

EUSCENIUM TRICOLPIUM H&L.

(Chal. pag. 1147 Pl. LIII fig. 13.)

1898 *March*: 62° N. 2° E.*July*: 78° N. 3° W. (deep sea haul from 2,000 m.)*November*: 53° N. 32° and 50° W.; 56° N. 36°, 30° and 23° W.*December*: 43° N. 57° W.1899 *March*: 64° N. 12° W.*November*: 51° N. 21° W.**Temperature:** 9.1, mean of 5 obs., max. 13, min. 6.8**Salinity:** 34.22, mean of 5 obs., max. 35.22, min. 34.21.

Plankton-type. According to H&L this species has been found in the central Pacific, abyssal; according to the above data it occurs in the Northern Atlantic in most cases associated with Styli-plankton, but it seems nevertheless not to be a true Styli-plankton-form. To judge from its non occurrence in the Atlantic, S. of 40°, it seems as if it derived from the Polar Basin or N. Pacific, as is probably the case also with many other radiolaria of the Northern Atlantic.

GAZELLETTA HEXANEMA H&L.

(Chal. pag. 1671 Pl. CXX fig. 5.)

1898 *March*: 49° N. 18° W.**Temperature:** 11°.**Salinity:** 35.23.

Plankton-type. Found in the Atlantic, Mediterranean, Indian and Pacific. My specimens were found in Styli- and Tricho-plankton intermingled. — S. ?

HALIOMMA ECHINOSPHERA CL.

(K. Sv. Vol. Akad. Handl. Vol. XXXIV n. 1 Pl. V fig. 5.)

1899 *January*: 45° N. 49° W.**Temperature:** 12.**Salinity:** 35.22.**Plankton-type:** ?

HALIOMMA IRREGULARE CL.

K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 4 Pl. V fig. 4.1

1890 *January*: 45° N. 49° W.**Temperature**: 13.**Salinity**: 35.34.**Plankton-type**. ?**HALIOMMA SPINULOSUM** J. MULL.

Abh. der Berl. Akademie 1858 pag. 39 Pl. IV fig. 6.)

1897 *December*: 12° N. 50° W.1898 *February*: 13°—16° N. 70°—71° W.; 21° N. 74° W.*March*: 20° N. 56° W.; 30° N. 35° W.*June*: 10° N. 53° W.*July*: 15° N. 71° W.; 41° N. 58° W.*August*: 41° N. 57° W.*September*: 9° N. 53° W.; 15° N. 71° W.; Azores; 56° N. 21° W.*October*: 13° N. 70° W.*November*: 8°—13° N. 28°—27° W.; Azores.*December*: 18° N. 67° W.; 41° N. 56° W. to 44° N. 57° W.1899 *November*: 51° N. 13° W.**Temperature**: 22.5, mean of 22 obs., max. 28.2, min. 10.**Salinity**: 34.36, mean of 16 obs., max. 36.23, min. 32.06.**Plankton-type**. Noted from the Mediterranean and the central Pacific. — D. ?**HELIOSPHERA ACTINOTA** H&L.

(Monogr. pag. 352 Pl. IX, fig. 3.)

1898 *March*: 17° N. 47° W.*May*: 21° N. 38° W.*July*: 78° N. 3° W. (deep sea haul).*October*: 26° N. 76° W.*December*: 30° N. 16° W.1899 *January*: 29° N. 16° W.**Temperature**. 22.4, max. 26.4, min. 16.3.**Salinity**: 36.6, max. 36.13, min. 36.13.

Plankton-type. Noted from the Mediterranean, the Atlantic, and the Canaries. — *H.*

HELIOSPHERA MINUTA Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VI fig. 2.)

1898 *March*: 41° N. 21°—23° W.; 49° N. 18° W.; 62° N. 11° W.
August: 17° N. 71° W.

Temperature: 11.7, mean of 4 obs., max. 14.0, min. 8, exceptionally 27.4.

Salinity: 35.63, mean of 3 obs., max. 35.87, min. 35.47.

Plankton-type: S. ?

HEXACONTIUM ARMATUM Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VI fig. 5.)

1898 *November*: 50° N. 17° W.

Temperature: 11.4.

Salinity: 35.27.

Plankton-type: S.

HEXACONTIUM ASTERACANTHION Hxt.

(Monogr. pag. 441 Pl. XXIII fig. 5—8. The fig. 22 Pl. VI in VAN DER VEK'S D. Fauna u. Flora Grönlands, which has erroneously been named *Dicelocanthe heterocantha*, probably represents this species.)

1898 *March*: 62° N. 2° E.

1899 *November*: 51° N. 21° and 28° W.

Temperature: 7.4 (one obs.).

Salinity: 35.12 (one obs.).

Plankton-type. Found in the Atlantic, Mediterranean and Pacific. My specimens were found in Styli-plankton. — S. ?

HEXACONTIUM HOSTILE Gr.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 4 Pl. VI fig. 4.)

1898 *November*: 56° N. 23° W.**Temperature**: 10.5.**Salinity**: 35.32.**Plankton-type**: S. ?

HEXACONTIUM SETOSUM Hkl.

(Chal. pag. 158.)

1899 *January*: 45° N. 49° W.**Temperature**: 12.**Salinity**: 35.14.**Plankton-type**. Found in the Mediterranean, the Atlantic and the Pacific. — D. ?

HEXADORAS BOREALIS Gr.

(Gr. K. Sv. Vet. Akad. Handl. Vol. XXXI n. 3 pag. 30 Pl. II fig. 4. — *Diacyclops* sp. Anniv. L. c. Vol. XXXII n. 6. pag. 98.)1898 *March*: 63° N. 2° E.*July*: 77° N. 12° E. (deep sea haul).*August*: 80° N. 10° E. (deep sea haul).*September*: 72° N. 13° E. (deep sea haul).**Plankton-type**. ?

HEXALASPIS HELIODISCUS Hkl.

(Chal. pag. 875 Pl. CXXXIX fig. 2.)

1898 *January*: 11° N. 53° W.*May*: 29° N. 39° W.; 26° N. 52° W.*June*: 24° N. 58° W.; 31° N. 17° W.; 34° N. 33° W.; 37° N. 33° W.*July*: 21° N. 58° W.; 26° N. 48° W.

October: 30° N. 21° W.

November: 24° S. 29° W.; 22° N. 53° W.; 26° N. 48° W.;
36° N. 14° W.

December: 18° N. 67° W.; 25° N. 52° W.; 28° N. 17° W.

1899 *May*: 25° S. 7° E.

June: 14° S. 6° W.; 5° S. 17° W.

Temperature: 22.s, mean of 19 obs., max. 27.s, min. 14.s.

Salinity: 36.s, mean of 16 obs., max. 37.s, min. 34.s.

Plankton-type. Found in the central Pacific. — *D*.

HEXALONCHE AMPHISIPHON Huxl.

(Chall. pag. 182 Pl. XXV fig. 2.)

1898 *June*: 22° N. 60° W.; 23° N. 42° W.

September: 17° N. 48° W.

November: 19° S. 31° W.

Temperature: 25.s, mean of 4 obs., max. 27.s, min. 25.

Salinity: 36.s; mean of 4 obs., max. 37.s, min. 36.s.

Plankton-type. Found in the central Pacific. — *D*.

HEXALONCHE HEXACANTHA (L. MULL.),

(*Hottotiana* var. MULLER Abh. d. Berl. Akad. 1858 pag. 36 Pl. IV fig. 5.)

1898 *January*: 46° N. 11° W.

March: 49° N. 18° W.

November: 56° N. 23° W.

Temperature: 11.s, mean of 3 obs., max. 12.s, min. 10.s.

Salinity: 35.s₂ to 35.s₃.

Plankton-type. Found in the Mediterranean. — *S*.

HEXALONCHE OCTAHEDRA Huxl.

(Chall. pag. 181 Pl. XXII fig.)

1898 *November*: 56° N. 30° and 17° W.

December: 18° N. 67° W.

1899 *October*: 50° N. 15° W.

Temperature: 26.3; 11.3; 9.6

Salinity: 34.88; 35.03; 35.27

Plankton-type. Found in the central Pacific, abyssal.
S. ? D. ?

HEXALONCHE PHILOSOPHICA Hbk.

(Chall. pag. 186 PL. XXII fig. 4.)

1808 *March:* 40° N. 11° W.; 63° N. 2° E.

November: 53° N. 14° W.; 56° N. 17° and 30° W.

1809 *March:* 64° N. 11° W.

Temperature: 9.1, mean of 5 obs., max. 11.6, min. 6.1.

Salinity: 35.23, mean of 5 obs., max. 35.42, min. 35.04.

Plankton-type. Noted from the Färöe Channel and from Iceland. — S.

HEXASTYLUS NOBILIS G.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VI fig. 1.)

1808 *November:* 19° N. 60° W.

Temperature: 27.6.

Salinity: 35.22.

Plankton-type: D. ?

HEXASTYLUS PHÆNAXONIUS Hbk.

(Chall. pag. 171 Pl. XXI fig. 3.)

1898 *November:* 19° N. 57° W.

Temperature: 37.6.

Salinity: 35.22.

Plankton-type. Found in the central Pacific, abyssal. — D.

HYMENIASTRUM EUCLIDIS HXL.

(Chall. pag. 531 Pl. XLIII fig. 13.)

1898 *January*: 7° N. 53° W.; 12° N. 51° W.*March*: 4° N. 10° W.; 9° N. 59° W.*July*: 21° N. 58° W.; 41° N. 58° W.*August*: 41° N. 57° W.; Azores.*September*: 31° S. 36° W.; 9° N. 53° W.*November*: 19° N. 58° W.; 22° N. 53° W.*December*: 18° N. 67° W.; 34° N. 38° W.1899 *April*: 36° N. 74° W.*June*: 15° S. 6°—7° W.; 3° N. 20° W.**Temperature:** 25.6, mean of 16 obs., max. 28, min. 13.4.**Salinity:** 35.25, mean of 14 obs., max. 37.21, min. 34.25.**Plankton-type.** Found in the central Pacific. — *D.*

HYMENIASTRUM LEYDIGH HXL.

(Monog. 31, XXXI fig. 4, 5. — Small specimen, central disc 0.32 mm., arms 0.6 m. m. Patagium with 2 rows of caltula.)

1899 *January*: 45° N. 46° W.**Temperature:** 12.**Salinity:** 35.51.**Plankton-type.** Found in the Pacific, the Atlantic and the Mediterranean.

HYSTRICHASPIS DORSATA HXL.

(Chall. pag. 823 Pl. CXXVIII fig. 10.)

1898 *November*: 37° N. 27° W.**Temperature:** 20.**Salinity:** 36.25.**Plankton-type.** Found in the central Pacific. — *D. ? S. ?*

HYSTRICHASPIS PECTINATA Hkl.

(Chall. pag. 829 Pl. CXXXVIII fig. 8.)

1898 *March*: 4° S. 10° W.; 3° N. 16° W.*October*: Azores.*December*: 18° N. 67° W.1899 *February*: 32° N. 47° W.*June*: 5° S. 17° W.**Temperature**: 24._s, mean of 5 obs., max. 28, min. 19._s.**Salinity**: 35._{ss}, mean of 6 obs., max. 36._{ss}, min. 34._s.**Plankton-type**. Noted from the region of Sierra Leone. — D.**ICOSASPIS ELEGANS** Hkl.

(Chall. pag. 844 Pl. CXXXVI fig. 4.)

1898 *February*: 5° S. 4° E.*April*: 14° N. 70° W.*May*: 32° N. 57° W.**Temperature**: 21._s to 28.**Salinity**: 34._{ss} to 36._{ss}.**Plankton-type**. Found from Ascension to the Canaries. — S. ?**ICOSASPIS TABULATA** Hkl.

(Chall. pag. 843 Pl. CXXXVI fig. 3.)

1898 *October*: 56° N. 10° W.**Temperature**: 12.**Salinity**: 35._{ss}.**Plankton-type**. Found in the north Pacific, between Japan and San Francisco, abyssal. — S. ?**ICOSASPIS TETRAGONOPA** Hkl.

(Hallowellian Monogr. Pl. XXII fig. 13.)

1898 *March*: 23° N. 28° W.**Temperature**: 20.**Salinity**: 36._{ss}.**Plankton-type**. Found in the Mediterranean. — S. ?

LAMPROCYCLAS ÆGLES (EHR.)*(Palaemonetes Ægles* Ehr., *Microg.* Pl. XXXV B. B. IV fig. 18.)1898 *March*: 62° N. 2° E.**Temperature**: 7.4.**Salinity**: 35.13.**Plankton-type.** Found in the bottom mud of the northern Atlantic. — S. ?**LAMPROMITRA CORONATA** HEL.*(Chall. pag. 1214 Pl. LX fig. 7.)*1898 *January*: 32° N. 74° W.**Temperature**: 19.5.**Plankton-type.** Found in the central Pacific, abyssal.**LAMPROMITRA EROSA** CL.*(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. IV fig. 2, 8.)*1899 *January*: 45° N. 49° W.**Temperature**: 12.**Salinity**: 35.51.**Plankton-type**: ?**LITHARACHNIUM (TENTORIUM) HEL.** Sp.

(The determination is not trustworthy, and my specimens may belong, at least in part, to *L. neochanidius* or *L. egeica*, if these really be distinct species. I have published my notes, because the distribution of these forms seems to be of interest, especially as one specimen was found W. of Norway.)

1898 *March*: 32° N. 74° W.; 62° N. 2° E.*April*: 48° N. 29° W.**Temperature**: 7.5 to 13.5.**Salinity**: 35.12 to 35.13.**Plankton-type.** *Litharachnium tentorium* occurs in the Mediterranean, *L. egeica* has been found in the central Pacific and *L.*

arachnodiscus in bottom-mud from Greenland. The specimen found at 62° N, 2° E, occurred together with a number of other radiolaria, which seem to derive from the northern Pacific.

LITHELIUS ARBORESCENS Hkt.

(Chall. pag. 695.)

1898 *November*: 40° N, 67° W.

Temperature: 18.2

Plankton-type. Noted from the Färöe Channel. My specimen occurred in Styli- and Tricho-plankton intermingled.

LITHOLOPHUS LIGURINUS Hkt.

(Chall. pag. 736 — *L. costata* ARNAV. and *L. divinitatis* Hkt. included.)

1898 *July*: 36° N, 28° W.; 61° N, 4° W.; 78° N, 7° E.; 78° 1' E—3° W. (deep sea hauls ARNAV.)

August: 56° N, 13° W.; 76°—77° N, 11° E.; 79° N, 10° E. (deep sea haul ARNAV.)

September: 12° N, 27° W.; Azores; 56° N, 27° W.; 60° N, 3° W.; 71°—74° N, 19° E.

October: 21° S, 36° W.; 56° N, 10° W.; Westmannā.

November: 5° N, 30° W.; 34° N, 33° W.; 34—36° N, 10°—14° W.; 52° N, 38° W.; 53° N, 32° W.; 56° N, 23° W.

December: 26° S, 45° W.; Azores.

1899 *January*: 29° N, 16° W.

February: 32° N, 47° W.

April: 32° N, 75° W.; 37° N, 26° W.; 44° N, 15° W.

May: 50° N, 33°—30° W.; 62° N, 8° W.

June: 5°—7° S, 10°—11° W.; 62° N, 1° E. to 65° N, 1° W.

July: 71° N, 21° W. to 75° N, 20° W.

August: 56°—56° N, 26°—23° W.

September: 65° N, 2° W.

October: 56° N, 23° W.; 53° N, 31°—37° W.

November: 51° N, 13° and 21° W.

Temperature: 16.2, mean of 31 obs., max. 27.2, min. 6.2.

Salinity: 35.26, mean of 26 obs., max. 37.11, min. 34.21.

Plankton-type. *L. nigricans* is found the Mediterranean and central Pacific, *L. decimialis* also in the Atlantic and Indian Ocean, *L. arctica* from Davis's Strait. If they, as I believe, represent one species only, this species belongs principally to the east Atlantic and spreads thence to the northern and arctic Atlantic, being one of the most eurythermous forms of the *Stylidium* plankton.

LITHOLOPHUS RHIPIDIUM Hkl.¹

(Monogr. pag. 402 Pl. XIX fig. 6. — *L. decipiens* Hkl. included.)

1898 *September*: 15° N. 71° W.; 29° N. 75° W.

October: Azores.

November: 4° N. 30° W.; 45° N. 7° W.

December: Canary Islands; Azores.

1899 *March*: 36° N. 29° W.

April: 48° N. 9° W.

June: 6° S. 16° W.; 4° S. 19° W.

Temperature: 21.2, mean of 12 obs., max. 28.1, min. 12.1.

Salinity: 35.88, mean of 10 obs., max. 36.56, min. 34.96.

Plankton-type. Found in the region W. of Sierra Leone and in the Mediterranean. — S. D.

LITHOMELISSA THORACITES Hkl.²

(Monogr. pag. 301 Pl. VI fig. 2-8.)

1898 *January*: 7° N. 53° W.

February: 16° N. 71° W. to 30° N. 74° W.

May: 41° N. 51° W.

September: 9° N. 53° W.

November: 56° N. 23° W.

December: 18° N. 67° W.

1899 *January*: 45° N. 49° W.

Temperature: 20.1, mean of 9 obs., max. 28, min. 10.8.

¹ All observations before September 1898 excluded as not trustworthy.

² *Lithomelissa thoracites* Auct. (Kongl. Vet. Akad. Handl. Vol. XXXII n. 6 pag. 28 from the Arctic Sea is another species, or *Peridinium ? islandicum* CL.

Salinity: 35.13, mean of 5 obs., max. 36.01, min. 34.03.

Plankton-type. Found in the Atlantic, Mediterranean, Indian, Pacific. — S. ? D. ?

LITHONITRA LINEATA EMB.

(Gl. Koenig. *Sv. Vet. Akad. Handl.* Vol. XXXII n. 3 pag. 30 Pl. II fig. 7.)

1898 *July:* 78° N. 3° W. (deep sea haul).

August: 80° N. 10° E. (deep sea haul).

September: 72° N. 19° E. (deep sea haul).

Plankton-type. Found in the Atlantic, Mediterranean, Indian and Pacific. — ?

LITHOPERA BACCA EMB.

(Abb. d. Berl. Akad. 1872 Pl. VII fig. 1.)

1898 *June:* 23° N. 42° W.; 33° N. 48° W.

August: 22° N. 74° W.

October: 21° S. 36° W.

Temperature: 24.7, mean of 4 obs., max. 27.2, min. 22.

Salinity: 36.48, mean of 4 obs., max. 37.21, min. 36.25.

Plankton-type. Found in the tropical, central Pacific. — D.

LITHOPHYLLIUM FOLIOSUM J. MOLL.

(Abb. d. Berl. Akad. 1858 pag. 62 Pl. XI fig. 6-10.)

1898 *June:* 34° N. 33° W.

July: 49° N. 22° W.

December: 29° S. 49° W.

Temperature: 21.6, mean of 4 obs., max. 23.6, min. 19.

Salinity: 35.43, mean of 4 obs., max. 36.00, min. 34.81.

Plankton-type. Found in the Mediterranean. — S. ?

LITHOPHYLLIUM GLADIATUM Hbk.

(Chall. pag. 754 Pl. CXXX fig. 3.)

1898 *May*: 26° N. 42° W.*September*: 33°—35° N. 31°—30° W.**Temperature**: 23.₂ to 25.₈.**Salinity**: 36.₃₃ to 37.₁₆.**Plankton-type**. Found in the north Pacific. — *D*.

LITHOPTERA DARWINII Hbk.

(Chall. Rep. Narrative pag. 222 fig. 90.)

1898 *December*: 25° N. 52° W.**Temperature**: 24.₂.**Salinity**: 37.₁₇.**Plankton-type**. Noted from the region west of Patagonia. — *D*

LITHOPTERA MÜLLERI Hbk.

(Monogr. pag. 398 Pl. XX fig. 1, 2.)

1898 *October*: Azores.1899 *April*: 32° N. 75° W.**Temperature**: 21.₅ to 21.₈.**Salinity**: 36.₃₃ to 36.₂₈.**Plankton type**. Found in the Mediterranean. — *S. ?*

LITHOPTERA TETRAPTERA Hbk.

(Chall. pag. 779 Pl. CXXXI fig. 9.)

1898 *October*: Azores.*November*: Azores; 32° N. 38° W.*December*: Azores.**Temperature**: 19.₇, mean of 5 obs.; max. 22, min. 18.₂.**Salinity**: 36.₂₂ to 36.₂₉.**Plankton-type**. Noted from the region between Sierra Leone and Ascension. — *S. ?*

LITHOSTROBUS BOTRYOCYRTIS Hkt.

(Chall. pag. 1476 Pl. LXXIX (fig. 18, 19).)

- 1897 *December*: 12° N. 50° W.
 1898 *February*: 16° N. 71° W.
March: 9° N. 59° W.; 16° N. 70° W.; 45° N. 13° W.
September: 9° N. 53° W.
October: 21° S. 36° W.
November: 22° N. 53° W.; 50° N. 31° W.; 55° N. 44° W.;
 56° N. 30° and 23° W.
 1899 *January*: 45° N. 49° W.

Temperature: 18.4, mean of 13 obs., max. 28, min. 6.**Salinity**: 35.24, mean of 9 obs., max. 37.21, min. 33.72.**Plankton-type**. Found in the central Pacific, abyssal. — *D.*

LYCHNASPIS GILTSCHII Hkt.

(Chall. pag. 889 Pl. XCIV fig. 9.)

- 1898 *February*: 26° N. 74° W.
March: 4° S. 10° W.; 23° N. 28° W.; 9° N. 59° W.
May: 23° N. 56° W.; 28° N. 47° W.; 29° N. 39° W.; 30° N.
 42° W.; 32° N. 37° W.
June: 19° N. 63° W.; 27° N. 55° W.
July: 21° N. 58° W.; 26° N. 48° W.; 41° N. 58° W.
September: 9° N. 53° W.; 15° N. 71° W.
October: 26° N. 76° W.
November: 8° N. 28° W.; 22° N. 53° W.; 36° N. 14° W.;
 Azores.

Temperature: 24.1, mean of 21 obs., max. 28.4, min. 17.3.**Salinity**: 36.36, mean of 19 obs., max. 37.61, min. 33.58.**Plankton-type**. Noted from 21° S. 14° W. to 3° N. 15° W.
— *D.*

LYCHNASPIS UNDULATA Hkt.

(Chall. pag. 861 Pl. CXXXV fig. 2.)

- 1898
- December*
- : Azores.

Temperature: 18.2.**Plankton-type**. Noted from Ascension. — *S. ? D. ?*

PANARTUS DIPLOCONUS Hrk.

(Chall. pag. 379 Pl. XI. fig. 1.)

1898 *October*: 21° S. 36° W.**Temperature:** 22°.**Salinity:** 37.21.**Plankton-type.** Found in the central Pacific, abyssal. My specimen was found in Styli- and Desmo-plankton intermingled.**PANARTUS SPINOSUS** Hrk.

(Chall. pag. 381.)

1898 *December*: 16° N. 67° W.**Temperature:** 26.5.**Salinity:** 34.88.**Plankton-type.** Found in the north Pacific. — *D.* ? *S.* ?**PANARTUS TETRATHALAMUS** Hrk.

(Chall. 378 Pl. XI. fig. 3.)

1898 *March*: 12° N. 51° W.*November*: 19° N. 58° W.**Temperature:** 25.3 to 27.5.**Salinity:** 35.29.**Plankton-type.** Found in the Atlantic, Mediterranean and Pacific. My specimens were found in Desmo-plankton. — *D.***PANICIUM CORONATUM** Hrk.

(Chall. pag. 386 Pl. XI. fig. 4.)

1898 *November*: 19° N. 58° W.**Temperature:** 27.5.**Salinity:** 35.79.**Plankton-type.** Found in the central Pacific, abyssal. — *D.*

PERIDIUM (?) INTRICATUM Cl.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 31 Pl. II fig. 8.)

1898 *July*: 78° N. 3° W. (deep sea haul).**Plankton-type:** ?**PERIDIUM (?) LAXUM Cl.**

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 31 Pl. II fig. 9.)

1898 *September*: 72° N. 19° E. (deep sea haul).**Plankton-type:** ?**PERIDIUM (?) MINUTUM Cl.**(Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 31 Pl. III fig. 1. — *Lithothamnion thalassites* ABRU. non HER.)1898 *July*: 78° N. 3° W. (deep sea haul).*August*: 72° N. 10° E. (deep sea haul).*November*: 55° N. 44° W.**Temperature:** 6°.**Salinity:** 34.75.**Plankton-type:** ?**PERIPANARTUS AMPHICONUS HER.**

(Chall. pag. 383 Pl. XI. fig. 6.)

1898 *July*: 21° N. 58° W.**Temperature:** 27°.**Salinity:** 36.37.**Plankton-type.** Found in the central Pacific, abyssal. — *D.* ?

PERIPANICIUM AMPHICORONA H&L.

(Chall. pag. 387 Pl. XL fig. 8.)

1898 *March*: 9° N. 59° W.*December*: 18° N. 67° W.**Temperature**: 26.1 to 26.8.**Salinity**: 34.88 to 35.38.**Plankton-type**. Found in the central Pacific, abnormal. — *D*.**PHATNASPIS CRISTATA** H&L.

(Chall. pag. 869 Pl. CXXXVI fig. 6.)

1898 *March*: 6° S. 4° W.; 23° N. 28° W.**Temperature**: 20.9 to 26.3.**Salinity**: 35.02 to 36.21.**Plankton-type**. Found in the north Pacific. — *D*.**PHATNASPIS LACUNARIA** H&L.

(Chall. pag. 868 Pl. CXXXVI fig. 9.)

1898 *November*: Azores.**Temperature**: 18.5.**Plankton-type**. Found in the central Pacific.**PHORTICIUM PYLONIUM** H&L.(Chall. pag. 799 Pl. XLIX fig. 10. — Gl. Kongl. Sv. Vet. Akad. Handl. Vol. XXXII
n. 3 pag. 31 Pl. III fig. 2.)1898 *July*: 78° N. 3° W. (deep sea haul).*August*: 77°—80° N. 12°—10° E. (deep sea haul).*September*: 72°—76° N. 19°—15° E. (deep sea haul).*October*: 21° S. 36° W.

November: 40° N. 67° W.; 50° N. 61° W.; 55°—56° N. 44°—
30° W.

December: 41° N. 66° W.

1899 *January*: 56° N. 49° W.

February: 32° N. 47° W.

Temperature: 13.3, mean of 9 obs., max. 22, min. 6.

Salinity: 35.50, max. 37.51, min. 34.00.

Plankton-type. Found in the Mediterranean, Atlantic and Pacific. — S. ? D. ?

PHRACTASPIS BIPENNIS Hirt.

(*Parastipes bip.* Hirt. Monogr. pag. 413 Pl. XXI fig. 1, 2)

1898 *January*: 27° N. 37° W.

July: 42° N. 48° W.

December: Azores.

Temperature: 19.7, mean of 3 obs., max. 22, min. 17.2

Salinity: 35.33 (one obs.).

Plankton-type. Noted from the Canaries and the Mediterranean. — D. ?

PHRACTASPIS CATAPHRACTA (J. Müller.)

(*Acantihaueria cataph.* J. Müller. Abh. d. Berl. Acad. 1868 pag. 49 Pl. X fig. 7, 8)

1898 *January*: 7° N. 22° W.; 15° N. 70° W.; 32° N. 74° W.

February: 15° N. 74° W.

March: 10° N. 53° W.; 28° N. 38° W.

July: 33° N. 74° W.

Temperature: 24.5, mean of 7 obs., max. 28, min. 19.3.

Salinity: 35.61 (four obs.).

Plankton-type. Noted from the Canaries and the Mediterranean. — D. ?

PHRACTASPIS PROTOTYPUS Hbk.

(Ghall. pag. 809 Pl. CXXVII fig. 2.)

1898 *February*: 5° S, 4° E.*June*: 19° N, 63° W.*July*: 39° N, 23° W.*September—November*: Azores.**Temperature**: 22.2, mean of 7 obs., max. 28, min. 18.2.**Salinity**: 35.77, mean of 5 obs., max. 36.26, min. 34.12.**Plankton-type**. Found in the eastern tropical Atlantic, the Mediterranean, Indian and Pacific. — S. ?

PLAGIACANTHA ABIETINA R. Harw.

(Osgood, d. Radiol. Pl. VII fig. 6—8 b.)

1898 *November*: 53° N, 50° W.; 55° N, 44° W.**Temperature**: 6 to 7.2.**Salinity**: 34.29 to 34.72.**Plankton-type**. Found in the Mediterranean. My specimens occurred in Styli and Tricho-plankton intermingled.

PLECTANIUM SIMPLEX Cl.

(Kongl. Sc. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 32 Pl. III fig. 3.)

1898 *July*: 78° N, 3° W. (deep sea haul).*November*: 56° N, 30° W.**Temperature**: 7.2.**Salinity**: 35.**Plankton-type**. ?PLECTOPHORA ARACHNOIDES (CLAPE. & LACHM.)¹*Plagiocantha* sp. Etudes sur les inf. pag. 462 Pl. XXI fig. 9.)1898 *March*: 45° N, 13° W.; 40° N, 72° W.*April*: 43° N, 50° W.¹ Oosterfeld's data used.

May: Färöes; 62° N. 2° E.

June: S. Iceland; 71° N. 22° E.

July: 61° N. 4° W.

August: Färöes; 76°—78° N. 12°—8° E.

September: 64° N. 31° W.; Färöes; 60° N. 2° W.; between Norway and Spitzbergen.

October: S. of Iceland; Färöes; 59° N. 16° W.; 57° N. 27° W.; 58° N. 32° W.; 56° N. 31° W.

November: 56° N. 30°—36° W.; 53° N. 32° W.; 52° N. 38° W.; 45° N. 52° W.; 42° N. 61° W.; 40° N. 67° W.

December: 47° N. 45° W. to 42° N. 65° W.

1899 *January:* 45° N. 49° W.; 41° N. 69° W.

June: 62° N. 1° E. (deep sea haul).

July: 56°—57° N. 38°—31° W.

October: 53° N. 37° W.

November: 51° N. 21° W.

Temperature: 8.s., mean of 36 obs., max. 18.s., min. 5.

Salinity: 34.56, mean of 35 obs., max. 35.23, min. 31.55.

Plankton-type. *T.* and *C.*

POLYPETTA HOLOSTOMA Cl.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 3, pag. 32 Pl. III fig. 4.)

1898 *July:* 78° N. 3° W. (deep sea haul).

Plankton-type. ?

PORODISCUS FLUSTRELLA Huxl.

(Chall. pag. 591 Pl. XII fig. 1.)

1898 *August:* 41° N. 50° W.

1899 *January:* 45° N. 49° W.; 48° N. 39° W.

Temperature: 11 to 21.s.

Salinity: 34.25 to 35.25.

Plankton-type. Found in the Atlantic and Pacific. — *S.* ?

PORODISCUS HETEROCYCLUS Hbk.

(Monogr. pag. 403 Pl. XXIX fig. 3.)

1808 *May*: 61° N. 1° W.

Temperature: 7.5.

Salinity: 35.00.

Plankton-type. Found in the Mediterranean, Atlantic and Pacific. — S.

PSILOMELISSA GALEATA Emu

(Emu, Abb. d. Berl. Akad. 1872 Pl. VII fig. 25.)

1808 *February*: 15° N. 71° W.

March: 15° N. 49° W.

May: 41° N. 51° W.

July: 42° N. 48° W.

Temperature: 24, mean of 3 obs., max. 27, min. 19.

Salinity: 35.03 to 36.01.

Plankton-type. Found in the western tropical Pacific. — D.

PSILOMELISSA LONGISPINA Gr.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. IV fig. 4.)

1808 *January*: 32° N. 74° W.

May: 41° N. 51° W.

December: 18° N. 67° W.

Temperature: 21.5, mean of 3 obs., max. 23.5, min. 19.

Salinity: 34.88 to 36.00.

Plankton-type: D.

PTEROCANIUM PRÆTEXTUM Emu

(*Agelocanina* sp. Emu, Abb. d. Berl. Akad. 1872 Pl. X fig. 2. — *P. tricolatum* Hbk. included.)

1808 *January*: 12° N. 50° W.; 15° N. 70° W.; 25° N. 74° W.

February: 21° N. 74° W.

March: 12° N. 51° W.

April: 12° N. 51° W.

June: 10° N. 53° W.

July: 21° N. 58° W.; 25° N. 74° W.; 29° N. 74° W.; 33° N. 74° W.

August: 22° N. 74° W.; 25° N. 74° W.; 31° N. 73° W.

September: 0° N. 53° W.; 15° N. 70° W.; 33° N. 74° W.

October: 21° S. 36° W.; 26° N. 76° W.

November: 22° N. 53° W.; 32° N. 38° W.; 33° N. 33° W.; 47° N. 41° W.

December: 18° N. 67° W.

1899 *January*: 7° N. 53° W.

June: 14° S. 3° W.; 12° N. 52° W.; 15° N. 50° W.; 21° N. 45° W.

Temperature: 25.2, mean of 27 obs., max. 28, min. 16.

Salinity: 36.56, mean of 20 obs., max. 37.21, min. 34.62.

Plankton-type. Noted from Zanzibar and Ceylon. *P. tricol-puro*, which seems to me not to differ specifically, is found in the Atlantic and Pacific. — According to the above data this species occurs in the tropical, western Atlantic, in November in the region of the Newfoundland Banks. — *D.*

PTEROCORYS CAMPANULA HEL.

(Glab. pag. 1916 Pl. LXXI fig. 3.)

1897 *December* and

1898 *January*: 12° N. 50° W.; 15° N. 70° W.

February: 15° N. 71° W.

March: 9° N. 59° W.; 15° N. 49° W.

September: 0° N. 53° W.; 15° N. 70° W.; 41° N. 65° W.

November: 19° N. 58° W.

December: 18° N. 67° W.

Temperature: 26.1, mean of 8 obs., max. 28, min. 23.1.

Salinity: 35.62, mean of 5 obs., max. 35.68, min. 34.65.

Plankton-type. Found in the central Pacific. — According to the above data this species occurs in the tropical western Atlantic and advances in September beyond 41° N. — *D.*

PTEROCORYS IRREGULARIS Gr.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 32 Pl. IV fig. 1.)

- 1898 *March*: 62° N. 2° E.
July: 78° N. 3° W. (deep sea haul).
November: 56° N. 23° W.

Temperature: 10.s.**Salinity**: 35.5s.**Plankton-type**. S. ♀**PTEROSCENIUM ARCUATUM** Her.

(Conl. pag. 1362 Pl. XXVII fig. 4.)

- 1898 *January*: 43—44° N. 17° W.; 46° N. 11° W.
 1899 *November*: 51° N. 21° W.

Temperature: 12.s to 14.s.**Plankton-type**. Found in the central Pacific, abyssal. My specimens were found in Styli- and Tricho-plankton intermingled.**QUADRILONCHE CRUX** Gr.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. IV fig. 1.)

- 1898 *January*: 4° S. 29° W.; 29° N. 74° W.
February: 15° N. 71° W.; 26° N. 74° W.
March: 16° N. 53° W.; 9° N. 59° W.
June: 19° N. 63° W.
July: 15° N. 71° W.; 21° N. 58° W.
November: 26° N. 48° W.
December: 26° S. 45° W.; 18° N. 67° W.
 1899 *April*: 36° N. 74° W.

Temperature: 25.s, mean of 13 obs., max. 28, min. 21.s.**Salinity**: 36.0s, mean of 8 obs., max. 37.4s, min. 34.5s.**Plankton-type**. This species occurs in the western tropical Atlantic. — *D.*

RHAPHIDOZOOM PATAGONICUM Hkl.

(Chall. pag. 38.)

1898 *March*: 7° N. 17° W.**Temperature**: 27.s.**Salinity**: 35.2s.**Plankton-type**: *D.*

SAGENOSCENA PENICILLATA Hkl.

(Chall. pag. 1614 Pl. CVIII fig. 10.)

1898 *July*: 78° N. 3° W. (deep sea haul).**Plankton-type**. Found in the Antarctic Ocean, abnormal.

SEMANTIS DISTEPHANUS Hkl.

(Chall. pag. 957 Pl. LXXXIII fig. 3.)

1897 *December*: 12° N. 50° W.1898 *January*: 7° N. 53° W.*November*: 56° N. 23° W.**Temperature**: 21.s, mean of 3 obs., max. 26.s, min. 10.s.**Salinity**: 35.22 (one obs.).**Plankton-type**. Noted from the north of Ascension. — *D.*

SETHOCONUS CRINITUS Gr.

(Kongl. Sc. Vet. Akad. Handl. Vol. XXXIV Pl. III fig. 13.)

1898 *January*: 7° N. 53° W.*March*: 8° N. 59° W.*May*: 23° N. 66° W.*June*: 10° N. 53° W.; 19° N. 63° W.*July*: 41° N. 58° W.*August*: 22° N. 74° W.*September*: 33° N. 74° W.1899 *April*: 28° N. 75° W.**Temperature**: 25.s, mean of 8 obs., max. 28, min. 22.s.

Salinity: 35.95, mean of 7 obs., max. 36.50, min. 33.86.

Plankton-type. Belongs to the western tropical Atlantic. — *D.*

SETHOCONUS GALEA Gr.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 28 Pl. IV fig. 3.)

1898 *July:* 78° N. 3° W. (deep sea haul).

Plankton-type: ?

SETHOCONUS ORTHOCERAS Huxl.

(Chall. pag. 1294 Pl. LIV fig. 11.)

1899 *January:* 45° N. 49° W.

Temperature: 12.

Salinity: 35.51.

Plankton-type. The only specimen seen was found in Stylian Tricho-plankton intermingled. Noted from 37° S. 46° W. — *S.*

SETHOCYRTIS PYRUM Gr.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. IV fig. 3.)

1899 *January:* 45° N. 49° W.

Temperature: 12.

Salinity: 35.51.

Plankton-type: ?

SIPHONOSPHERA CYATHINA Huxl.

(Chall. pag. 105 Pl. VI fig. 10.)

1898 *February:* 30° N. 75° W.

March: area between 26° N. 29°—39° W., 28° N. 38° W. and 36° N. 29° W.

May: 29° N. 39° W.; 30° N. 42° W.

June: area between 23° N. 42° W., 24° N. 58° W. and 31° N. 50° W.; 41° N. 34° W.

July: 33° N. 74° W.
September: 33° N. 31° W.
October: 21° S. 36° W.

1899 *June*: 21° N. 45° W.
July: 35° N. 40° W.

Temperature: 28.8, mean of 16 obs., max. 27, min. 17.8.

Salinity: 36.18, mean of 13 obs., max. 37.3, min. 35.01.

Plankton-type. Noted from the west of tropical Africa. — *D.*

SIPHONOSPHERA SOCIALIS Huxl.

(Chart, pag. 103 Pl. VI fig. 1, 2,

- 1897 *December* and
 1898 *January*: 16° N. 18° W.; 20° N. 36° W.
February: 13° N. 70° W.
March: 22°—23° N. 43°—42° W.; 28° N. 58° W.; 37°—39° N.
 24°—25° W.
May: 26° N. 42° W.
June: 27° N. 55° W. to 43° N. 20° W.
August: 41° N. 50° W.; Azores.
September: 26° N. 30° W.
October: 21° S. 36° W.
November: 19° N. 58° W.; 24° N. 21° W.
December: 34° N. 38° W.
 1899 *March*: 25° N. 40° W.; 37° N. 26° W.
June: 8°—9° S. 13°—12° W.; 35° N. 40° W.
July: 11° N. 26° W.

Temperature: 22.5, mean of 26 obs., max. 27.5, min. 14.9.

Salinity: 36.18, mean of 20 obs., max. 37.01, min. 34.25.

Plankton-type. Found in the tropical and sub-tropical eastern Atlantic. According to the above data it occurs in the Sargasso Sea the Caribbean Sea and to 43° N. — *D.*

SPERMATOGONIA ANTIQUA LIND-FORSM. — *Sphaerostoma Zanted.*

(Diatomées de la Malaisie, Ann. du Jardin botanique de Halleuzorg, Vol. XI fig. 8.
 Gr. K. Sv. Vol. Akad. Handl. Vol. XXXIV p. 1 pag. 11.)

1897 *December* and

1898 *January*: 12° N. 50° W.; 35° N. 74° W.

February: 21° N. 74° W.

March: 41° N. 23° W.

May: 11° N. 52° W.

July: 33°—38° N. 75° W.; 40°—41° N. 67°—60° W.

August: 22°—30° N. 74° W.; 42° N. 62° W.; 45° N. 53° W.

September: 0° N. 53° W.; 15° N. 71° W.; 20°—29° N. 75° W.;
 41° N. 65° W.; 42° N. 57° W.

October: 30° N. 74° W.

November: Rio Janeiro; 56° N. 30°—23° W.

December: 18° N. 67° W.; 20° N. 40° W.

Temperature: 24., mean of 26 obs., max. 28., min. 9.

Salinity: 35.36, mean of 23 obs., max. 36.36, min. 33.02.

Plankton-type. Noted from the Malay Archipelago. — *D.*

SPHÆROZOUUM PUNCTATUM J. MULL.

(Holl. Monogr. pag. 628 Pl. XXXIII fig. 7—9.)

1898 *January*: 21° N. 43° W.

February: 26° N. 74° W.

March: 15° N. 49° W.; 36° N. 29° W.

April: 41° N. 19° W.; 45° N. 16° W.; 47° N. 32° W.

May: 34°—36° N. 32°—27° W.; 46° N. 38° W.

June: 44° N. 16° W.

July: Azores.

November: 26°—24° S. 30°—29° W.; 26° N. 18° W.

Temperature: 19., mean of 15 obs., max. 23., min. 13.

Salinity: 36.23, mean of 11 obs., max. 37.37, min. 35.05.

Plankton-type. Found in the Mediterranean, Atlantic, Indian
 and Pacific. — *S.* and *D.*

SPIROCYRTIS SCALARIS Huxl.

(Chall. pag. 1569 Pl. LXXVI fig. 14.)

1898 *December*: 18° N. 67° W.**Temperature**: 23.8.**Salinity**: 34.88.**Plankton-type**. Found in the central Pacific, abyssal. My specimen was found in Styli- and Desmo-plankton intermingled.**SPONGASTER TETRAS** Ehrh.

(Rat. Abb. d. Berl. Akad. 1878 Pl. VI 3. fig. 8.)

1898 *February*: 15° N. 71° W.*September*: 24° N. 74° W.*November*: 0° S. 31° W.; 19° N. 58° W.; 22° N. 53° W.; 47° N. 41° W.1899 *April*: 28°—34° N. 75°—74° W.*June*: 19° S. 0° W. to 3° S. 90° W.**Temperature**: 24.6, mean of 13 obs., max. 28, min. 16.**Salinity**: 36.68, mean of 11 obs., max. 36.61, min. 35.22.**Plankton-type**. Found in the Atlantic, Indian and Pacific.

— D.

SPONGODISCUS MEDITERRANEUS Huxl.

(Monogr. pag. 461 Pl. XI fig. 14, 15.)

1898 *January*: 15° N. 71° W.*August*: 40° N. 67° W.*December*: 25° N. 52° W.**Temperature**: 26 to 27.**Salinity**: 34.68 to 37.17.**Plankton-type**. Found in the Mediterranean. — D.**SPONGOSPHERA POLYACANTHA** J. McL.

(Abb. d. Berl. Akad. 1868 pag. 52 Pl. IV fig. 1—4.)

1898 *November*: Azores.**Temperature**: 18.5.**Plankton-type**. Noted from the Mediterranean and the Canaries. — S. ?

SPONGOSPHERA STREPTACANTHA Hkl.

(Monogt. pag. 455 Pl. XXVI fig. 1-3.)

1897 *December*: 45° N. 13° W.

1898 *February*: 5° S. 4°-9° E.

March: 43° N. 17° W.

August: 17° N. 71° W.

October: 21° S. 36° W.

December: Azores.

1899 *January*: 45° N. 49° W.

Temperature: 20.2, mean of 8 obs., max. 28, min. 12.

Salinity: 35.03, mean of 5 obs., max. 37.21, min. 33.96.

Plankton-type. =Common in all warmer seas (Hkl.) — S. (and D. ?).

SPONGOTROCHUS LONGISPINUS Hkl.

(Monogt. pag. 463 Pl. XXVII fig. 2, 3.)

1898 *February*: 16° N. 71° W.

March: 49° N. 18° W.

April: 49° N. 22° W.; 50° N. 9° W.

September: 16° N. 71° W.

Temperature: 19.3, mean of 4 obs., max. 28.4, min. 11.2.

Salinity: 35.35, mean of 4 obs., max. 35.35, min. 34.96.

Plankton-type. Found in the Mediterranean. — S. ?

STAURACANTHA MURRAYANA Hkl.

(*Xiphocantus Murrayi* Chall. Report Narrative I pag. 222 fig. 89.)

1898 *March*: 14° N. 50° W.

Temperature: 25.2.

Salinity: 36.21.

Plankton-type. Noted from 37° S. 28° W. — D.

STEURACANTHA ORTHOSTAURA Hkl.¹

(Chall. pag. 762 Pl. CXXX fig. 5.)

1898 *February*: 5° S. 9° E.**Temperature:** 27.5.**Salinity:** 33.5 (anomalous).**Plankton-type.** Noted from the south Pacific. My specimen was found in Desmo- and Styli-plankton intermingled. — *D.?*STEURACANTHA QUADRIFURCA Hkl.¹

(Chall. pag. 764 Pl. CXXX fig. 4.)

1898 *January*: 11° N. 52° W.*February*: 26° N. 74° W.*April*: 45° N. 16° W.*June*: 33° N. 48° W.*August*: 40° N. 66° W.*November*: Azores.1899 *June*: 26° S. 7° E.**Temperature:** 20.5, mean of 8 obs., max. 25, min. 13.**Salinity:** 35.55, mean of 4 obs., max. 36.55, min. 33.55.**Plankton-type.** Noted from 37° S. 46° W. and 38° S. 33° W.
— *D.?* *S.?*

STICHOPILIUM DAVISIANUM [Ehr.]

(C. R. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 33 Pl. IV fig. 6.)

1898 *July*: 78° N. 3° W. (deep sea haul).*September*: 76° N. 15° E. (deep sea haul).**Plankton-type.** Found in bottom-mud from Greenland. — ?¹ Very doubtful as species and scarcely different from *S. chlorocapsa*. Both probably the young state of some *Trochocapsa*.

STYLODICTYA ARACHNIA (J. MÜLL.)

(*Stylocyathia* or MÜLL. Abh. d. Berl. Akad. 1868 pag. 41 Pl. I fig. 8, 9.)

- 1898 *January*: 7° N. 53° W.; 30° N. 34° W.
February: 15° N. 71° W.; 30° N. 74° W.
March: 41° N. 23° W.; 49° N. 18° W.
May: 26° N. 42° W.
September: 23° N. 42° W.
October: 21° N. 36° W.; 26° N. 76° W.
November: 19° N. 58° W.; 22° N. 53° W.; 56° N. 23° W.
December: 25° N. 52° W.; 28° N. 47° W.; 34° N. 38° W.;
 29° N. 14° W.
- 1899 *January*: 33° N. 15° W.
December: 32° N. 47° W.
March: 27° N. 37° W.

Temperature: 20.5, mean of 21 obs., max. 27.5, min. 10.5.

Salinity: 35.55, mean of 17 obs., max. 37.55, min. 35.55.

Plankton-type. Found in the Atlantic, Mediterranean, Indian and Pacific. — *D.*

STYLODICTYA GRACILIS ERM.

(Abh. d. Berl. Akad. 1875 Pl. XXIII fig. 3.)

- 1898 *December*: 31° N. 43° W.; 40° N. 23° W.

Temperature: 17 to 20.

Salinity: 36.50 to 36.55.

Plankton-type. Found in the Atlantic and Pacific. — *D.*

STYLODICTYA HELIOSPIRA HETZ.

(Glauc. pag. 512 Pl. XII fig. 8.)

- 1899 *January*: 45° N. 40° W.

Temperature: 12.

Salinity: 35.55.

Plankton-type. Found in the Mediterranean. — *S.*

STYLODICTYA MULTISPINA Hirt.

(Monogr. pag. 496 Pl. XXIX fig. 5.)

- 1898 *February*: 13° N. 70° W.
March: 41° N. 21° W.; 49° N. 18° W.
October: 21° S. 36° W.
- 1899 *January*: 45° N. 49° W.
March: 47° N. 8° W.

Temperature: 17.1, mean of 5 obs., max. 26.1, min. 11.**Salinity:** 36.19, mean of 3 obs., max. 37.21, min. 35.03.**Plankton-type.** Found in the Atlantic, Mediterranean, Indian, Pacific. — S. ? (D. ?)

TESSARASPIS ARACHNOIDES Hirt.

(Cmil. pag. 886 Pl. CXXXVI fig. 1.)

- 1898 *January*: 7°—11° N. 53°—52° W.
March: 4° S. 10° W.; 3° N. 16° W.; 26° N. 29° W.; 9° N. 59° W.; 17° N. 47° W.
April: 31° N. 75° W.
May: 21° N. 48° W.; 13° N. 51° W.; 23° N. 56° W.; 26° N. 52° W.; 20° N. 60° W.
June: 19° N. 63° W.; 23° N. 42° W.; 24° N. 58° W.
September: 20° N. 74° W.
October: Azores.
November: 13° N. 26° W.; 34° N. 10° W.; 36° N. 14° W.; 22° N. 53° W.; 19° N. 58° W.; 32° N. 38° W.
December: 26° S. 45° W.; 19° N. 58° W.

Temperature: 24.1, mean of 22 obs., max. 28.1, min. 17.1.**Salinity:** 36.19, mean of 19 obs., max. 37.01, min. 34.81.**Plankton-type.** Found in the tropical Atlantic, west of Africa.

— D.

TETRAPYLE QUADRILOBA Ehrh.

(*Schizosomma quadr.* Ehrh. Abh. d. Berl. Akad. 1872 Pl. X fig. 12-14.)

1898 *January*: 7° N. 53° W.; 15° N. 70° W.

February: 21° N. 75° W.

March: 10° N. 53° W.

November: 19° N. 58° W.

December: 25° N. 54° W.

1899 *June*: 12° S. 9° W.

Temperature: 25.6, mean of 7 obs., max. 27.5, min. 22.

Salinity: 36.64, mean of 3 obs., max. 37.17, min. 35.22.

Plankton-type. Found in the Atlantic, Mediterranean, Indian and Pacific. — *D*.

THEOCALYPTRA CORNUTA (DALL.)

(*Carpocornium calyptra* Zerk. Abh. d. Berl. Akad. 1872 pag. 287 Pl. II (g, 9).)

1898 *March*: 63° N. 2° E.; 71° N. 1° W.

July: 78° N. 3° W. (deep sea haul).

August: 80° N. 10° E. (deep sea haul).

September: 76° N. 15° E. (deep sea haul).

November: area between 56° N. 26° W., 52° N. 38° W. and 56° N. 44° W.

December: 41° N. 66° W.

1899 *March*: 65° N. 13° W.

October: 53° N. 31° W.

November: 51° N. 21° and 34° W.

Temperature: 7.7, mean of 9 obs., max. 22, min. 2.3.

Salinity: 36.02, mean of 9 obs., max. 36.56, min. 34.72.

Plankton-type. Found in bottom-mud from Kamchatka and Greenland. The non occurrence of this species in the southern Atlantic and its occurrence at Kamchatka, as well as the low temperature, point to the conclusion that this species arrived ultimately from the northern Pacific through the Polar basin.

THEOCAPSA DEMOCRITI HXL.

(Chall. pag. 1427 Pl. LXXVI fig. 8.)

1899 *June*: 6° S. 16° W.**Temperature**: 26.7.**Salinity**: 35.15.**Plankton-type**. Found in the central Pacific, abyssal. — *D*.

THEOCONUS JUNONIS HXL. ?

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. IV fig. 8.)

March: 62° N. 2° E.**Temperature**: 7.1.**Salinity**: 35.12.**Plankton-type**. My specimen was found in Tricho-plankton (very poor). — ?

THEOCONUS ZANCLEUS (J. MÜLL.).

(*Encyrtid. zanc.* MÜLL. Abb. d. Berl. Akad. 1858 pag. 41 Pl. VI fig. 1-3.)1897 *December* and1898 *January*: 7° N. 53° W.; 12° N. 50° W.; 15° N. 70° W.*February*: 15° N. 71° W.; 26° N. 74° W.*March*: 9° N. 59° W.; 39 41° N. 25°-23° W.*April*: 12° N. 51° W.; 14° N. 70° W.*May*: 16° N. 71° W.*July*: 31° N. 39° W.; 26° N. 48° W.; 21° N. 58° W.; 25-33° N. 74° W.*August*: 22°-25° N. 74° W.*September*: 9° N. 53° W.; 41° N. 65° W.; 15° N. 71° W.; 33° N. 74° W.*October*: 26° N. 76° W.*November*: 22° N. 53° W. **December*: 49° N. 30° W.; 49° N. 58° W.; 43° N. 57° W.1899 *February*: 32° N. 47° W.*June*: 15° N. 49° W.

Temperature: 24.2, mean of 29 obs., max. 28.5, min. 13.
Salinity: 35.58, mean of 22 obs., max. 37.04, min. 34.05.
Plankton-type. Found in the Mediterranean. — *D.*

THEOCORYS BOREALIS Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 33 Pl. III fig. 5.)

1898 *July:* 78° N. 3° W. (deep sea haul).
August: 80° N. 10° E. (deep sea haul).
September: 76° N. 15° E. (deep sea haul).
January: 45° N. 49° W.

Temperature: 12 (one obs.).

Salinity: 35.54 (one obs.).

Plankton-type. My only specimen from the surface was found in Styli- and Tricho-plankton intermingled.

THEOCYRTIS ACULEATA Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. IV fig. 11)

1898 *November:* 56° N. 17° and 23° W., 48° N. 29° W.

Temperature: 12.5, mean of 3 obs., max. 15, min. 10.5.

Salinity: 35.51, mean of 3 obs., max. 35.54, min. 35.47.

Plankton-type. S. ? T. ?

THEOCYRTIS TURRIS Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. IV fig. 7.)

1899 *January:* 45° N. 49° W.

Temperature: 12.

Salinity: 35.51.

THEOPILIUM TRICOSTATUM Hkt.

(Chall. pag. 1322 Pl. LXX fig. 6 *Lampyrodiscus tricostatus* Hkt. included.)1897 *December*: 12° N. 50° W.1898 *February*: 13°—16° N. 70°—71° W.*March*: 9° N. 59° W.; 45° N. 13° W.; 48° N. 6° W.*April*: 7° N. 54° W.*May*: 41° N. 59° W.*July*: 26° N. 48° W.*August*: 25° N. 74° W.*September*: 15° N. 70° W.; 33° N. 74° W.; 41° N. 65° W.; 23° N. 42° W.; 32° N. 33° W.*October*: 21° S. 36° W.; 26° N. 76° W.; 56° N. 10° W.*November*: 56° N. 23°—30° W.*December*: 18° N. 67° W.**Temperature**: 22.1, mean of 19 obs., max. 28, min. 9.1.**Salinity**: 35.57, mean of 11 obs., max. 37.55, min. 34.55.**Plankton-type**. Found in the central Pacific. — *D.*

THOLOSPIRA CERVICORNIS Hkt.

(Chall. pag. 700 Pl. XLIX fig. 4, 5.)

1898 *March*: 44° N. 17° W.*November*: 56° N. 17° W.**Temperature**: 11.5 to 12.5.**Salinity**: 35.35.**Plankton-type**. Found in the central Pacific. — *S.?*

TROCHODISCUS ECHINIDISCUS Hxt.

(Cl. K. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 34 Pl. IV fig. 4.)

1898 *July*: 78° N. 3° W. (deep sea haul).**Plankton-type**. Found in the Fürøe Channel.

TROCHODISCUS HELIOIDES Gr.

(K. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 34 Pl. IV fig. 5.)

- 1897 *December*: 12° N. 50° W.
 1898 *February*: 15° N. 70°—71° W.
March: 9° N. 59° W.
July: 79° N. 10° E. (deep sea haul).
November: 55° N. 44° W.

Temperature: 21.4, mean of 4 obs., max. 27, min. 6.**Salinity**: 34.3 to 35.68.**Plankton-type**: *D.* ?

TRYPANOSPHERA BRACHYSIPHON Gr.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VI fig. 8.)

- 1898 *November*: 56° N. 17° W.
December: 41° N. 66° W.

Temperature: 11.6 to 12.**Salinity**: 34.66 to 35.35.**Plankton-type**. ?

XANTHOSPHERA LAPPAGEA Hrk.

(Chall. pag. 120 Pl. VIII fig. 10, 11.)

- 1899 *June*: 33° N. 48° W.
December: 41° N. 66° W.
 1899 *April*: 28° N. 75° W.

Temperature: 19.3, mean of 3 obs., max. 24, min. 12.**Salinity**: 34.79, mean of 3 obs., max. 36.42, min. 34.20.**Plankton-type**. Found in the central Pacific. — *D.* ?

XIPHACANTHA CILIATA Hekl.

(Chall. pag. 761 Pl. CXXIV fig. 4, 5.)

1898 *March*: 4° S. 10° W.**Temperature:** 26.8.**Salinity:** 35.29.**Plankton-type.** Noted from the eastern tropical Atlantic, between 10° S. 14° W. and 11° N. 18° W. My specimens were found among Destrø-plankton. — *D.*

XIPHACANTHA PLATYPTERA Hxt.

(Chall. pag. 761.)

1898 *January*: 10° N. 52° W.*March*: 14° N. 24° W.; 23° N. 28° W.; 41° N. 23° W.*April*: 41° N. 19° W.**Temperature:** 19.1, mean of 5 obs., max. 25, min. 13.**Salinity:** 36.56, mean of 4 obs., max. 36.91, min. 35.78.**Plankton-type.** Found in the Pacific. — *S. ?*

XIPHACANTHA QUADRIDENTATA (J. Müll.)

(Hxt. Monogr. pag. 387 Pl. XVII fig. 15 a, b.)

1897 *December*: 16° N. 48° W.**Temperature:** 25.8.**Plankton-type.** Found in the Mediterranean, west of Africa and the Azores. — *S. ? D. ?*

ZYGACANTHA LANCEOLATA (J. Müll.)

(*Amathussetea l.* Müll. Abh. d. Berl. Akad. 1858 pag. 48 Pl. XI fig. 12.)1898 *February*: 5° S. 9° E.**Temperature:** 27.1.**Salinity:** 33.98 (anomalous).**Plankton-type.** Noted from the Canaries and the Mediterranean. — *S. ?*

ZYGOCIRCUS PRODUCTUS (R. HERTWIG.)*(Lithothamnium prod., Hertw. Organism. d. Radiol. Pl. VII fig. 4.)*1898 *February*: 34° N. 73° W.*March*: 12° N. 51° W.*May*: 41° N. 51° W.*September*: 25°—33° N. 74° W.*October*: 26° N. 76° W.**Temperature**: 24.3, mean of 6 obs., max. 28, min. 19.**Salinity**: 36.13, mean of 4 obs., max. 36.26, min. 36.01.**Plankton-type**. Found in the Atlantic, Mediterranean and Pacific. — *D.***ZYGOCIRCUS RHOMBICUS** HERTW.*(Chall. pag. 946.)*1898 *February*: 16° N. 71° W.**Temperature**: 20.7.**Plankton-type**. Found in the south Atlantic. — *D. ? S. ?***ZYGOCIRCUS TRIQUETRUS** HERTW.*(Chall. pag. 947 Pl. 81 fig. 3.)*1898 *February*: 16° N. 71° W.**Temperature**: 20.7.**Plankton-type**. Found in the Atlantic, Mediterranean and Pacific. — *D. ? S. ?***ZYGOSTAURUS SAGITTALIS** HERTW.*(Chall. pag. 775 Pl. CXXXI fig. 8.)*1897 *December*: 12° N. 50° W.*February*: 20° N. 74° W.*March*: 23° N. 28° W.**Temperature**: 23.7, mean of 3 obs., max. 26.5, min. 20.6.**Salinity**: 36.31 (one obs.).**Plankton-type**. Found in the central Pacific. — *D.*

Rhizopoda.

GLOBIGERINA BULLOIDES n'Orb.²

(Hantzsch: Challenger Reports, Foraminifera pag. 593 Pl. LXXVII, LXXIX (fig. 3-7, *G. pachyderma* included.)

1868 *January*: 21° N. 17° W. to 4° S. 29° W.; 7°-11° N. 53°-52° W.; Caribbean Sea to 37° N. 74° W.; 41° N. 21° W. to 46° N. 11° W.

February: 5° S. 4°-9° W.; Caribbean Sea to 31° N. 73° W.

March: area between 4° S. 10° W., 1° S. 27° W. and Cape Verde; area between 9° N. 53°-59° W. and 25° N. 41° W.; area between 36° N. 29° W., 45° N. 13° W., 51° N. 27° W. and 42° N. 51° W.

April: Caribbean Sea to 31° N. 75° W.; area between the Engl. Channel, 59° N. 22°-33° W. and 42° N. 61° W.

May: some spots in the Sargasso Sea, between 32° N. 37° W., 13° N. 51° W. and 20° N. 60° W.; area between the Azores, Cape Finisterre, Rockall, the Shetlands, 61° N. 23°-28° W. and 41° N. 56° W.

June: 19° N. 63° W. to 25° N. 57° W.; Caribbean Sea; Sargasso Sea at some points between 19° N. 63° W., 33° N. 48° W.; 29° N. 36° W. and 23° N. 42° W.; area between Madeira, Cape Finisterre, 48° N. 17° W. and 37° N. 41° W.; 57° N. 28°-34° W.; 72° N. 22° E. (Arriv.)

July: 21° N. 58° W.; 26° N. 48° W.; 40° N. 69° W.; Azores; 58° N. 23°-40° W., as a rule common; 61° N. 4° W.; 62° N. 0° W.; 64° N. 3° W.; 78° N. 1° E.-3° W. (deep sea hauls, Arriv.)

² Ostenfeld's data, signed + and +, used.

August: Caribbean Sea; Azores; 47° N. 39° W.; 54° N. 47° W. to 56° N. 28° W.; 56° N. 13° W.; 63° N. 18° W. to 61° N. 8° W.; 76° N. 11°—12° E.; 77° N. 8° E.; 81° N. 23° E. (Amery); 76° N. 12° E. to 80° N. 10° E. (deep sea hauls, Amery.)

September: Caribbean Sea; 33°—38° N. 74° W.; 41° N. 65° W.; Azores; 47° N. 14° W.; 46° N. 39° W.; 53° N. 50° W.; area between the Shetlands, N. Iceland, E. Greenland (65° N. 36° W.), 58° N. 39° W. and 56° N. 12°—35° W.; between Norway and Bearen Island.

October: Caribbean Sea; 34° N. 74° W.; 32° N. 33° W.; Azores; 56° N. 10°—31° W.; N. of Scotland; Färöe Channel; S. of Iceland; 58° N. 48° W.

November: 34°—36° N. 10°—14° W.; area between 53° N. 50° W., 42° N. 64° W. and 52° N. 38° W.; 56° N. 17°—23° W.; S. of Iceland to the Färöes and the Shetlands.

December: Canaries; 44° N. 56° W.; S. of Iceland; N. of Scotland.

1899 *January*: 33° N. 14° W. to 35° N. 9° W.

April: 48° N. 9° W.; 44° N. 15° W.

May: 50° N. 33°—39° W.; 60° N. 1° E.

June: 25° S. 7° E.; 6° S. 16° W. to 3° S. 20° W.; 66°—67° N. 3° W. to 69° N. 13° W.; 64° N. 0° E., common in the depth of 450—200 metres, var. *pachyderma*; 72° N. 18° E.

July: rare in the deeper strata E. of Greenland, 71°—72° N. 21°—22° W. (var. *pachyderma*); 56° N. 33° W.

August: 55° N. 9° W. to 54° N. 46° W., sparingly.

September: 56° N. 12°—33° W., not rare; 65° N. 2° W. to 68° N. 8° W., on the whole rare.

October: 53°—56° N. 37°—38° W. to 56° N. 31° W., rare.

November: 53° N. 43°—48° W. to 48° N. 46° W., rare.

Temperature: 17.₆, mean of 157 obs., max. 28.₆, min. 5.₃.

Salinity: 35.₆₁, mean of 114 obs., max. 37.₄₄, min. 32.₃₇.

Plankton-type. Globigerina was found 1899 in June west of S. Africa (25° S.) and appeared again in the region of Ascension. It follows the Equatorial current to the north coast of S. America, enters the Caribbean Sea and follows the Florida current, whence it spreads into the Sargasso Sea, but occurs there on the whole

rarely. On the other hand it follows the African coast to Cape Verde and the Azores. In March and May it occurred across the whole Atlantic between 35° and 50° N., from the English Channel to New York. In May it was not rare along 60° N. from 30° W. to the Shetlands, had in August reached Spitzbergen and Iceland. In September it was not rare in the whole Irminger Sea and was seen also N. of Iceland. It still remained, in October and November, between Iceland and the Shetlands, but was in December remarkably rare in the whole Atlantic. — S. (exceptionally *D.*)

PULVINULINA MENARDI (D'ORB.)

(Bass: Rep. Challenger Foraminifera pag. 690 Pl. CIII fig. 1, 2.)

1898 *January*: 7° N. 53° W.

March: 4° S. 11° W.

1899 *May*: 25° S. 7° E.

June: 20° S. 1° E. to 3° S. 21° W.

Temperature: 19° to 27° .

Salinity: 35.17 to 35.68.

Plankton-type. Found throughout the whole Pacific. It was collected during the Challenger cruise at 37° — 38° S. 44° — 50° W., from 24° S. 14° W. to 11° N. 18° W. and at 1° — 2° N. 28° — 24° W. It has been found in soundings from 52° S. to 55° N. — *D.*

Chlorophyllaceæ.

HALOSPHERA VIRIDIS SCHMITZ.¹

(Mitt. zool. Stat. Kopenhagen, Vol. I, 1877, pag. 67—92 Pl. III, *H. minor* Oстенf. and
H. vir. var. gracilis Lemmermann not distinguished.)

1897 *December* and

1898 *January*: 9°—10° N. 26°—25° W.; area between 12° N. 50° W., 21° N. 43° W. and 25° N. 50° W.; Caribbean Sea; Bahamas; Azores to the Engl. Channel.

February: 26° N. 74° W. to 34° N. 73° W.; 50° N. 10° W.

March: 22° N. 43° W. to 33° N. 32° W.; Caribbean Sea; 28° N. 74° W.; 40° N. 68°—70° W.; 42° N. 51° W.; 45° N. 13° W.; 55° N. 12° W.

April: 10° N. 53° W.; Caribbean Sea; 34° N. 74° W.; 41° N. 19° W. to 48°—50° N. 8°—10° W.; 58° N. 2° W. to 61° N. 6° W.

May: 26° N. 42° W.; 32° N. 37° W.; 40° N. 68°—72° W.; 41° N. 54° W.; 50° N. 22° W.; 62° N. 2° E. to 59° N. 16° W.

June: area between Madeira, the Azores, 45° N. 23° W. and 46° N. 11° W.; N. Scotland.

July: Azores; 41° N. 58° W.

August: Azores; 40°—41° N. 59°—57° W.; area between 58° N. 7° W., 62° N. 10° W. and 61° N. 4° E.

September: Azores; mouth of the Engl. Channel; area between 56°—57° N. 12°—14° W., 59° N. 2° W., the Färöes and 60° N. 11° W.; N. of Iceland; 70° N. 21° E. to 73° N. 19° E.

October: 21° S. 36° W.; Azores; area between 56° N. 10°—12° W., 59° N. 16° W., the Färöes and 60° N. 3° W.

¹Murray's & Whiting's and Oстенfeld's data used.

November: 26° S. 31° W.; 29° N. 43° W.; 22° N. 53° W. to 19° N. 58° W.; Azores; area between 42° N. 64° W., 53° N. 50° W. and 50° N. 20° W.; 63° N. 11° W. to 60° N. 1° W., round the Färöes.

December: 14° S. 36° W.; 25° N. 52° W.; 34° N. 38° W. to 36° N. 34° W.; Canaries; Azores; 47° N. 45° W. to 42° N. 63° W.; round the Färöes, thence to Scotland.

1899 *January*: 34° N. 9° W. to 33° N. 15° W.; 43° N. 57° W.; Färöes, common.

February: Färöes.

March: 35° N. 16° W.

April: 41° N. 16° W. to 50° N. 6° W.

May: 48° N. 45° W.; 57°—60° N. 2°—1° E.

June: 6°—19° S. 16°—1° W.; 69° N. 13° W.

July: 20° N. 34° W.; 40° N. 38° W. to 48° N. 25° W.

August: 80° N. 3° E.

September: 56° N. 17° W., common; 72° N. 19° E.; 67° N. 3° W. to 63° N. 1° E.

October: 52° N. 14° W., common; 52°—56° N. 21°—23° W., rare.

November: 51° N. 13°—21° W.; 49° N. 40° W.; 47° N. 51° W., nowhere common.

Temperature: 14.6, mean of 185 obs., max. 28, min. 4.6.

Salinity: 35.78, mean of 149 obs., max. 37.41, min. 31.68.

Plankton type. Occurs in the Mediterranean and the Indian Ocean. The principal area of distribution in the Atlantic is from the Cape Verde Islands to the Azores and thence, between 40°—50°, both west of Europe (March to October) and east of America (maximum in November—December). Another important area is near the Färöe Channel (August to February). *Halosphæra* was seen in September N. of Iceland and N. of Norway. — S. (D).

Dinoflagellatæ.

AMPHIDOMA NUCULA STEIN.¹

(D. Org. d. infusioent. Pl. IV fig. 21-24.)

1897 *December*: Caribbean Sea; 23°-25° N. 51°-50° W.

1898 *January*: Azores.

February: 31°-32° N. 31°-34° W.; 28°-27° N. 39°-41° W.;
Caribbean Sea.

March: 42° N. 22° W.; 30° N. 45° W.

May: 43°-44° N. 23°-20° W.; 31° N. 43° W.; 16° N. 54°-
58° W.; Caribbean Sea.

Temperature: 23, mean of 25 obs., max. 27.2, min. 15.2.

Plankton-type: *D*.

AMPHISOLENIA PALMATA STEIN.²

(D. Org. d. infus. Pl. XXI fig. 41-45.)

1897 *December*: 32° N. 32° W.; 23° N. 48° W.

1898 *January*: Azores to 24° N. 40° W.; 32° N. 74° W.

February: 31° N. 35° W. to 25° N. 44° W.; Caribbean Sea;
30°-34° N. 74°-73° W.; 5° S. 0° W.

March: 4° S. 10° W.; 11° N. 19° W. to 18° N. 25° W.; area
between 39° N. 32° W., 29° N. 45° W., 15° N. 49° W. and
37° N. 24° W.; Caribbean Sea.

¹ Murray's & Whiting's data only.

² Stein.

April: 29° N. 38° W. to 16° N. 56° W. and 12° N. 51° W.; Caribbean Sea.

May: 28° N. 45°—47° W.; 16°—20° N. 58°—64° W.; Caribbean Sea; 41° N. 51° W.

July: Caribbean Sea; 40° N. 67° W.

August: 30° N. 74° W.; 40° N. 67° W.; 42° N. 50° W.

November: 19° S. 31° W.; 4° N. 90° W.; 13° N. 27° W.; Azores; 36° N. 1½° W.

December: Canaries; Azores to 34° N. 41° W.; 22° N. 66° W.

1899 *January*: Canaries to Gibraltar.

February: 32° N. 46° W.

June: 19° S. 1° W.

Temperature: 24.13, mean of 65 obs., max. 28.3, min. 16.4.

Salinity: 36.22, mean of 34 obs., max. 37.37, min. 33.29.

Plankton-type: Occurs in the Red Sea, Indian Ocean and Pacific. It belongs to the tropical Atlantic. It occurs in the Sargasso Sea (December to June), in the Caribbean Sea and the Florida current, in August to 42° N., and in December between the Azores and the Canaries. — *D.*

AMPHISOLENIA THRINAX Schüfft.¹

(*Pflanzenleben der Hochsee* pag. 271 fig. 81.)

1898 *January*: 32° N. 74° W.

February: 13°—15° N. 70°—71° W.; 27°—25° N. 41°—44° W.

March: 14° N. 50° W.; 29°—31° N. 45°—42° W.

September: 40° N. 66° W.

October: 21° S. 36° W.

December: 30° N. 16° W.

Temperature: 22.4, mean of 8 obs., max. 27, min. 19.4.

Salinity: 36.11, mean of 4 obs., max. 37.51, min. 35.51.

Plankton-type. Found in the Pacific and Indian Ocean. It rarely occurs in the tropical Atlantic, east and west, the Sargasso Sea, the Caribbean Sea and the Florida current, where, in September, it reaches 40° N. — *D.*

¹ Murray's & Whitting's data used.

CERATIUM ARCTICUM (EHR.)¹

(EHR. Microg. Pl. XXXV A fig. A. *C. tripos* var. *labradoricum* Schüdt Pflanzenleh. der Hochsee pag. 308. var. *labradoricum* Vanhöffen Grönl. Exp. II Pl. V fig. 8. *C. tripos* var. *arctica* CL. Fifteenth annual report of the Fishery Board for Scotland, for 1898, fig. 3.)

- 1898 *February*: 50° N. 10° W.; 45° N. 50° W.
March: 71° N. 2° W.; 63° N. 1° 30' E.; 68° N. 26° W.; 49°—43° N. 72°—42° W.
April: 74°—75° N. 4°—9° W.; 43° N. 51° W. to 42° N. 61° W.
May: 71° N. 16° W. to 78° N. 2° 30' W.; 48° N. 33° W.; 45° N. 41° W.; 45° N. 45° W. to 40° N. 72° W.; 41° N. 52° W.
June: 69° N. 54° W.; 45° N. 41° W., common; 41° N. 59° W., common; 73° N. 22° E., rare; 77° N. 27° E., rare; 62° N. 2° 30' E., rare.
July: 67° N. 21°—22° W., rare; 64° N. 3° W., very abundant; 42° N. 48° W.; 36° N. 28° W. (Azores) very rare; 64° N. 3° E., very rare; Spitzbergen, 78° N. 0°—7° 30' E., rare.
August: 66° N. 18° W.; 65° N. 12° W., common; 63° N. 7° W., common; 66° N. 55° W. to 69° N. 53° W.; 42° N. 48° W. to 52° N. 55° W., very common; round Spitzbergen, common to rare.
September: between Spitzbergen and Beeren Island; 60° N. 55° W. to 69° N. 53° W., very common; 53° N. 50° W., rare.
October: Davis's Strait; 53° N. 52° W. to 46° N. 47° W., very common.
November: area between 42° N. 64° W., 53° N. 50° W., 54° N. 25° W. and 49° N. 23° W. (very common between 47° N. 41° W., 45° N. 50° W. and 48° N. 49° W., outside this area decreasing in frequency); 50° N. 9° W., rare and dead; 34° N. 10° W., one specimen only.
December: 47° N. 45° W., very common; 42° N. 49° W., very common; 45° N. 53° W., not rare; 42° N. 63° W., rare.
- 1899 *January*: 49° N. 20° W., not rare; 49° N. 30° W., common; 48° N. 39° W., dead specimens common; 45° N. 49° W., very common; 43° N. 57° W., very common.

¹ Ostenfeld's data for *C. tripos* var. *labradoricum* used.

March: 65° N. 13° W., rare.

May: 38° N. 74° W. to 50° N. 39° W., very common between 43° and 57° N.; 75° N. 2° E., rare.

June: 66°–69° N. 3°–13° W., not common; 62° N. 1° E. to 65° N. 1° W. (rare in deep sea hauls from 200–0 metres); 72° N. 18° E. to 75° N. 16° E., rare.

July: 79° N. 10° E., very rare; 71° N. 32° E. to 79° N. 53° E. (common at 73°–75° N. 41°–48° E.); 51° N. 47° W. to 52° N. 54° W., common.

August: 71° N. 20° W. to 73° N. 24° W., usually rare, but common at 71° N. 23° W.; 80° N. 51° E., rare; 78° N. 47° E., common, thence rarer to 74° N. 31° E., 56° N. 31° W., 54° N. 46° W., rare; 52° N. 53° W., very abundant.

September: 71° N. 15° W., rare, to 68° N. 8° W., common; 67° N. 4° W., rare, 79° N. 11° E. to 75° N. 17° E., more or less rare; 56° N. 33° W., rare; 52°–53° N. 55°–52° W., very abundant.

October: 56° N. 38° W., rare.

November: 53° N. 48° W., rare.

Temperature: S.a. mean of 36 obs., max. 22, min. 0.¹

Salinity: 33.4, mean of 36 obs., max. 36.3, min. 30.33.

Plankton-type. This species is a very characteristic arctic form, which, to judge from the low mean salinity, belongs to the coast regions of Spitzbergen, Greenland and the Newfoundland Banks, whence it spreads by under currents across the ocean towards Europe. It occurs in the northern Pacific (Lemmermann). — *Ny (T.)*.

CERATIUM TRIPOS VAR. ARCUATA GOUSSIER.

(Ann. Musée d'hist. nat. de Marseille. Zool. Vol. I 1883 n. 8 pag. 25 Pl. II fig. 42.)

1898 *March*: 6° S. 4° W.; 3° N. 16° W.

June: 23° N. 42° W.; 29° N. 36° W.; Azores to Madeira.

July: Caribbean Sea; 21° N. 68° W.; 29° N. 74° W.; area between 41° N. 60° W., 45° N. 40° W., the Azores and 31° N. 30° W.

¹ Only such samples as contained this species in abundance have been considered.

August: Bahamas; 34° N. 73° W.; 40° N. 66° W. to 46° N. 33° W.; Azores; 50° N. 12° W., rare.

September: 8° N. 25° W. to Cape Verde Islands; 38° N. 74° W.; 42° N. 57° W.; 47° N. 35° W. to 48° N. 29° W.; 46° N. 11° W.; Azores; 33° N. 31° W.

October: 21° S. 36° W.; Caribbean Sea; Bahamas to 38° N. 74° W.; 41° N. 59° W.; Azores.

November: Rio Janeiro; 26°—24° S. 30°—29° W.; 22° N. 53° W.; 26° N. 48° W.; 56° N. 36° W., common; area between 36° N. 14° W., 34° N. 10° W. and 29° N. 19° W.; 13° N. 26° W.; 8° N. 28° W.

December: 29°—26° S. 43°—45° W.; Porto Rico; 22° N. 56° W.; 25° N. 52° W.; 34° N. 38° W.; Azores; Canaries; Gibraltar.

1899 *January*: 32° N. 16° W.

March: 35° N. 16° W.; 18° N. 45° W.

April: 41° N. 17° W.; 28° and 36° N. 74° W.

May: 35° N. 75° W.

June: 19° S. 1° W.; 6° S. 16° W.; 7° N. 25° W.; 15 N. 50° W.

July: 11° N. 26° W.; 35° N. 40° W. to 45° N. 31° W.

Temperature: 23.1, mean of 94 obs., max. 28.8, min. 7.8.

Salinity: 35.8, mean of 87 obs., max. 37.0, min. 32.8.

Plankton-type: *D*.

CERATIUM (TRIPUS VAR.) ARIETINUM Cl.

(Kütz. Sc. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 3.)

1897 *December*: 40° N. 22° W.; 41° N. 18° W.

1898 *January*: 14° N. 51° W.; 7° N. 53° W.

February: 34° N. 74° W.

March: Azores to 45° N. 13° W.

April: 39° N. 24° W.; 48° N. 8° W.

May: area between 40° N. 16° W., 50° N. 14° W. and 42° N. 61° W.

June: 10° N. 52° W.; 22° N. 60° W.; 40° N. 10° W.; 50° N. 12° W.; 48° N. 33° W.

August: Caribbean Sea; Azores.

September, October: Azores.

November: 4° N. 28° W.; 29° N. 43° W.; 45° N. 36° W.;
Azores.

December: Azores.

1899 *January*: 33°—36° N. 15°—9° W.

February: 32° N. 47° W.

March: Azores to the Engl. Channel.

April: area between 40° N. 15°—16° W.; 46° N. 13° W. and
42° N. 18° W.

June: 15° N. 50° W., rare.

August and September: 56° N. 23° W., very rare.

October: 53° N. 25°—31° W. to 56° N. 31° W., rare.

November: 51° N. 13° and 34° W., rare.

Temperature: 19, mean of 55 obs., max. 27.2, min. 9.8.

Salinity: 35.88, mean of 41 obs., max. 37.88, min. 32.96.

Plankton-type. This form occurs in the Indian Ocean. Its principal area of distribution in the Atlantic is the eastern, temperate part. Nevertheless it has been found, although rarely, in the Equatorial Current, Caribbean Sea and the Antilles Current. In March and April it occurs from the Azores towards the Engl. Channel, but in May it spreads across the whole Atlantic, between 40° and 50° N., but later in the year it has been found there only rarely. — S.

CERATIUM (TRIPUS VAR.) AZORICUM Cl.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 6, 7.)

1898 *April*: Azores.

1899 *January*: 34° N. 12° W.

March: 36°—37° N. 29°—26° W.; 46° N. 11° W.

April: 40° N. 16°—18° W. to 44° N. 15° W.

May: 25° S. 7° E.

Temperature: 12°—19°

Salinity: 35.79 to 36.21.

Plankton-type: S

CERATIUM BELONE Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 13.)

1898 *April*: 10° N, 53° W.1899 *January*: 33°—34° N, 15°—12° W.**Temperature**: 17._s to 22.**Salinity**: 36._{ss} to 36._{st}.**Plankton-type**: *D*.

CERATIUM (TRIPUS VAR.) BUCEPHALUM Cl.

(Fifteenth annual report of the Fishery Board for Scotland, for 1896, pag. 332 fig. 5.
C. ovatum Vahlbüfen Grönl. Exp. II Pl. V fig. 13.)1898 *January*: 14° N, 70° W.*February*: 34° N, 73° W.*March*: 7° N, 17°—21° W.; Canaries: 44° N, 17° W.; 48° N, 6° W.; 41° N, 60° W.*April*: 41° N, 19° W.; 48° N, 8° W.; 39° N, 74° W.*May*: 46° N, 38° W. to 48° N, 26° W. (common); 61° N, 20° W., very rare (Ostenfeld); 40° N, 72°—68° W.*June*: Azores, 54° N, 9° W.*September*: 38° N, 74° W.; 71°—76° N, 15°—19° E. (Auriv.)*November*: 41° N, 69°—66° W.*December*: 41° N, 66° W.1899 *January*: 40°—41° N, 66°—69° W.*March*: 44° N, 16° W.; 46° N, 11° W.*May*: 50° N, 33°—39° W.; 57° N, 2° 41' E.; 35°—38° N, 75°—74° W.*June*: 15° N, 49° W.; 62° N, 2° E.*August*: 72° N, 26° E.*September*: 56° N, 38° W., rare.**Temperature**: 15._s, mean of 34 obs., max. 27._s, min. 5.**Salinity**: *a*. Western Atlantic: 33._{ss}, mean of 12 obs., max. 36._{ss}, min. 32._{ss}; *b*. Eastern Atlantic: 35._{ss}, mean of 14 obs., max. 36._{ss}, min. 34._{ss}.**Plankton-type**. This principal area of distribution is between the Azores and, along 50° N., from the Engl. Channel to 40° W.,

but also along the N. American coast, from New York to 41° N. 60° W. In May and June it crosses the Färöe Channel and enters the North Sea. Rare specimens may drift to the north of Norway and to Beeren Island. — S.

CERATIUM CANDELABRUM EHR.¹

(Strom D. Org. d. Infus. Pl. XV fig. 15—16.)

- 1897 *December*: 43° N. 18° W.; 12° — 25° N. 50° — 51° W.; Caribbean Sea.
- 1898 *January*: 7° N. 53° W. to 21° N. 43° W.; Caribbean Sea; Bahamas; Florida Current to 35° N. 74° W.; Azores.
- February*: 28° N. 39° W.; 21° N. 50° W. to 14° N. 79° W.; Bahamas; Florida Current to 34° N. 73° W.; Gulf of Guinea, 5° S. 8° E.; Canaries.
- March*: 4° S. 10° W.; Canaries; Azores; 12° N. 51° W. to 30° N. 35° — 45° W.; Caribbean Sea.
- April*: area between 7° N. 55° W., 32° N. 34° W. and 16° N. 56° W.; Caribbean Sea; 31° N. 75° W.
- May*: area between 34° N. 40° W., 27° N. 48° W. and 29° N. 39° W.; 16° N. 54° — 58° W.; area between 49° N. 23° W., 43° N. 45° W. and 41° N. 64° W.
- June*: 25° N. 58° W. to 33° N. 48° W.; 42° N. 50° W.; 48° N. 31° W.
- July*: 26° N. 48° W.; Caribbean Sea; Bahamas; 40° — 41° N. 69° — 58° W.
- August*: Caribbean Sea; Bahamas; Florida Current to 25° N. 74° W.; area between 38° N. 74° W., 44° N. 42° W. and 40° N. 48° W.; 49° N. 20° W.
- September*: Caribbean Sea; Bahamas; 41° N. 65° W. to 43° N. 48° W.; 8° — 12° N. 25° — 27° W.; Madeira.
- October*: 38° N. 73° W.; 21° S. 36° W.
- November*: 40° — 42° N. 67° — 64° W.; 0° S. 30° W. to 9° S. 34° W.; 18° S. 31° W. to 26° S. 30° W.; Rio Janeiro.
- December*: Canaries; off Gibraltar; 25° N. 52° W.; Caribbean Sea.
- 1899 *January*: 29° N. 16° W. to 34° N. 12° W.

¹ Murray's & Whiting's data used.

March: 35° N. 16° W.

April: 28°—36° N. 75°—74° W.

June: 27° N. 39° W.; 21° N. 45° W.; 20° S. 1° E. to 10° S. 11° W.

July: 11°—12° N. 26°—27° W.; 20° N. 34° W.; 45° N. 31° W.

October: 56° N. 23° W.

Temperature: 22., mean of 103 obs., max. 28., min. 9.

Salinity: 35.53, mean of 78 obs., max. 38.11, min. 32.84.

Plankton-type. This species is noted from the Mediterranean and Indian ocean. It occurs in the tropical Atlantic between 35° S. and 50° N., more abundantly in the western than the eastern parts, in the Sargasso Sea from December to June, in the west, between 40° and 50° N., from May to September, rarely later, from the Mediterranean to the Canaries in the winter. — *D.*

CERATIUM CONTORTUM GOURRET.

C. gibberum var. cont. Ann. du Muséum d'Hist. nat. de Marseille Zool. Vol. 17, 8, 1883 Pl. II fig. 93. — SCHOTZ Pflanzensystem d. Hochsee pag. 268. VII 5. no name.)

1898 *January*: 23° N. 42° W. to 11° N. 52° W.; Caribbean Sea; Bahamas.

February: Caribbean Sea; Bahamas.

March: 10° N. 20° W.; area between 23° N. 38° W., 25° N. 41° W. and 9°—10° N. 53°—59° W.

April: 12°—7° N. 51°—55° W.; 31° N. 75° W.

May: 21° N. 48° W. to 11° N. 52° W.; Caribbean Sea.

June: area between 36° N. 45° W., 16° N. 48° W. and 22° N. 60° W.

July: 33° N. 74° W. to 38° N. 74° W., thence to 41° N. 58° W.

August: 34° N. 73° W.; 40° N. 67° W. to 44° N. 42° W., common.

September: 15° N. 49° W. to 9° N. 53° W.; 20°—33° N. 74° W.; 41° N. 65° W.; 42° N. 57° W.

October: 35° N. 74° W.

November: 26°—18° S. 30°—31° W.; S. of Cape Verde Islands; 26° N. 43° W.

December: 26° S. 45° W.; 22° N. 55° W.

- 1809 *April*: 32°—36° N. 75°—74° W.
June: 7°—9° S. 14°—12° W.; 15° N. 44° W.
July: 11° N. 26° W.

Temperature: 25.₆, mean of 68 obs., max. 28.₃, min. 17.₃.

Salinity: 35.₀₁, mean of 51 obs., max. 37.₁₁, min. 32.₀₆.

Plankton-type. Found in the Mediterranean, Indian and Pacific. It occurs in the southern hemisphere both W. of Africa and E. of S. America. In the northern hemisphere it is confined to the western part, or W. of a line drawn from the Cape Verde Islands to the Newfoundland Banks. It occurs in the Sargasso Sea chiefly from winter to June. In July to September (maximum in August) it occurs between 40° and 45° N. — *D.*

CERATIUM CURVICORNE v. DAD.

(*C. trip. var. curvicorne* v. Dad. Természetráji fizetek, a Mus. nat. hung. Budapest vulgatz: 1887—88 Pl. III fig. 4, 8, 12, 14, 17. — SCOTT Pflanzenleben d. Hochsee pag. 268. Fig. VII c, without name.)

- 1897 *December*: 30° N. 24° W. to 33° N. 33° W.; 12° N. 50° W.
 1898 *January*: 0°—1° S. 26°—27° W.; 29°—35° N. 74° W.
February: 5° S. 4° E.; Caribbean Sea; Bahamas.
March: area between 1° S. 27° W., 3° N. 16° W. and 11° N. 20° W.; Azores to 23° N. 42° W.; 12° N. 50° W.; 37° N. 74° W.
April: 7° N. 55° W.; Caribbean Sea; 27°—34° N. 74° W.
May: 21° N. 48° W. to 28°—29° N. 47°—39° W.; 45° N. 43° W.
June: 29° N. 36° W.
July: 29° N. 44° W.; 33° N. 74° W.; 40° N. 67° W. to 42° N. 58° W.
August: 22° N. 74° W. to 30° N. 74° W.; 40° N. 66° W. to 45° N. 43° W. and 44° N. 42° W.
September: 8°—18° N. 25° W.; Caribbean Sea; 41° N. 65° W. to 42° N. 57° W.
October: Bahamas; 34° N. 74° W.
November: 18°—19° S. 30°—31° W.; 0° S. 31° W. to 13° N. 27° W.
December: 14° S. 36° W.; 26° S. 45° W.; 34° N. 38° W. to 19° N. 58° W.; Porto Rico; Canaries; Gibraltar; Azores.

1899 *January*: Canaries to 33° N. 15° W.

February: 32° N. 47° W.

March: 21° N. 43° W.

April: 28°—36° N. 74°—75° W.

June: 19° S. 1° W.; 3° S. 20° W. to 7° S. 14° W.; 9° N. 25° W.; 21° N. 45° W.

July: 28° N. 40° W.; 40° N. 38° W.

Temperature: 21.1, mean of 101 obs., max. 28.1, min. 9.1.

Salinity: 35.77, mean of 71 obs., max. 37.46, min. 33.69.

Plankton-type. Occurs in the Mediterranean, the Red Sea and Indian Ocean, in the Atlantic in the S. Equatorial and Brazil Currents. It follows the Equatorial Current along the N. coast of S. America into the Caribbean Sea, thence the Antilles and Florida Currents to the south of the Newfoundland Banks, between 40° and 45° N., where it occurs abundantly from July to September, thence, in the winter, to the space between the Azores, Gibraltar and the Canaries. It occurs in the Sargasso Sea not rarely from December to May, more rarely later. — *D.*

CERATIUM DIGITATUM SCHOTT.

(*D. Peridiniën d. Plankton-exp. Pl. XII fig. 42.*)

1898 *February*: Caribbean Sea.

March: 7° N. 55° W.

April: Caribbean Sea.

Temperature: 24.8, mean of 4 obs., max. 26.48, min. 20.1.

CERATIUM (FUSUS VAR.) EXTENSUM GOURRET.

(*Ceratium fusus* SCHOTT Pl. d. Hochsee pag. 271 fig. 80. *C. fusus var. extensum* GOURRET Ann. du Muséum d'hist. nat. de Marseille, zool. Vol. 1 n. 8 pag. 52 Pl. IV fig. 56. *C. fusus var. longicauda* CL. K. Sc. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 2, nomen nudum.)

1898 *January*: 1° S. 26°—27° W.; 11° N. 52° W.; 18° N. 46° W. to 45° N. 13° W.; Caribbean Sea; 26°—32° N. 74° W.; 7°—8° N. 22°—21° W.; 44°—45° N. 17°—11° W.

February: 5° S. 4° E.; 16° N. 71° W. to 30° N. 74° W.

March: 4°—1° S. 10°—15° W.; 11°—18° N. 19°—25° W.; 15° N. 49° W. to 43° N. 17° W.; Caribbean Sea; 32° N. 74° W.; 40° N. 56° W.; 45° N. 36° W.; 49° N. 18° W.

April: 41° N. 19° W.; 48° N. 29° W.; 16° N. 49° W.; Caribbean Sea; 31° N. 75° W.

May: Azores; area between 46° N. 31°—35° W. and 48° N. 30°—26° W.; 23° N. 45°—46° W.; 26° N. 52° W.

June: 22° N. 60° W. to 33° N. 48° W.

July: 24° N. 54° W.; Caribbean Sea; 25° and 38° N. 74° W.; 41° N. 60° W.; 34°—31° N. 33°—39° W.

August: 22° N. 74° W. to 34° N. 73° W.; 42° N. 62° W.; 47° N. 39° W.; 49° N. 20° W. to 50° N. 12° W.; Azores.

September: 9° N. 53° W.; Caribbean Sea; 20°—28° N. 74° W.; 46° N. 11° W.; Azores.

October: Caribbean Sea; 30° N. 74° W.; Azores.

November: 8° N. 28° W.; 13° N. 27° W.; Azores.

December: 20°—30° N. 14°—16° W.; Azores.

1899 *January:* 33° N. 15° W. to 35° N. 9° W.

March: Azores.

April: 41°—44° N. 18°—15° W.

June: 19° S. 1° E. to 14° S. 7° E.; 15° N. 49° W.; 26° N. 42° W.

July: 35° N. 40° W.; 48° N. 25° W.

August: 48° N. 13°—17° W.

Temperature: 21.4, mean of 121 obs., max. 28.1, min. 8.

Salinity: 35.61, mean of 80 obs., max. 37.23, min. 33.63.

Plankton-type. Found in the Mediterranean and the Pacific. In the Atlantic it follows the south Equatorial Current to the north of South America, enters the Caribbean Sea, the Florida Current and the Sargasso Sea. In May and August it occurs between 45° and 50° N., which seems to be the northern limit. It occurs during the whole year at the Azores. — *D. (S.)*

CERATIUM FLAGELLIFERUM CL.

(*C. trip. cor. flagellifera* CL. K. Sv. Vet. Akad. Handl. Vol. XXXII n. 3 1899 pag. 1, nomen nudum. — SCUDER Pflanzl. d. Hochsee pag. 267 fig. 77 V. h. (no name). — *C. trip. cor. infestum* GOUANER Ann. du Musée d'hist. nat. de Marseille, zool., Vol. 1 n. 8 pag. 29 Pl. III fig. 44?)

1897 *December* and

1898 *January*: 16° S. 37° W. to 8° S. 31° W.; 7°—11° N. 22°—20° W.; 7°—12° N. 53°—50° W.; 25°—35° N. 74° W.; 41° N. 22° W.; 27° N. 37° W. to 18° N. 46° W.

February: 5° S. 4°—9° E.; Caribbean Sea; 21°—30° N. 74° W.

March: 6° S. 4° W.; 7°—11° N. 17°—19° W.; area between 23° N. 28° W., the Azores and 9° N. 69° W.; 28°—32° N. 74° W.

April: 10° N. 52°—53° W.; 12° N. 51° W.; Caribbean Sea; 31° N. 75° W.

May: area between 11° N. 52° W., 32° N. 36° W. and 23° N. 56° W.; 41° N. 51° W.; Azores.

June: 10° N. 55° W.; area between 24° N. 58° W., 40° N. 37° W., 30° N. 36° W. and 23° N. 42° W.; Madeira.

July: 34° N. 33° W.; Azores; Caribbean Sea; 25°—38° N. 74° W.; 42° N. 48° W.

August: 40° N. 66° W. to 45° N. 40° W.; Azores.

September: 17° N. 48° W.; 20°—25° N. 74° W.; 41° N. 65° W.; 42° N. 57° W.; Azores; Madeira.

October: 21° S. 36° W.; 30°—34° N. 74° W.; Azores.

November: 18°—19° S. 31° W.; 34°—36° N. 10°—14° W.; Azores; 42° N. 64° W.

December: 29°—14° S. 49°—36° W.; area between the Canaries, Gibraltar, the Azores and 34° N. 38° W.; Porto Rico.

1899 *January*: 29° N. 16° W. to 33° N. 15° W. and 35° N. 9° W.

February: 32°—34° N. 47°—40° W.

March: Azores; 18° N. 45° W.

April: 9° N. 59° W.; 32°—36° N. 75°—74° W.

June: 19°—20° S. 1° E.; 15° N. 49° W.

July: 11° N. 26° W.; 20° N. 34° W.; 29° N. 41° W.

Temperature: 22.6, mean of 139 obs., max. 28.1, min. 15.1.

Salinity: 36.66, mean of 96 obs., max. 37.11, min. 28.16.

Plankton-type. The area of distribution is the whole tropical and subtropical Atlantic, between Africa and South America. It has been seen in 1898 May and July only very rarely north of 40° N., but in August it passed beyond that limit to at least 45° N. In September to January it occurred between the Azores, Gibraltar and the Canaries. — *D.*

CERATIUM FURCA Duj.¹

(STEIN: D. Oeg. d. Infusionsth. PL. XV E. 7-14.)

1887 *December* and

1898 *January*: 12° — 21° N. 19° — 17° W.; 4° N. 30° W. to 13° S. 35° W.; Caribbean Sea; 25° N. 50° W.

February: 21° — 27° N. 41° — 51° W.; Caribbean Sea.

March: 4° S. 10° W.; 3° N. 16° W.; 14° — 25° N. 17° — 18° W.; 29° N. 42° W.; 7° N. 55° W.; Caribbean Sea.

April: 39° N. 24° W.; 59° N. 22° W.; north of Scotland.

May: 16° — 24° N. 58° — 51° W.; area between 44° N. 19° W., 48° N. 29° W. and 50° N. 12° W.; 59° — 57° N. 28° — 25° W. to the Färöe Channel; Shetlands to 58° N. 5° E. and 66° N. 9° E.

June: 34° N. 46° W. and 57° N. 34° W., rare; area between 40° N. 10° W., 42° N. 33° W. and 47° N. 17° W., maximum at 46° N. 23° W.; N. of Scotland (common on some spots) to SE. Iceland to the west coast of Norway, from 61° to 68° N.

July: common at 39° N. 23° W., more or less rare at 49° N. 22° — 10° W.; common on the area between the Färöes, Scotland and the Shetlands, thence less common to 58° N. 32° W. and sparingly to 59° N. 2° E.

August: 45° N. 24° — 12° W.; 56° N. 34° — 28° W.; 40° — 41° N. 59° W.; Irish Sea and the Clyde area; common from the Shetlands to the Färöes and thence with decreasing abundance to Iceland and round that island; 60° N. 3° E., rare.

September: 45° — 49° N. 14° W. to 49° N. 3° W.; SW. and N. of Rockall, 56° N. 19° W. and 57° N. 14° W.; common N.

¹ Ostenfeld's, Murray's & Whiting's data used.

of Iceland, 66° N. 18° W.; 64° N. 31° W. to the south of the Shetlands. — N. of Norway, 70° N. 21° E. to 73° N. 19° E.

October: 50° N. 10° W.; 58° N. 32° W. to 56° N. 3° W., maximum in the Färöe Channel; S. of Iceland, rare.

November: 5° S. 33° W.; 17° N. 25° W. to 20° N. 23° W.; 49° N. 12° W.; 56° N. 23°—30° W.; Iceland to the Shetlands, rare.

December: 29° S. 49° W. to 22° S. 41° W., 18° N. 67° W.; 50° N. 9° W., rare; Färöes rare; 43° N. 58° W.

1899 *January*: 33° N. 12°—15° W.

March: 47° N. 8° W.

April: 37° N. 9° W. to 42° N. 18° W. and thence to the mouth of the Engl. Channel; 9° N. 59° W.

May: 51° N. 14°—26° W.; 60° N. 4° W.—1° E.; 58° N. 2° W. to 57° N. 3°—6° E.

June: 20° S. 1° E.; 9° S. 12° W. to 1° N. 23° W.; 9° N. 25° W.; 61°—63° N. 1° E.; 62° N. 2° E. to 67° N. 11° E.

July: 11° N. 26° W.; 48° N. 23°—25° W., common; 56°—57° N. 15°—23° W.; 62° N. 0° W., not rare.

August: 48° N. 13°—20° W., more or less rare; 60° N. 3° E.; 55° N. 9° and 26° W., rare; 72° N. 26° E.

September: area between 51° N. 21°—28° W. and 56° N. 17° W., rare; 72° N. 19° E. to 76° N. 16° E.

November: 51° N. 13° W., rare.

Temperature: 13., mean of 46 obs., max. 21, min. 6. (Samples containing this species sparingly not considered.)

Salinity: 35.12, mean of 44 obs., max. 36.13, min. 31.83.

Plankton-type. Found in the Pacific, the Indian Ocean and the Red Sea. In the Atlantic it follows the south Equatorial Current, west of Africa towards S. America, enters the Brazil Current and sparingly the northern Equatorial Current into the Caribbean Sea and the Florida Current. Very rare in the Sargasso Sea. It appeared very abundantly on the west coast of Africa towards the Azores, in the English Channel, off Iceland and in the Färöe Channel, sweeping in August—September round Iceland. From the Färöe Channel it enters the North Sea and follows the west coast of Norway to 76° N. — S.

CERATIUM FUSUS Duj.¹

(SIZEN: D. Organ. d. Infusionsth. Pl. XV fig. 1-6.)

1897 *December* and1898 *January*: 41°-43° N. 22°-18° W.; 6° N. 55° W.; 37° N. 73° W.*February*: 34°-38° N. 73°-74° W.*March*: along the west coast of Africa, from 11° N. 19° W. to 31° N. 12° W.; 36° N. 29° W. to 48° N. 6° W. and 55° N. 12° W.; 61° N. 11° and 23° W., rare; 40° N. 58° W.*April*: 41° N. 19° W.; the whole English Channel; 63° N. 10° W. and 60° N. 19° W. to 62° N. 2° E., rare; 39° N. 74° W.; 42° N. 47° W.; 47° N. 40° W.; 57° N. 49° W., rare everywhere.*May*: Azores, rare; 50° N. 22° W. to the English Channel; area between 58° N. 23° W., 59° N. 28° W. and the Shetlands, thence into the North Sea to the west coast of Norway; 40° N. 72° W. to 46° N. 35° W., on many points.*June*: area between 40° N. 10° W., 34° N. 46° W., 41° N. 59° W. and 50° N. 12° W.; 57° N. 34°-38° W.; S. Iceland to N. Scotland and 62° N. 2° E.; 69° N. 15° E.*July*: area between the Azores, 49° N. 22° W. and 40° N. 60° W.; round Iceland, more or less common; area between Iceland, 58° N. 33° W. (common) and 59° N. 2° E. (rare, but common E. of the Färöes).*August*: Azores; 49° N. 20° W. (common) to 41° N. 72° W.; area between Rockall, Scotland, the Shetlands, E. and S. Iceland, more or less common.*September*: 48° N. 34° and 7° W.; area between 56° N. 19° W., 65° N. 33° W. and 59° N. 1° W., more or less common; N. of Iceland, common; 70° N. 21° E. to 73° N. 19° E.; 43° N. 61° W., rare.*October*: 56°-57° N. 25°-18° W., not rare; S. Iceland to 59° N. 1° W., rare; 41° N. 67° W., rare.*November*: 56° N. 23° W., not rare; S. Iceland to the Färöes, rare; 47° N. 40° W. to 42° N. 58° W., rare to common.¹ Ostenfeld's data used. Murray's & Whitting's not used.

December: S. Iceland to Scotland, rare; 48° N. 40° W. to 42° N. 63° W., rare to common; 26° S. 45° W., rare.

1899 *January*: Färöes, rare; 40°—41° N. 66°—69° W.

March: 63° N. 14° W., very rare.

April: 41° N. 18° W.; 40° N. 33° W.; 49° N. 7° W., rare everywhere.

May: along 50° N. from 39° to 14° W., rare; W. of Scotland to 60° N. 4° W., rare; 60° N. 1° E. to 58° N. 9° E., varying from rare to common.

June: 20° S. 2° E.; 62° N. 1°—2° E. to 67° N. 11° E., as a rule rare.

July: 40° N. 38° W. to 48° N. 23° W., more or less rare; 57° N. 23° W.; 62° N. 0° W., not rare; 71° N. 32° E., very rare.

August: 55° N. 9° and 26° W., rare; 54° N. 43° W., rare.

September: 56° N. 17° W., common; 60° N. 3° E. to 67° N. 3° W., as a rule rare, but common at 63° N. 1° E.; 72° N. 19° E. to 77° N. 14° E.

October: 56° N. 15° W., not rare.

November: 51° N. 28° W., rare; 47° N. 51° W., not rare.

Temperature: 10.₃, mean of 26 obs., max. 18, min. 5.

Salinity: 34.₃₁, mean of 23 obs., max. 35.₃₈, min. 31.₉₆. (Only samples containing this species in abundance have been taken into calculation.)

Plankton-type. This common species occurs along the west coast of Africa and spreads, between the Azores and the English Channel, towards Iceland and the Färöe Channel, goes round Iceland and follows the Norwegian coast towards Beeren Island. In May it occurred across the whole Atlantic between 40°—60° N. — S.

CERATIUM GENICULATUM LEMMERM.

(*Cer. fissus* var. *genic.* LEMMERMANN *Abh. d. Naturw. Ver. Bremen* Bd. XVI H. 2, Pl. 1 fig. 17.)

1898 *February*: 26° N. 74° W., very rare.

Temperature: 23.₄.

Plankton-type. Found in the South Equatorial Current, 14° S. 27° W. — D.

CERATIUM GRAVIDUM GÖTTSCHEW.¹

(Source: D. Paridinén d. Plankton-exp. Pl. XI. fig. 81.)

- 1897 *December*: between 25° N. 50° W., 33° N. 51° W. and 23° N. 42° W.; Caribbean Sea; Azores.
- 1898 *January*: Caribbean Sea; Florida Current to 35° N. 74° W.; 11° N. 20° W.; 24° N. 17° W.; Azores.
- February*: 5° S. 0°—9° E.; 27°—28° N. 41°—39° W.; 21° N. 50° W. to 18° N. 76° W.; whole Caribbean Sea; N. of the Bahamas.
- March*: 4° S. 10° W.; 23° N. 28° W.; Caribbean Sea; 29°—31° N. 45°—42° W.; 43° N. 41° W.; 44° N. 23° W.
- April*: 19°—16° N. 52°—56° W.; Caribbean Sea; 31° N. 75° W.
- June*: 10° N. 52° W.; 42° N. 48° W.
- September*: 40° N. 65° W. to 46° N. 39° W.
- October*: Azores.
- November*: Azores; 22° N. 53° W.
- December*: 26° S. 45° W.; 25° N. 52° W.; Caribbean Sea; Azores.
- 1899 *February*: 32° N. 47° W.
- March*: Azores.
- April*: 32° N. 75° W.
- June*: 12° S. 8° W.
- November*: 43° N. 50° W.

Temperature: 22.1, mean of 34 obs., max. 27.1, min. 12.

Salinity: 35.99, mean of 21 obs., max. 37.41, min. 33.91.

Plankton-type. This species occurs in the Mediterranean and the Indian Ocean. In the Atlantic it follows the Equatorial Current into the Caribbean Sea and thence the Florida Current. It occurs in September between 40° and 45° N. in the western Atlantic and from December to March at the Azores and in the Sargasso Sea. — *D.*

¹ Murray's & Whiting's data used.

CERATIUM (?) HYPERBOREUM Cr.¹

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VIII fig. 14.)

1898 *August*: 81° N. 19° E.1899 *August*: 80° N. 16° E.**Temperature**: -0.33 and +2.42.**Salinity**: 25.33 to 33.33.**Plankton-type**: *Ny*.CERATIUM LIMULUS GOEBBELT.²

(SCHÜTZ: D. Peridineen d. Plankton-exp. Pl. IX fig. 32.)

1897 *December*: area between 29° N. 36° W., 24°—25° N. 51°—50° W. and 12° N. 50° W.; Caribbean Sea.1898 *January*: 9°—10° N. 25° W.; 17° S. 37° W.; 7° N. 53° W.; Azores to 32° N. 34° W.; 29°—35° N. 74° W.*February*: 31° N. 35° W. to 25° N. 44° W.; Caribbean Sea; 30° N. 74° W. to 34° N. 73° W.*March*: area between the Azores, 30° N. 35° W., 29° N. 45° W. and 28° N. 38° W.; 10° N. 53° W.; Caribbean Sea.*April*: 41° N. 20° W. to 16° N. 56° W.; Caribbean Sea.*May*: 16°—24° N. 58°—51° W.; 30°—32° N. 44°—42° W.*June*: Azores.*July*: Azores; Caribbean Sea; 41° N. 58° W.*August*: Azores; 34° N. 73° W.*September*: Azores; Madeira; Bahamas.*October*: Azores.*November*: Azores; 36° N. 14° W.; 0° S. 31° W.*December*: Canaries; Azores; 34° N. 38° W.; Porto Rico.1899 *January*: Canaries to Gibraltar.*February*: 32° N. 46° W.*March*: 24° N. 40° W.; Azores to the Engl. Channel.*April*: 41° N. 16° W.; 45° N. 13° W.; 28°—36° N. 74° W.*June*: 36° N. 30° W.*July*: 29° N. 40° W.; 12°—14° N. 27°—28° W.¹ According to a letter from Jørgensen the same as his *Gongaulax? trisacantha*. Jørgensen's paper was not published when the above was written.² Murray's & Whitting's data used.

Temperature: 20.₅, mean of 64 obs., max. 27.₈, min. 14.

Salinity: 36.₂₁, mean of 39 obs., max. 36.₅₂, min. 33.₈₈.

Plankton-type. This species follows the Equatorial Current into the Caribbean Sea, thence the Florida Current, only exceptionally beyond 35° N. It occurs in the Sargasso Sea to the Azores and Gibraltar. In March 1899 rare specimens drifted towards the Engl. Channel. — *D.*

CERATIUM LINEATUM ESK.¹

(*Cer. Jacea nov. latibus* Müh. in Scudder D. Peridiniaceae d. Plankton-expedition
Pl. IX fig. 35.

1897 *December:* 32°—34° N. 33°—36° W.; area between 24° N. 50° W., 19° N. 45° W. and 16° N. 48° W.; Caribbean Sea.

1898 *January:* 15°—16° S. 37° W.; 1° S. 27° W.; 14° N. 46° W.; Caribbean Sea; 25° N. 74° W.

February: 34° N. 31° W. to 25° N. 44° W.; Caribbean Sea; 34° N. 73° W.

March: 6°—7° N. 22°—21° W. to 16° N. 18° W.; area between 15° N. 49° W., 7° N. 55° W. and 14° N. 64° W.; 33°—37° N. 74° W.; 25° N. 41° W. to 45° N. 13° W.

April: 7° N. 54° W. to 14° N. 58° W.; Caribbean Sea; 31° N. 75° W.; Azores to 48° N. 8° W.

May: area between 11° N. 52° W., 57° N. 38° W., 60°—61° N. 20°—10° W. and 50° N. 14° W.

June: area between Cape Finisterre, the Canaries, 31° N. 50° W. and 48° N. 33° W.

July: Azores to 29° N. 44° W.; 41°—40° N. 58°—67° W.; area between 58° N. 32° W., 59° N. 6° W. and 63° N. 21° W.

August: 40° N. 66° W. to 45° N. 40° W., common; Azores; 48° N. 24° W.; Irish Channel; Shetlands to 57° N. 7° W.; S. of Iceland, across Denmark's Sound to E. Greenland.

September: Azores; 46° N. 11° W.; 41°—42° N. 65°—57° W.; Shetlands to 60° N. 6° W.; S. of Iceland to E. Greenland; 62° N. 21° W. to 65° N. 36° W.; 72° N. 19° E.

¹ Ostenfeld's data used.

October: Azores; 42° N. 64°—50° W.; 48° N. 29° W.; 67°—59° N. 27°—21° W.; 60° N. 4°—6° W.

November: 26°—24° S. 30°—29° W.; 5°—4° N. 33°—31° W.; Azores; 41°—43° N. 69°—61° W.; 48°—50° N. 29°—31° W.; 49° N. 12° W.

December: 26° S. 45° W.; Azores; Canaries; 43° N. 61°—57° W.

1899 *February*: 32° N. 47° W.

March: 34° N. 70° W.; 36° N. 29° W.; 35° N. 16° W.

April: 41°—42° N. 15°—18° W.; 49° N. 7° W.

May: 35° N. 76° W.; 50°—51° N. 33°—20° W.; 60°—61° N. 4°—5° W.; 58° N. 5° E.

June: 20° S. 2° E. to 3° S. 20° W.; 62° N. 0° E.

July: 20° N. 34° W.; area between 33° N. 41° W., 45° N. 31° W. and 48° N. 35° W.

September: 77° N. 14° E.

Temperature: 19.8, mean of 168 obs., max. 28, min. 4.78.

Salinity: 35.48, mean of 106 obs., max. 37.96, min. 31.96.

Plankton-type. This species occurs in the Red Sea, the Indian Ocean and the Bering Sea. In the Atlantic it has a very wide range of distribution between America and Africa—Europe, at least from 26° S., occurs from the winter to June in the Sargasso Sea and the Florida Current, and in the western Atlantic between 40° and 45° N., where it reaches its maximum in August. It occurs at the Azores the whole year, spreads thence, in May, northwards, at least to 50° N., in July to 60° N. It reaches in August S. Iceland and goes thence across Denmark's Sound to E. Greenland. — S. (D.)

CERATIUM TRIPUS VAR. LONGIPES BAILL.¹

(Cl. Fifteenth annual report of the Fishery Board for Scotland, for 1896, pag. 302 fig. 2 inclusive *cer. harride* Cl. l. c. fig. 4. *C. trip. v. longipes* ScaFF. *C. tripus var. ovatus* AUSTV. p. p.)

1898 *March*: Azores, very rare; 64° N. 25° W., very rare; 62° N. 2° E.; 58° N. 6° E.; 40° N. 71° W.

April: SW. and S. of Iceland; Färöes; Färöe Channel; 59° N. 28° W.; 60°—62° N. 2°—9° W.; 39° N. 74° W., common.

¹ Ostenfeld's data used.

May: S. and E. of Iceland to the Färöes and Scotland, common at some points; 62° N. 2° E., rare; along the coast of Norway, from 58° to 66° N.; 40° N. 72° W. to 41° N. 59° W., as a rule common.

June: Iceland to the Färöes and Scotland; 58° N. 2° W., rare; 62° N. 2° E., common; along the coast of Norway from 67° to 72° N.; SE. of Spitzbergen.

July: NE. and S. of Iceland, common, thence to the Färöes, Scotland and to 59° N. 2° E.; 65° N. 5° W., not rare; SW. of Cape Farewell; 40° N. 69° W., common.

August: N. of Iceland; along the S. coast of Iceland to the Färöes; E. of Scotland; round Spitzbergen; W. of Greenland, 61°—62° N. 53°—56° W.

September: NE. and S. of Iceland, common to rare; S. of the Färöes; between Norway and Spitzbergen; S. of Greenland, 58°—60° N. 39°—55° W.; 48° N. 29° W.

October: along S. Iceland and thence to the Färöes; SE. of Cape Farewell; 42° N. 59° W.

November: S. of Iceland, rare; Färöes.

December: 47° N. 45° W. to 41° N. 66° W.

1899 *January*: Färöes, rare; 48° N. 39° W., common; 40°—41° N. 66°—69° W., very common to rare.

March: 64° N. 12° W., rare; 62° N. 7° W.

May: 64° N. 10° E., rare; 61° N. 1° E. to 58° N. 6° E., common to very common, less common to 58° N. 8° E.; 38° N. 74° W., not rare.

June: 67° N. 3° W., rare; 62° N. 1° E., rare to common; 64° N. 7° E. to 67° N. 11° E., very common; 62° N. 2° E. to 78° N. 12° E., rare.

July: 74° N. 17° W., rare; 62° N. 0° W., not rare; 71°—73° N. 32°—36° E., not rare; 56° N. 38° W.

August: 72°—74° N. 26°—31° E., more or less common; 54° N. 46° W., rare.

September: 74° N. 17° W. to 65° N. 2° W., rare to common, abundantly at 67°—68° N. 4°—6° W.; 72° N. 19° E. to 79° N. 11° E., more or less scarce, but very common at 76°—77° N. 16°—14° E.; 47° N. 51° W., rare.

Temperature: S., mean of 58 obs., max. 21, min. 4, (only such samples as contained this species abundantly considered).

Salinity: 34.62, mean of 58 obs., max. 35.58, min. 31.52.

Plankton-type. This species belongs to the arctic and Northern Atlantic. I have met with it in a sample from the Bering Sea. It has been seen in the west as far north as 74° N. From there it follows the E. Greenland Current to Iceland, where it occurs from April to November. From Iceland it goes round S. Greenland and continues with the southward current along America, at least to 38° N. In the other direction it spreads to the Färöes, Scotland, into the North Sea and to the W. coast of Norway, which it follows, and continues round Spitzbergen and into the Murman Sea. In the E. it scarcely goes south of 58° N., but very rare specimens may drift as far as the Azores. — *T.* and *Ns.*

CERATIUM MACROCEROS ERR.

(L. Fitzenth annual report of the Fishery Board for Scotland, for 1896,
pag. 301 (fig. 6))

- 1898 *January:* 33° N. 31° W.
February: 30°—34° N. 74°—73° W.
March: 6° S. 4° W.; 7° N. 55° W.; 12° N. 51° W.; area between the Azores, 45° N. 13° W. and 41° N. 66° W.; 62° N. 2° E.; 60° N. 2° E.
April: 10° N. 52° W.; 44°—47° N. 45°—40° W.; Azores; Engl. Channel.
May: Azores; 41° N. 65° W. to 49° N. 23° W., common to rare; 50° N. 7° W.; 58° N. 4° E. to 58° N. 6° E.
June: area between the Canaries, the Azores and Cape Finisterre; 42° N. 50° W.; 40° N. 37° W.; 48° N. 33° W.; area between the Azores, 38° N. 41° W., 25° N. 57° W. and 23° N. 42° W.
July: Azores; 38° N. 74° W. to 40° N. 60° W.; 63° N. 1° W. to 59° N. 2° E., common.
August: Azores; 48° N. 30° W. to 40° N. 67° W.; 60° N. 3° E., common; 58° N. 0°—5° E., common.
September: Azores; 46°—47° N. 11°—9° W.; 70°—73° N. 21°—19° E., common.
October: Azores; 42° N. 50° W.

November: 18° S. 36° W.; Azores: 41° N. 66° W. to 47° N. 41° W.; 51° N. 20° W.; 36° N. 14° W.

December: Canaries; Azores: 41° N. 66° W. to 49° N. 35° W., at some points common.

1899 *January*: 34° N. 12° W., rare; 41°—40° N. 69°—66° W.

March: Azores: 46° N. 11° W.; 47° N. 8° W., everywhere rare.

April: 41° N. 17° W.; 46° N. 13° W., rare.

May: 25° S. 7° E.; 49°—50° N. 39°—33° W.; 57° N. 3°—9° E., rare to common; 59° N. 2° E., very rare.

June: 7°—9° N. 25° W.; 24° N. 42° W.; 64°—67° N. 7°—11° E., common to rare.

July: 12° N. 27° W.; 35°—38° N. 40° W.; 44°—49° N. 33°—28° W., rare; 62° N. 0° W., rare.

August: 48° N. 17° W., rare; 60° N. 3° E., common; 72° N. 26° E., very rare.

September: 56° N. 33° W., rare; 60° N. 3° E. to 62° N. 1° E., very common, thence rare to 67° N. 4° W.; 72° N. 19° E. (very common) to 77° N. 14° E. (rare).

October: 56° N. 23° (rare) and 31° W. (not rare).

Temperature: 12.₅, mean of 20 obs., max. 24.₂, min. 7.₅ (only such samples as contained this species abundantly considered).

Salinity: 34.₅₈, mean of 19 obs., max. 35.₂₆, min. 30.₅₂.

Plankton-type. The principal area of distribution is in the spring between the Azores, New York and the British Islands. It enters the North Sea, north of Scotland, and follows the Scandinavian coast into the Skagerak and to the north of Norway. In June 1898 it was seen scattered in several parts of the tropical Atlantic. It occurs in the Indian Ocean. — S.

CERATIUM PARADOXIDES Cl.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 14)

1898 *March*: 37° N. 24° W.

September: 46° N. 39° W.

1899 *January*: 33° N. 15° W.

Temperature: 17.₅, mean of 3 obs., max. 18.₄, min. 17.

Salinity: 36.23, mean of 3 obs., max. 36.36, min. 35.96.

Plankton-type: S.

CERATIUM PLATYCORNE v. BABAY.

(Természeti Pályozók Vol. XI part 2, 1887-88 a Mus. nat. hungarica Budapest inarsi vulgata pag. 101. — *C. crispus var. aurito* CL. 1837.)

1898 *January:* 44°—46° N. 17°—11° W.

March: Azores to the Engl. Channel.

April: Azores to the Engl. Channel; 40° N. 41° W.

May: 41° N. 16° W.; 48° N. 28° W. to 41° N. 60° W.

September: Engl. Channel.

October: 57° N. 27° W.

November: area between 50° N. 21° W., 56° N. 23°—30° W. and 50° N. 10° W.

December: Canaries; area between 42° N. 16° W., Cape Finisterre and 50° N. 9° W.

1899 *February:* 34° N. 40° W.

March: area between 44° N. 16° W., 46° N. 11° W. and 47° N. 8° W.

April: area between 40° N. 16° W., 46° N. 13° W. and 42° N. 18° W.

October: 56° N. 31° W.

November: 51° N. 13° and 21° W.

Temperature: 14.2, mean of 37 obs., max. 20.2, min. 9.2.

Salinity: 36.12, mean of 29 obs., max. 36.71, min. 35.22.

Plankton-type. This species is confined to the eastern Atlantic, between the Azores and the English Channel, but in May the area of distribution expands between 40° and 50° N. towards the Newfoundland Banks, and rare specimens drift in October nearly to 60° N. — S.

CERATIUM RANIPES Cl.

(K. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 1).

1897 *December*: 19° N. 45° W.; 32° N. 33° W.1898 *January*: 25° N. 74° W.*February*: 13° N. 69° W.; 26°—34° N. 74° W.*March*: 10° N. 53° W.; 30° N. 35° W.*April*: 10° N. 58° W.; 12° N. 51° W.*May*: 16° N. 50° W.*October*: 26° N. 76° W.*December*: 49° N. 35° W.; Azores.**Temperature**: 21.₂, mean of 14 obs., max. 36.₃, min. 14.**Salinity**: 36.₁₁, mean of 3 obs., max. 36.₃₂, min. 35.₃.**Plankton-type.** This species follows the Equatorial, Antilles- and Florida Currents, and towards the winter is conveyed to the Azores — *D.*

CERATIUM REFLEXUM Cl.

(K. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 8, 9 E)

1898 *November*: 19° S. 31° W., very rare.**Temperature**: 25.₁.**Salinity**: 37.₃₃.**Plankton-type.** Noted from 38° N. 47° W. (June 1892 E. Löxner) — *D.*CERATIUM RETICULATUM (POUCHET).¹*C. hexacanthum* var. *contortum* LAMOUR. Abh. Nat. Ver. Bremer Vol. XVI B. 2 Pl. II f. 20, 21 -- SCHÜTTER Pflanzl. d. Hochsee pag. 268 VII C. without name.1898 *January*: 12° N. 19° W.*February*: 5° S. 9° W.; Caribbean Sea and the Antilles Current (13° N. 70° W. to 26° N. 74° W.).*March*: 4° S. 10° W. to 18° N. 18° W.; 30° N. 35° W.; 39° N. 25° W.; 44° N. 16° W.; 51° N. 27° W.*April*: 41—46° N. 19—16° W.; 34° N. 74° W.¹ Ostenfeld's data used.

May: 27° N. 48° W.; 31° N. 36° W.; 38° N. 21° W.; 41° N. 16° W.; along 49° N. from 14° to 26° W.; 41° N. 51° W.

June: 10° N. 53° W.; 19° N. 63° W.; 23° N. 42° W.; 34° N. 46° W.; 35° N. 21° W.; 44° N. 16° W.

July: 41° N. 48° W.; 48°—49° N. 21°—32° W.; 62° N. 0° W., very rare.

August: Azores; 48° N. 23° W. to 50° N. 12° W.; 41° N. 57°—58° W.

September: 9° N. 53° W.; 46° N. 11° W. to 48° N. 24°—7° W.; 49° N. 21° W.; 56° N. 21° W. (rare dead); 38° N. 74° W. to 41° N. 60° W.

October: 21° S. 36° W.; 57°—58° N. 27°—25° W.

November: 0° S. 31° W.; 36° N. 14° W.; 45° N. 7° W.; 42° N. 64° W.; 47° N. 41° W.

December: 30° N. 16° W.; Azores.

1899 *January*: 35° N. 9° W.

March: 35° N. 16° W.; 47° N. 8° W.; 21° N. 43° W.; 30° N. 35° W.; 36° N. 29° W.

April: 41° N. 17° W. to 49° N. 7° W.

June: 14° S. 6° W.; 4° S. 19° W.; 9° N. 25° W.; 21° N. 45° W.

September: 56° N. 23° W.; very rare.

November: 51° N. 38° W., very rare.

Temperature: 19.1, mean of 77 obs., max. 28, min. 6.

Salinity: 36.45, mean of 53 obs., max. 37.28, min. 33.25.

Plankton-type. This species occurs in the Mediterranean and the Indian Ocean. In the Atlantic it follows the south Equatorial Current along S. Africa and to the north coast of S. America, enters the Caribbean Sea and the Florida Current. On the east side it spreads to the Canaries, the Azores and the West of Europa, where very rare specimens drift as far as 62° N. — S. (*D*).

CERATIUM TRIPOS DICT.¹

(G. Fifteenth annual report of the Fishery Board for Scotland, for 1896, pag. 301 fig. 1.)

1898 *January*: 8° N. 21° W.; 20°—21° N. 18°—17° W.; 33° N. 31° W.; 35°—37° N. 74°—73° W. (common).

¹ Ostenfeld's, but not Murray's & Whitting's data used.

February: 26°—38° N. 74° W.

March: 6° S. 4° W.; area between 3° N. 16° W., Cape Verde Islands and 33° N. 17° W.; Canaries; 33° N. 32° W. to 48° N. 6° W.; 10° N. 53° W. to 15° N. 49° W.; 32° N. 74° W. 37° N. 74° W.; 40° N. 68° W.; to 41° N. 60° W.

April: 10° N. 52° W.; 39° N. 74° W. to 40° N. 70° W., common. 30° N. 24° W.; 59° N. 22° W. to 62° N. 2° E., on the whole rare.

May: across the whole Atlantic, from 41° N. 63° W., where very common, to the mouth of the Engl. Channel (common between 50° N. 7° W. and 48° N. 25° W.), area between 59° N. 19° W., 63° N. 10° W. and 61° N. 1° W., common at the Färöes, but not abundant elsewhere; 58° N. 3° E., common; common along the coast of Norway, from 58° to 64° N.

June: 40° N. 10° W. to 43° N. 9° W., not rare; 44°—46° N. 16°—11° W.; 52° N. 50° W.; 60° N. 9°—3° W., common at 4° and 8° W.; 62° N. 3° E.; 67° N. 10° E., common; 69° N. 15° E., rare; 72° N. 22° E., rare.

July: 50° N. 10° W.; 50° N. 22° W.; 48° N. 30° W.; 41° N. 49° W. to 40° 69° W., where very common; area between 58° N. 33° W., 63° N. 1° W. and 59° N. 2° E., on the whole very common; 78° N. 1° E. (*c.* deep sea haul).

August: 56° N. 28°—34° W., common; 56° N. 13° and 20° W., not rare; E. of Iceland, common; W. of Scotland, more or less rare; area between 62° N. 16°—18° W., 60° N. 3° E. and 58° N. 1° E., common from the Färöes to Norway; 38°—40° N. 74°—72° W., very common; 40°—41° N. 67°—58° W., not common.

September: Engl. Channel, rare; 56° N. 35°—12° W., not common; area between 60° N. 26° W., 63° N. 27° W., Färöes, 60° N. 3° E. and 56° N. 13° W., as a rule very common; N. of Iceland, common; Tromsø to Beeren Island, not common.

October: area between 56° N. 31° W., 58° N. 35° W., S. Iceland and 59° N. 1° W. as a rule very common; 41° N. 67°—59° W., not common.

November: Rio Janeiro, not rare; 6° S. 33° W., rare; 51° N. 20° W., not rare; 56° N. 26°—20° W., common; S. Iceland

(not common) to 60° N. 1° W., as a rule common; 41° N. 66° — 69° W., common to rare.

December: 26° S. 45° W., not rare; 18° N. 67° W., not rare; 62° N. 10° W., not rare; 63° N. 21° — 18° W., rare; 47° N. 44° W. to 41° N. 66° W., common.

1899 *January*: Färöes, rare; 40° N. 66° W., common.

April: 9° N. 59° W., rare.

May: 51° N. 14° W., rare; 60° N. 5° W. to 58° N. 2° E., common, and thence to Skagerak common; 50° N. 39° W.; 35° — 38° N. 75° — 74° W., more or less common.

June: 20° S. 2° E., rare; 62° N. 0° W.— 2° E., common; 64° N. 7° E., (common) to 67° N. 11° E., [rare].

July: 48° N. 25° W., not rare; 53° N. 42° N., rare; 62° N. 0° W., common.

August: 48° N. 13° W., rare; 55° N. 9° W. to 54° N. 46° W., rare; 60° N. 3° E., not rare; 72° N. 26° E., very rare.

September: 57° N. 16° W. to 56° N. 38° W., rare to common; 50° — 62° N. 3° to 1° E., common to rare; 72° — 73° N. 49° E., more or less common.

October: 52° N. 14° W. to 53° N. 37° W., rare to very common.

November: 51° N. 13° (rare) and 28° (not rare) W.

Temperature: 11.3, mean of 99 obs., max. 28.3 min. 6.3 (only such samples as contained this species abundantly have been considered).

Salinity: 34.23, mean of 96 obs., max. 35.32, min. 30.02.

Plankton-type. *Ceratium tripos* has the same distribution as other species of the Styli-plankton and is much more abundant in the east than in the west Atlantic. In May its area extends across the whole Atlantic, between 40° and 50° N. Later it advances towards Iceland and the Färöe Channel, enters the North Sea and follows the Scandinavian coasts, nearly to Beeren Island — S.

CERATIUM (TRIPUS VAR.) VOLANS CL.

(K. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 4).

1898 *January*: 16° — 21° N. 18° — 17° W.; 41° — 44° N. 21° — 17° W.; 11° — 14° N. 52° — 49° W.

- February:* Caribbean Sea; 30° N. 74° W.
March: area between 18° N. 13° W., Cape Verde Islands and 26° N. 29° W.
April: 41° N. 19° W.; 32° N. 75° W.
May: 7° N. 54° W.; area between 23° N. 56° W. and 26°—30° N. 42° W.; 41° N. 51° W.
June: 28°—30° N. 53°—52° W.
July: Caribbean Sea.
August: 41° N. 57° W. to 44° N. 42° W.; Azores.
September: 42° N. 57° W.; Azores.
October: 38° N. 74° W.
November: 19° S. 31° W.; 8° N. 28° W. to 15° N. 27° W.; area between the Azores, Madeira and 34° N. 10° W.; 42° N. 64° W.; 22° N. 53° W.
December: 20° S. 45° W.; Porto Rico; 25° N. 52° W.; 34° N. 38° W.; Azores; Canaries.

- 1899 *January:* 32°—34° N. 16°—15° W.
March: 18° N. 45° W.; 36° N. 29° W.
April: 9° N. 59° W.; 28° N. 74° W.; 24° N. 42° W.
June: 19° S. 1° W.; 27° N. 39° W.
July: 19° N. 33° W.; 30° N. 41° W. to 42° N. 36° W.

Temperature: 21.5, mean of 66 obs., max. 28, min. 13.

Salinity: 36.15, mean of 50 obs., max. 37.33, min. 32.33.

Plankton-type: D

CERATIUM (TRIPUS VAR.) VULTUR Cl.

(K. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 6).

- 1897 *December:* and
 1898 *January:* 7° N. 53° W. to 19° N. 45° W.; 25° N. 74° W.
February: Caribbean Sea; Bahamas; area between 12° N. 51° W., 7° N. 54° W. and 9° N. 59° W.; 32° N. 32° W.; 41°—43° N. 49°—41° W.; 45° N. 36° W.
March: 10° N. 52° W.; Caribbean Sea.
June: 23° N. 42° W.
July: 21° N. 58° W.; 33° N. 74° W.
August: 14° N. 70° W. to 34° N. 73° W.; 40° N. 67° W. to 42° N. 50° W.

September: 41° N. 65° W.

October: 21° S. 36° W.

November: 19° N. 58° W. to 32° N. 38° W.; 20° N. 25° W.

1899 *March*: 35°—37° N. 16°—26° W.

June: 14° S. 7° W.; 8° S. 13° W.

Temperature: 24.4, mean of 36 obs., max. 27.4, min. 8.

Salinity: 35.62, mean of 28 obs., max. 37.44, min. 33.26, (exceptionally 28.39).

Plankton-type. Occurs in the Indian Ocean. — *D.*

CERATOCORYS HORRIDA STELLER¹

(D. Org. d. Infusionsch. Pl. VI. fig. 4—11.)

1807 *December*: and

1808 *January*: 16°—15° S. 37° W.; area between 1° S. 29° W., 11° N. 26° W. and 9° N. 28° W.; area between 24° N. 50°—40° W. and 29° N. 36° W.; 11°—12° N. 52°—50° W. Caribbean Sea; 25°—32° N. 74° W.

February: 5° S. 4° E.; 34° N. 31° W. to 35° N. 43° W.; Caribbean Sea; 21°—34° N. 74° W.

March: area between 4° S. 10° W., 2° N. 25° W. and the Cape Verde Islands; 32°—29° N. 34°—38° W.; area between 9° N. 53°—59° W. and 14° N. 50° W.; Caribbean Sea; 28°—32° N. 74° W.

April: 32° N. 34° W. to 29° N. 38° W.; 22° N. 47° W. to Barbados; Caribbean Sea; 27°—31° N. 75° W.

May: area between 32° N. 42° W., 11° N. 52° W. and 20° N. 60° W.; Caribbean Sea; 41° N. 60° W.; 46° N. 31° W.

June: 19° N. 63° W. to Porto Rico.

July: 25° N. 48° W.; 20° N. 58° W.; Caribbean Sea; 15° N. 71° W. to 38° N. 74° W., thence to 42° N. 48° W.

August: Caribbean Sea; 34° N. 74° W.; 40° N. 60° W. to 44° N. 42° W.

September: 8°—12° N. 25°—27° W.; 20°—29° N. 74° W.; 41° N. 65° W., 42° N. 57° W.; 47° N. 36° W.

¹ Murray's & Whittling's data used.

October: 21° S. 36° W.; 9° S. 34° W.; Cape Verde Islands;

Canaries; Caribbean Sea to 38° N. 74° W.; 41° N. 58° W.

November: 18°—19° S. 31° W.; 4° N. 30° W.; 20° N. 48° W.

to 19° N. 58° W.; 42° N. 62° W.; 47° N. 41° W.; 36° N.

14° W. to 34° N. 10° W.

December: 25° N. 52° W. to 22° N. 56° W.; Caribbean Sea;

Canaries; Gibraltar.

1899 *January*: area between the Canaries, Madeira and 35° N. 9° W.

February: 32° N. 47° W.

April: 36° N. 74° W.

May: 35° N. 75° W.

June: 12° S. 9° W.; 4° S. 19° W. to 9° N. 25° W.; 12° N. 52° W.

July: 10° N. 26° W.

Temperature: 33.5, mean of 129 obs., max. 28.3, min. 13.3.

Salinity: 35.78, mean of 99 obs., max. 38.54, min. 32.02.

Plankton-type. Noted from the Mediterranean, Indian and Pacific. It occurs in the tropical Atlantic, at least from 21° S., between S. America and Africa, follows the Equatorial Current to the north coast of S. America, into the whole Sargasso Sea and the Caribbean Sea, thence the Florida Current. From July to September (maximum in August) it advances in the western Atlantic between 40° and 45° N. (rare specimens nearly to 50°). In the winter it occurs from Gibraltar to the Canaries. — *D.*

CITHARISTES APSTEINII SCHÖTT.¹

(D. Peridinées d. Plankton-expedition II. V fig. 34).

1897 *December*: 23°—25° N. 51°—50° W.

1898 *February*: 28° N. 39° W. to 19° N. 52° W.

March: Azores to 29° N. 45° W.; Caribbean Sea.

April: 19° N. 52° W. to 16° N. 56° W.; Caribbean Sea; N. coast of San Domingo.

¹ Murray's & Whiting's data used.

Temperature: 22.8, mean of 13 obs., max. 27.7, min. 21.1.
Salinity: 36.43 (one obs.).
Plankton-type. *D.*

CLADOPYXIS BRACHIOLATA STEIN.¹

(D. Org. d. Infusorienst. Pl. II fig. 7.)

- 1808 *March:* 17° N. 57° W.; 29° 31° N. 45°—42° W.
April: 19°—22° N. 52°—47° W.
May: 28°—26° N. 47°—52° W.
June: 23°—24° N. 42° and 58° W.; 39° N. 39° W.; Cape Finisterre: 31° N. 17° W.
July: 38° N. 74° W.; 41° N. 58°—48° W.; 34° N. 33° W.; 29° N. 44° W.
August: 40° N. 66° W. to 44° N. 42° W.; 49° N. 20° W.; 50° N. 10° W.
September: 30° N. 35° W. to the Azores; 45° N. 14° W.
October: Azores; 34° N. 74° W.
November: 19°—18° S. 31° W.; 29° N. 43° W. and 36° N. 14° W.
- 1899 *June:* 18° N. 47° W.; 27° N. 39° W.

Temperature: 22.7, mean of 35 obs., max. 27.3, min. 14.8.
Salinity: 35.31, mean of 29 obs., max. 37.30, min. 33.30.
Plankton-type: *D.*

DINOPHYSIS ACUTA ERM.²

(Schäffer: D. Peridineeen d. Plankton-expedition Pl. I fig. 6.)

- 1808 *March:* 61° N. 23° W.; N. of Scotland; 23° N. 74° W. (one specimen).
April: 58°—59° N. 22°—50° W.; Färöe Channel.
May: area between S. Iceland, Scotland, N. of Rockall and 59° N. 38° W.; 58° N. 5° E. to 64° N. 6° E.

¹ Murray's & Whitting's data used.

² Ostenfeld's data used.

- June*: 57°—59° N, 34°—42° W.; NW. and S. of Iceland; NW. of the Färöes; 60°—61° N, 4°—14° W.; 62° N, 2° 30' E.; 40°—44° N, 9°—10° W.
- July*: S. of Iceland to about 63° N, 1° W.; 59° N, 2° W. to the N. of Rockall and along 58°—60° N. to the S. of Greenland.
- August*: N. and S. of Iceland to the Shetlands; W. of Scotland; Irish Channel. Between S. Iceland and E. Greenland (60° N, 37° W.); 58° N, 5° E.; N. of Spitzbergen; 55°—54° N, 41°—47° W.
- September*: N. of Iceland; N. of the Färöes to S. of the Shetlands; 70° N, 20° E.; Denmark's Sound; E. Greenland; from Iceland to Rockall; 62°—56° N, 14° W. to 60°—54° N, 55°—43° W.
- October*: S. Iceland to Scotland, thence to 58° N, 25° W.; 55°—58° N, 29°—32° W. to SW. of Cape Farewell, maximum at 58° N, 32° W.
- November*: S. Iceland to Scotland; S. of Rockall (56° N, 17° W.) to 54° N, 44° W. (maximum at 53°—56° N, 32°—36° W.); 45° N, 52° W.; 41° N, 69° W.
- December*: 49° N, 27° W. to 47°—42° N, 44°—49° W. and along the American coast to 41° N, 66° W.
- 1899 *May*: 66° N, 10° W.; 59°—60° N, 3° W.—2° E.; 58° N, 2° W.; 57° N, 3°—9° E.; 50° N, 33° W.
- June*: 66°—67° N, 10°—11° E.
- July*: 57° N, 31° W. to 53° N, 42° W., common.
- August*: 72°—73° N, 26°—31° E.; 56° N, 26° W. to 54° N, 46° W., not rare.
- September*: 72° N, 19° E. to 80° N, 13° E.; 56° N, 30° W. to 52° N, 55° W., not rare to common.
- October*: 53° N, 31° W. to 54° N, 45° W., more or less rare.
- November*: 51° N, 28° W., not rare; area between 52° N, 48° W., 53° N, 43° W. and 48° N, 46° W., not rare.

Temperature: 9.6, mean of 44 obs., max. 12.8, min. 5.

Salinity: 35.03, mean of 43 obs., max. 35.16, min. 32.01.

Plankton-type. I have found this species in a sample from Paget's Sound. *Dinophysis acota* is a characteristic boreal form, that inhabits the area between Greenland, S. Iceland and Scotland.

I found it exceptionally (one specimen) in the Florida Current (23° N.) and in the eastern Atlantic sparingly on the coast of Portugal. The occurrence in the Gulf of Naples (Schubert) is very strange. — *Ny*

DINOPHYSIS HASTATA STEIN.¹

(D. Org. d. Infus. Pl. XIX fig. 12.)

- 1898 *May*: 36° N. 27° W.; 46° N. 35° W. to 41° N. 51° W.
August: 40° N. 66° W. 44° N. 42° W.; 56° N. 34° W.; 61° N. 8° W.
September: 60° N. 6° W.
November: 60° N. 4° W.
December: 62° N. 10° W.
- 1899 *March*: 47° N. 8° W.
June: 11° S. 10° W. to 19° S. 1° W.
July: 23° N. 36° W.; 32° N. 41° W.

Temperature: 17.6, mean of 18 obs., max. 25.1, min. 7.6.

Salinity: 35.77, mean of 18 obs., max. 37.55, min. 33.65.

Plankton-type: This species occurs in the Indian Ocean. It ranges in the Atlantic at least from 19° S. to 62° N. and has, essentially, an eastern distribution. — S.

DINOPHYSIS HOMUNCULUS STEIN.¹

(D. Org. d. Infus. Pl. XXI fig. 1-8.)

- 1898 *January*: 10° N. 20° W.; 21° N. 17° W.; 17° N. 38° W.; Caribbean Sea; 37° N. 73° W.; 34° N. 31° W. to 38° N. 25° W.
February: 34° N. 31° W.; 32° N. 34° W.; Caribbean Sea; 34° N. 73° W.
March: 18°-21° N. 18° W.; area between 35° N. 28° W., 29° N. 45° W. and 45° N. 19° W.; 43° N. 48° W.
April: area between 29° N. 38° W., 43° N. 50° W. and 50° N. 9° W.; 31°-34° N. 75°-74° W.
May: 11° N. 52° W.; 30° N. 44° W.; 32° N. 36° W.; 34° N. 40° W.; area between 38° N. 21° W., 50° N. 7° W. and

¹ Ostenfeld's and Murray's & Whiting's data used.

41° N. 56° W.; area between 60° N. 10° W., 59° N. 16° W. and 61° N. 19° W.

June: area between the Canaries, Portugal and Cape Finisterre; 60° N. 4° W.; 50° N. 12° W.; 42° N. 50° W.; 33° N. 48° W.

July: area between 34° N. 33° W., 49° N. 22° W. and 44° N. 39° W.; 40° N. 67° W. to 41° N. 58° W.; 58° N. 27° W.; 63° N. 8° W.

August: area between the Azores, New York and 49° N. 23° W.; Färöes.

September: Azores; 47° N. 33° W.

October: 41° N. 59° W.

November: Rio Janeiro; 40° N. 67° W., 50° N. 30° W.; Azores; Madeira.

December: Azores.

1899 *January*: Madeira; 48° N. 39° W.; 41° N. 69° W.

March: 36° N. 16° W.; Azores.

April: 44° N. 15° W.

May: 50° N. 33°—39° W.; 35° N. 75° W.

July: 38° N. 39° W. to 48° N. 23° W., not rare; 53° N. 42° W., common.

September: 55° N. 44° W. to 53° N. 51° W., rare.

October: 54° N. 45° W., not rare.

November: 51° N. 28° W. to 52° N. 48° W., rare.

Temperature: 18.5, mean of 100 obs., max. 27.2, min. 6.

Salinity: 35.51, mean of 77 obs., max. 36.25, min. 31.60.

Plankton-type. This species has been found in the Mediterranean, Indian and Pacific. It occurs both in the western and eastern Atlantic. In the *west* it was found rarely at Rio Janeiro, sparingly in the North Equatorial Current, Caribbean Sea and Florida Current, reached in July the latitude of New York and approached the Newfoundland Banks. Barely seen in the Sargasso Sea. In the *east* it occurs along the African coast in the Cape Verde region and round the Azores, where it is stationary during the whole year. In April it spreads towards the English Channel and to the South of the Newfoundland Banks. In May and June it had advanced to the Färöe Channel. In July and August it reached its maximum and was found across the whole Atlantic between 40°—45° N., later it became more scarce. — S. (D.)

DINOPHYCIS MICHAËLIS (EHR.) AURIV.¹

(*D. laevis* CLAP. & LACHM. *D. laevis* BERGM? *D. rotundata* CLAP. & LACHM.? SCHÜTT *D. Paridin*, Pl. I fig. 5. *D. rotundata* SLEEM. *Plectocroun oercentoides* CL. K. Sc. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 40 non SCHÜTT.)

1898 *March*: 58° N. 6° E.

April: 61° N. 6° W.

May: 63° N. 10°—17° W., not rare; 62° N. 2° E., rare; 59°—60° N. 10° W., rare; 59° N. 16° W., not rare; 59° N. 28° W., very rare.

June: S. Iceland to 60° N. 4° W., rare; 67° N. 34°—38° W., rare; 83° N. 56° W., very rare; N. of Iceland, 67° N., 24° W.; 68° N. 13° E.; 40° N. 10° W.

July: round Iceland to 60° N. 4° W.; 58°—59° N. 27°—22° W.

August: area between 63° N. 25° W., 60° N. 3° W. and 66° N. 15° W.; 76°—80° N. 11° E.; 78° N. 26°—28° E.; 66° N. 37° W.; 62°—69° N. 56°—53° W.; 41° N. 72° W.

September: N. of Iceland; area between 60° N. 4° W., 65° N. 36° W. and 57° N. 42° W., as a rule rare; 57° N. 42° W.; 59° N. 50° W.; 60° N. 55° W.; Disco, 73° N. 19° E.

October: S. Iceland to the Shetlands, rare; 58° N. 32° W., rare; 57° N. 42° W., rare.

November: 60° N. 4° W., very rare; 41° N. 69° W., rare.

1899 *May*: 64°—66° N. 10°—14° W.

June: 66° N. 10° E.; 70° N. 20° E. to 78° N. 13° E., rare.

August: 72° N. 26° E.

September: 73°—80° N. 19°—13° E., rare.

Temperature: 7.2, mean of 39 obs., max. 21, min. 1.2.

Salinity: 34.44, mean of 38 obs., max. 35.69, min. 30.28.

Plankton-type: Ns, T.

¹ Ostenfeld's data used.

DINOPHYSIS OVUM SCOTT.

(D. Peridimene d. Plankton-exp. Pl. I fig. 8.)

- 1898 *August*: 41° N. 58° and 72° W.
October: 41° N. 59° W.
 1899 *January*: 35° N. 9° W.
March: 35° N. 16° W.; 37° N. 26° W.

Temperature: 19.1, mean of 6 obs., max. 25.2, min. 15.1.**Salinity**: 34.51, mean of 5 obs., max. 36.11, min. 31.11.**Plankton-type**: S. ?**DINOPHYSIS SACCULUS** STEIN.

(Oz. d. Infusionsch. Pl. XX fig. 10-12.)

- 1898 *June*: 40°-42° N. 10°-9° W.

Temperature: 14.5-15.5.

Plankton-type. Found in the Mediterranean. My specimens occurred in Styli-plankton, and as no specimens were found in the open Atlantic, this species may be considered as neritic. — *Nov.*

DINOPHYSIS VANHÖFFENI OSTENF.

(*D. granulata* CL. K. St. Vet. Akad. Handl. Vol. XXXII n. 3 pag. 39 Pl. IV fig. 7 (a small form). *D. ovata* VANHÖFFEN Grönl.-Exp. II Pl. V. fig. 7. *D. Vanhöffeni* OSTENF. Inkrügelser etc. 1898 pag. 50.)

- 1898 *May*: area between 57° N. 28° W., 61° N. 23° W. and 60° N. 10° W., rare.
June: Westmannaö to 60° N. 1°-8° W., as a rule rare, but common at 63° N. 10° W.; 57° N. 34°-42° W., as a rule rare; Disco, rare.
July: 63°-65° N. 14°-24° W., rare; 58° N. 44° W., rare; 78° N. 0° W.-5° E.
August: 64° N. 21° W.; 60° N. 3° W.; 66° N. 37° W.; W. of Greenland 63°-69° N. 55°-53° W., everywhere rare; 80°-81° N. 19°-30° E., rare.

¹ Ostenfeld's data used.

September: 65°—68° N. 55°—53° W., rare.

1899 *May*: 56° N. 1° W. to 59° N. 2° W.

June: Westmannaaö, common to rare; 62° N. 1° E.; 65° N. 10° E.; 78° N. 12° E.

July: 52° N. 54° W., not rare.

September: 72° N. 19° E. to 81° N. 16° E., as a rule rare, but common at 78° N. 12° E.; 52° N. 55° W., not rare.

Temperature: 5_a, mean of 21 obs., max. 9_a, min. — 0_a.

Salinity: 34₅₀, mean of 21 obs., max. 35₁₁, min. 32₀₂.

Plankton-type. I found this species in a sample from Jedo Bay, Japan. It is difficult to decide to what plankton-type this species belongs. It occurs at Spitzbergen among drift-ice and together with arctic forms, but on the other hand it has not been seen, as true arctic species, north of Iceland along east Greenland. — *Ns?* *T?*

DINOPYXIS COMPRESSA (Barr.)

(*Encocostis compressa* Sauter & Peridineen d. Plankton-exp. Pl. I fig. 1.)

1898 *January*: 7° N. 53° W.

March: 6° S. 4° W.

July: 31° N. 39° W.

September: Azores; 56° N. 12° W.; 57° N. 14° W.; 60° N. 4° W.

October: Azores; 57° N. 27° W.

November: 47° N. 41° W.

1899 *April*: 46° N. 13° W.

June: 15° S. 5° W.; 9° N. 25° W.; 27° N. 25° W.

July: 12° N. 27° W.; 33° N. 36° W.; 35°—36° N. 40° W.; 40°—41° N. 38°—37° W.; 48° N. 23°—25° W.

August: 48° N. 17°—20° W.

Temperature: 20_a, mean of 26 obs., max. 27, min. 9.

Salinity: 36₃₀, mean of 22 obs., max. 37₅₀, min. 35₁₆.

Plankton-type: S.

DIPLOPSALIS LENTICULA Brugu.¹

(Source: D. Peridineeae d. Plankton-exp. Pl. XV fig. 50.)

- 1899 *January*: 16°—21° N. 18°—17° W.; 35° N. 74° W.
February: Caribbean Sea; 34° N. 74° W.
March: 16° N. 18° W.; 27° N. 16° W.; 9° N. 59° W.; Caribbean Sea; 43° N. 48° W.
April: 7°—10° N. 55°—53° W.; 50° N. 41° W. to 48° N. 29° W.; 50° N. 9° W.
May: 28° N. 45°—47° W.; 20° N. 60° W.; 41° N. 60° W. to 50° N. 14° W.
June: 22° N. 60° W.; area between 37° N. 41° W., 48° N. 33° W. and the Engl. Channel.
July: 31° N. 38° W.; 41° N. 58° W.; Azores; Engl. Channel; 59° N. 3° W. to 58° N. 36° W.
August: Caribbean Sea; Azores; 44° N. 43° W. to 40° N. 66° W.; 56° N. 28°—34° W.; S. of Iceland; Färöes; Shetlands.
September: 9° N. 53° W.; 23° N. 42° W.; 26° N. 39° W.; Azores; 40° N. 59° W. to 41° N. 65° W.; 50° N. 11° W. to 49° N. 8° W.; area between 56° N. 36° W., 57° N. 14° W. and the Shetlands; Färöes; 63° N. 27° W.
October: 41° N. 67°—59° W.; 55°—56° N. 39°—29° W.; S. of Iceland to N. of Scotland.
November: 22° N. 53° W.; 22° N. 43° W.; 41° N. 69° W. to 43° N. 58° W.; 56° N. 36°—17° W.; S. of Iceland to the Shetlands.
December: 18° N. 67° W.; 19° N. 58° W.; 25° N. 52° W.; Azores; 41° N. 66° W.; 62° N. 10° W.
- 1899 *January*: 29° N. 16° W. to 31° N. 13° W.
February: 34° N. 40° W.
March: 35° N. 16° W.
April: 9° N. 59° W.; 32°—36° N. 75°—74° W.
June: 14° S. 10° W.; 1° N. 23° W.; 62° N. 2° E.
July: 57° N. 31° W.; 62° N. 0° E.
August: 56° N. 31° W.

¹ Ostenfeld's data used.

September: 56° N. 38° W.

October: 56° N. 38° W.

Temperature: 16.6, mean of 159 obs., max. 28, min. 4.

Salinity: 35.67, mean of 137 obs., max. 37.34, min. 32.20.

Plankton-type. Occurs in the Mediterranean the Pacific and Indian Ocean. It is rare in the Atlantic on the whole S. of 40° N. It occurs between 40° and 50°, across the Atlantic, from May to August, rarely later; between 55° and 60° in July to August, rarely later, and between 60° and 65° from August to November — S.

GONIODOMA ACUMINATUM STRICK.¹

(SCHÜTZ D. Peridineen d. Plankton-exped. PL. VIII fig. 30. — The var. *armata* SCHÜTZ. not distinguished.)

1898 *January*: 13° S. 35° W. to Cape Verde Islands; 7° N. 53° W. to 48° N. 6° W.; 25°—35° N. 74° W.

February: 19°—21° N. 52°—50° W.; 30°—31° N. 37°—35° W.; Caribbean Sea; 21° N. 74° W. to 34° N. 73° W.

March: 3° N. 16° W.; 7° N. 21° W.; 11° N. 20° W.; area between 10° N. 53° W.; 45° N. 13° W.; 29° N. 45° W.; Caribbean Sea; 28° N. 74° W.

April: area between 10° N. 53° W., 14° N. 48° W., 41° N. 20° W. and 30° N. 24° W.; Caribbean Sea; 23° N. 72° W. to 27° N. 75° W.; 48° N. 30° W.

May: area between 11° N. 52° W., 16° N. 58° W., 34° N. 40° W. and 32° N. 36° W.; Caribbean Sea; area between 32° N. 36° W., 41° N. 54° W. and 50° N. 14° W.; 60° N. 10° W.

June: area between Porto Rico, 37° N. 41° W., 29° N. 36° W. and 23° N. 42° W.; Azores; 60° N. 8° W.

July: 21° N. 18° W.; area between 26° N. 48° W., 44° N. 39° W. and 41° N. 17° W.; Caribbean Sea; 25°—33° N. 74° W.; 41° N. 60° W.; 59° N. 21°—13° W.

August: Caribbean Sea; 25°—34° N. 74°—73° W.; Azores; 40° N. 66° W. to 49° N. 14° W.

September: 8°—12° N. 25°—27° W.; 9° N. 53° W. to 17° N.

¹ Ostenfeld's and Murray's & Whitting's data used.

- 48° W.; Caribbean Sea; 20°—37° N. 74° W.; 42° N. 57° W.; area between Madeira, the Azores and 26° N. 39° W.; 46°—48° N. 11°—7° W.
- October*: 21° S. 36° W.; 30°—34° N. 74° W.; Azores; 57°—58° N. 27°—25° W.
- November*: area between Rio Janeiro, 24° N. 29° W and 9° S. 34° W.; Cape Verde Islands; 19° N. 58° W.; 26°—29° N. 48°—43° W.; 44° N. 55° W.; 47° N. 41° W.; Azores.
- December*: 14° S. 35° W.; Cape Verde Islands; Canaries; Caribbean Sea; 19° N. 58° W. to 28° N. 47° W.; 34° N. 38° W.
- 1899 *January*: 29° N. 16° W. to 35° N. 9° W.
- February*: 32° N. 47° W.
- March*: 24° N. 40° W.; 35° N. 16° W.
- April*: 41° N. 18°—15° W.; 28° N. 75° W. to 36° N. 74° W.
- June*: 19° S. 1° W. to 9° S. 12° W.; 1° N. 23° W. to 9° N. 25° W.; 48° N. 47° W. to 27° N. 39° W.; 33° N. 30° W.
- July*: 11°—14° N. 26°—28° W.; 23° N. 36° W. to 38° N. 39° W.; 32° N. 41° W.
- August*: 48° N.—11°—20° W.
- November*: 51° N. 13° W.

Temperature: 22.1, mean of 171 obs., max. 28.1, min. 11.

Salinity: 35.18, mean of 136 obs., max. 37.22, min. 32.87.

Plankton-type. I have seen this species in samples from the Red Sea and the Indian Ocean. SCANDERN mentions it from Naples. It occurs in the whole Atlantic, from 35° S. to 60° N. It appears between 40° and 50° N., in the eastern Atlantic, from the winter to September, in the western Atlantic from May to September (maximum in August, when its area of distribution crosses the Atlantic from west to east). It reaches nearly 60° N. from May to October — D. S.

GONIODOMA SPHERICUM MURR. & WHITT.¹

(Trans. Linn. Soc. 2 ser. Bot. Vol. V. part. 9 1899 Pl. XXVII t. 3.)

1897 *August*: 33° N. 35°—43° W.

1898 *January*: 35°—34° N. 30°—31° W.

¹ Murray's and Whitting's data used.

February: 28°—25° N. 39°—44° W.

March: 29°—31° N. 43°—42° W.

August: 48° N. 24° W.

Temperature: 19.4 (one observation).

Salinity: 35.08 (one observation).

Plankton-type: *D*.

GONYAULAX GLYPTORHYNCHUS MURR. & WHITT.¹

(Trans. Linn. Soc. 2 ser. Bot. Vol. V part 3, 1899 Pl. XXVIII f. 3.)

1897 *April*: 21°—18° N. 49°—53° W.

December: 24°—25° N. 50°—51° W.

1898 *January*: 34°—32° N. 31°—34° W.

February: 30° N. 74° W.

March: 14°—16° N. 64°—68° W. and 29°—30° N. 45°—42° W.

Temperature: 16.08 to 20.10.

Plankton-type: *D*.

GONYAULAX JOLLIFFEI G. MURRAY & WHITTING.²

(Trans. Linn. Soc. London. 2 Ser. Bot. Vol. V part 9, p. 324 Pl. XXVIII f. 1.)

1898 *January*: 32° N. 74° W.

February: 28°—27° N. 29°—41° W.; Caribbean Sea.

March: 12° N. 51° W. to 9° N. 58° W.; Caribbean Sea; area between 28° N. 36° W., 29° N. 45° W. and 39° N. 32° W.

April: 41° N. 20° W. to 17° N. 72° W.

May: 30°—32° N. 44°—42° W.; 36°—38° N. 27°—21° W.; 41° N. 51° W.

June: 25° N. 57° W.; 33° N. 48° W.

July: Caribbean Sea; 26° N. 48° W.; Azores.

August: Caribbean Sea; Azores.

September: Caribbean Sea; 42° N. 57° W.; Azores.

October: 21° S. 36° W.

December: 20° S. 45° W.; 14° S. 26° W.; Caribbean Sea.

¹ Murray's and Whitting's data used.

² Murray's & Whitting's data used.

1899 *February*: 32° N. 46° W.

March: 21°—24° N. 43°—40° W.

April: 36° N. 74° W.

June: 19°—7° S. 1°—14° W.; 36° N. 30° W.

July: 28° N. 40° W.; 43° N. 35° W.

Temperature: 23.2, mean of 33 obs., max. 28.4, min. 17.2

Salinity: 36.15, mean of 28 obs., max. 37.4, min. 34.72.

Plankton-type. Occurs at Naples (Schroöder) — *D.*

GONYAULAX POLYGRAMMA STEIN.¹

(SCHROÖT. D. Peridineeen d. Plankton exped. Pl. VIII fig. 33)

1898 *January*: 9°—10° N. 26°—25° W.; Azores.

February: 26°—34° N. 74°—73° W.

March: 25° N. 41° W.; 29° N. 45° W. to 44° N. 19°—17° W.

April: Caribbean Sea; 19° N. 56° W. to the Azores; 50° N. 12°—9° W.

May: Caribbean Sea; 22°—24° N. 53°—51° W.; area between 30° N. 44° W., 34° N. 40° W. and 34° N. 46° W.; area between 44° N. 19° W., 45° N. 43° W. and 50° N. 14° W.; 60° N. 10° W.

June: 25°—28° N. 57°—53° W.; 47° N. 17°—33° W. to 50° N. 12° W.; 60° N. 4° W.

July: Azores; 40° N. 57° W. 49° N. 27° W.; area between 58° N. 36°—27° W. and 63°—64° N. 10°—23° W.

August: Azores; 42° N. 62° W.; 48°—49° N. 23°—14° W.; 60° N. 3° W. to 61° N. 8° W.

September: 32° N. 33° W.; Azores; 46°—47° N. 11°—9° W.; Shetlands; N. of Iceland.

October: 57° N. 27° W. to 59° N. 21° W.; 60° N. 6° W.

November: Azores; 60° N. 4° W.

December: 26° S. 45° W.

1899 *March*: Azores.

April: 41° N. 18° W.; 44° N. 15° W.

May: 51° N. 26° W.

June: 9° N. 25° W.; 27° N. 39° W.

¹ Murray's & Whiting's and Osterfeld's data used.

July: 29° N. 41° W.; 45°—48° N. 31°—25° W.; 57° N. 23° and 31° W.

August: 48° N. 17° W.

Temperature: 17.1, mean of 57 obs., max. 27.1, min. 7.

Salinity: 35.73, mean of 47 obs., max. 37.41, min. 33.13.

Plankton-type. Occurs in the Mediterranean, Pacific and Indian Ocean. — S (and D.)

GONYAULAX SPINIFERA (CLAP & LACHN.)¹

(SERIN: D. Org. d. Infus. Pl. IV fig. 10—14).

1898 *January*: 37° N. 73° W.

February: 34° N. 73° W.

March: 51° N. 25° W.

April: 59° N. 22° W.

May: 57°—60° N. 13°—36° W.; Färöes.

June: S. and SE. of Iceland; between Iceland and the Färöes; N. of Scotland; 57° N. 34°—38° W.; 40°—44° N. 9°—16° W.; 44° N. 16° W.

July: S. of Iceland; between Iceland and the Färöes; 58° N. 27°—36° W.

August: S. coast of Iceland; Färöe Channel; 50° N. 12° W.; 48° N. 23° W.; 55° N. 41° W.; 54° N. 47° W.; 42° N. 62° W.; E. Greenland at 65° N.; W. Greenland, Disco, common.

September: SW. of Iceland; Denmark's Sound to E. Greenland at 65° N.; Färöe Channel; 59° N. 1° W.; area between 53° N. 49° W., 56° N. 35° W. and 59° N. 34° W.

October: area between 58° N. 35°—48° W. and 54°—55° N. 45°—39° W.; Färöe Channel.

November: 53° N. 32° W.; 55°—50° N. 44° W.

December: 47° N. 44° W.; 41° N. 66° W.

1899 *January*: 40° N. 69°—66° W.

May: 56° N. 1° W.; 60° N. 4° W.; 58° N. 9° E.

June: 64° N. 7° E.

July: 57° N. 31° W.; 53° N. 42° W., common.

¹ Ostenfeld's data used.

- August*: 55° N. 34° (rare) to 48° W. (common).
September: 56° N. 38° W. (rare) to 53° N. 51° W. (common).
October: 54° N. 45° W., rare.
November: 51° N. 28° W., not rare; 52° N. 48° W., not rare.

Temperature: 8.5, mean of 15 obs., max. 12, min. 6.

Salinity: 34.80, mean of 15 obs., max. 35.61, min. 32.40.

Plankton-type. The principal area of distribution is between Scotland, Iceland and the Newfoundland Banks. SCHÜDNER mentions it from Naples — Ns.

GYMNASTER PENTASTERIAS (EHR.)

(SCHÜDNER: D. Peridinen d. Plankton-exped. Pl. XXVII. fig. 100.)

- 1898 *November*: 56° N. 35° W.
 1899 *January*: 45° N. 49° W.

Temperature: 7.8 to 12.

Salinity: 35.00 to 35.51.

Plankton-type: S ?

HISTIONEIS MAGNIFICA (STEIN).¹

(*Cornithoceros magnificus* STEIN D. Org. d. Infus. Pl. XXIII fig. 6.)

- 1837 *December*: and
 1898 *January*: area between 12° S. 34° W., 20° N. 18° W., the Azores and 10° N. 83° W.; 29°—33° N. 74° W.
February: 31° N. 35° W. to 19° N. 52° W.; whole Caribbean Sea; Bahamas to 34° N. 73° W.
March: area between 6° S. 4° W., 41° N. 22° W. and 9° N. 59° W.; Caribbean Sea; 28°—32° N. 74° W.
April: 41° N. 20° W. to 7° N. 55° W. and 14° N. 58° W.; Caribbean Sea; 31° N. 75° W.
May: 43°—44° N. 23°—27° W.; Azores; 42° N. 45° W. to 41° N. 65° W.; area between 32°—33° N. 36°—40° W., 22°—23° N. 53°—45° W. and 11° N. 53° W.; Caribbean Sea;

¹ Murray's and Whiting's data used.

- June*: area between 10° N. 52° W., Madeira, 40° N. 37° W. and Porto Rico.
- July*: area between the Azores, 41° N. 58° W., 33° N. 74° W. and 15° N. 71° W.
- August*: 14° N. 70° W. to 34° N. 73° W.; 40° N. 59° W. to 45° N. 43° W.; Azores.
- September*: S. of Cape Verde Islands; sparingly from 9° N. 53° W. to the Azores; 20° — 38° N. 74° W.
- October*: 21° S. 36° W.; Caribbean Sea; 34° N. 74° W.; Azores.
- November*: 26° — 24° S. 30° — 29° W.; 13° S. 27° W. to 0° S. 32° W.; 18° N. 57° W.; 22° N. 53° W.; 29° N. 43° W.; Azores to 34° N. 10° W.
- December*: 26° S. 45° W.; 18° N. 67° W. to 25° N. 52° W.; 34° N. 38° W.; area between the Azores, Gibraltar and the Canaries.
- 1899 *January*: area between the Canaries, Madeira and Gibraltar.
- March*: 21° — 24° N. 43° — 40° W.; 35° N. 16° W.
- April*: 32° — 36° N. 75° — 74° W.
- May*: 29° — 25° S. 9° — 7° E.; 36° N. 75° W.
- June*: 17° S. 2° W. to 9° N. 25° W.; 24° N. 41° W.; 27° N. 39° W.
- July*: 11° — 12° N. 26° — 27° W.; 32° N. 41° W. to 40° N. 38° W.

Temperature: 22.8, mean of 150 obs., max. 28, min. 17.

Salinity: 36.12, mean of 120 obs., max. 37.63, min. 33.96.

Plankton-type. This species is one of the most characteristic organisms of the Desmo-plankton. It occurs outside the Atlantic in the Adriatic, Mediterranean, Red Sea, Indian and Pacific. In the Atlantic the area of distribution is the tropical and subtropical region, between Africa and America, at least from 29° S. to the Azores, where it occurs the whole year. The northern limit in the west is during the the winter about 35° N. The northern limit advanced in May beyond 40° N. nearly to 45° , but in September it had retired below 40° , but on the other hand the area of distribution moved in November—January towards the Canaries and Gibraltar. — *D.*

HISTIONEIS PARA MURR. & WHITT.¹

(Trans. Linn. Soc. 2 Ser. Bot. V. part. 9. 1899 Pl. XXXII fig. 4.)

- 1897 *December*: 24° N. 50°—51° W.
 1898 *January*: 32°—33° N. 34°—31° W.
February: 25°—27° N. 44°—41° W.
March: 24° N. 41° W. to 29°—31° N. 45°—42° W.

Temperature: 21.5 (one obs.).

Salinity: 37.22 (one obs.).

Plankton-type: *D.*

HISTIONEIS SPLENDIDUS (SCHÜTT).¹

(*Cryptomonas splendida* SCHÜTT D. Peridineen d. Plankton-archiv. Pl. V. fig. 23.)

- 1898 *February*: 31° N. 35° W. to 19° N. 52° W.
March: 29°—31° N. 45°—42° W.
April: 27° N. 74° W.
May: 41° N. 51° W.
July: 41° N. 58° W.
September: 41° N. 65° W.
October: 21° S. 36° W.
November: 4° N. 30° W.; 34°—36° N. 10°—14° W.; Azores.
December: Canaries; 22°—25° N. 50°—52° W.; 34° N. 38° W.
 1899 *January*: 35° N. 9° W.
February: 32°—34° N. 47°—40° W.
May: 36° N. 75° W.

Temperature: 21.5, mean of 24 obs., max. 27.2, min. 16.5.

Salinity: 36.24, mean of 16 obs., max. 37.21, min. 33.83.

Plankton-type: *D.*

¹ Murray's & Whiting's data used.

OXYTOXUM CONSTRICTUM (STEIN)¹

(*Pygidium constrictum* STEIN. D. Org. d. Infus. Pl. V. fig. 15-18.)

1898 *January*: 36° N. 30° W.

February: 34° N. 31° W. to 27° N. 41° W.

March: 30° N. 44° W.; 44° N. 21° W.

April: 29° N. 38° W. to 22° N. 47° W.; 19° N. 52° W. to 16° N. 56° W.

May: 44° N. 20° W. to 33° N. 42° W.

1899 *July*: 28° N. 40° W., very rare.

Temperature: 21.8, mean of 22 obs., max. 27.2, min. 12.2 (Murray's and Whitting's data).

Salinity: 37.36 (one obs. only)

Plankton-type. Noted from the Mediterranean. — *D.*

OXYTOXUM CRIBROSUM STEIN.

(D. Org. d. Infus. Pl. V fig. 4.)

1898 *August*: Azores, very rare.

Temperature: 21.3.

Salinity: 36.25.

Plankton-type: *D.* ?

OXYTOXUM DIPLOCONUS STEIN.²

(SCHÜTZ: D. Peridoneen d. Plankton-exp. Pl. XVII fig. 54.)

1898 *February*: 27°—28° N. 41°—39° W.

March: 34°—39° N. 39°—32° W.

April: 16° N. 53° W.

May: 45° N. 43° W.

September: 47° N. 9° W.

October: 57° N. 27° W. and 61° N. 6° W.

November: 36° N. 14° W. and 49° N. 12° W.

December: 50° N. 9° W.

¹ Murray's & Whitting's data used.

² Ostenfeld's and Murray's & Whitting's data used.

1899 *April*: 46° N. 13° W. and 32° N. 75° W.

July: 41° N. 37° W.

November: 51° N. 13° W., very rare.

Temperature: 16.₈, mean of 14 obs., max. 24.₁, min. 9.₈.

Salinity: 35.78, mean of 9 obs., max. 36.₅₄, min. 35.₁₁.

Plankton-type: S.

OXYTOXUM SCEPTRUM (STEIN.)¹

(Pygidium sp. D. Org. d. Infus. Pl. V fig. 19—21.)

1898 *April*: 36°—32° N. 28°—34° W.; 26°—27° N. 43°—47° W.

May: 44°—47° N. 19°—13° W.

June: 34° N. 46° W.

Temperature: 18.₈, mean of 4 obs., max. 23.₂, min. 13.₈.

Salinity: 36.18 (one obs.).

Plankton-type. Noted from the Mediterranean. — *D*.

OXYTOXUM SCOLOPAX (STEIN.)¹

(SCOTT: D. Ferdineen d. Plankton-xxx. Pl. XVIII fig. 55.)

1898 *January*: 32° N. 34° W.; Azores.

February: 19°—21° N. 52°—50° W.; Caribbean Sea; 27°—31° N. 41°—35° W.

March: Caribbean Sea; 39° N. 45° W.; 41°—46° N. 21°—19° W.

April: 41° N. 20° W. to 46° N. 56° W.

May: Caribbean Sea; 16°—20° N. 58°—54° W.; 30° N. 44° W. to 47° N. 13° W.; 45° N. 43° W.; 50° N. 14° W.

June: 34° N. 47° W.; 37° N. 26° W.; 48° N. 33° W.; 50° N. 18° W.

July: round the Azores; 48° N. 31° W.; 42° N. 51° W.

August: across the Atlantic, between 40° and 50° N. from 49° N. 14° W. to 42° N. 62° W.

¹ Murray's & Whiting's data used.

- September*: 47° N. 9° W.
 1899 *April*: 41° N. 17° W. to 46° N. 13° W.
June: 20° S. 1° E. to 14° S. 6° W.
July: 15° N. 29° W.; 43° N. 35° W.; 48° N. 23° W.
November: 51° N. 34° W.

Temperature: 18.7, mean of 31 obs., max. 26.1, min. 10.3.

Salinity: 35.08, mean of 26 obs., max. 36.08, min. 32.08.

Plankton-type. This species occurs in the Mediterranean, Pacific and Indian Ocean. To judge from my own observations, it is a typical Styli plankton-form, but MURRAY's and WHITTING's data point more to the conclusion that it belongs to the Desmo-plankton. It occurs in the Atlantic at least from 20° S., but scarcely passes beyond 50° N. — S. (Pl. ?)

OXYTOXUM TESSELATUM (STELL)¹

(SCHUBER: D. Peridinea d. Plankton-exp. Pl. XVII fig. 52.)

- 1897 *September*: 30° N. 30° W.
October: 28°—31° N. 45°—42° W.
November: 24° N. 45° W.
December: 15°—16° N. 78°—77° W.
 1898 *January*: 38° N. 25° W. to 32° N. 34° W.
February: 27°—25° N. 41°—44° W. and 21°—19° N. 50°—52° W.
March: 29°—31° N. 45°—42° W. and 34°—39° N. 39°—32° W.
August: 49° N. 20° W.
 1899 *March*: 46° N. 11° W.
July: 48° N. 25° W.

Temperature: 15.1 to 27.0 (exceptionally 12).

Salinity: 35.17 to 35.11.

Plankton-type. Occurs in the Mediterranean and Indian Ocean.

¹ Murray's & Whitting's data used.

PERIDINIUM BLACKMANI Murr. & Whitt.¹

(Trans. Linn. Soc. London. 2 Ser. Bot. Vol. V part. 9. Pl. XXIX fig. 8, 1899.)

1897 *December*: Caribbean Sea.1898 *January*: 7° N, 54° W.*April*: 16°—22° N, 55°—47° W.*June*: 23° N, 42° W.*July*: 15° N, 71° W.*October*: 30° N, 74° W.*December*: 18° N, 67° W.**Temperature**: 25 to 27.2.**Salinity**: 35.76 to 36.02 (exceptionally 34.88).**Plankton-type.** This species occurs at all seasons in the western tropical Atlantic, in the Equatorial Current N. of S. America, in the Caribbean Sea and the Antilles Current, from 7° to 30° N. — D.

PERIDINIUM CATENATUM LEVANDER.

(Acta Soc. p. Fauna & Flora Fennica IX n. 10 1884.)

1899 *July*: 80° N, 16° E.*September*: 73°—80° N, 18°—13° E.**Temperature**: —0.36 to 6.80.**Salinity**: 34.32—34.82 (exceptionally 25.06).**Plankton-type.** This small and characteristic species occurs in the Baltic (Bay of Finland and at Roslagen). POUQUET (Journ. de l'anatom. et de physiolog. Vol. XIX, 1883, pag. 441 fig. 36) has represented a form from the French coast, that seems to be the same as *P. catenatum*, which thus probably occurs so far south. VANHÖRST found *P. catenatum* in Davis's Strait (May and September 1893). — Ng.¹ Murray's and Whiting's data used.

PERIDINIUM DEPRESSUM BALL.¹

(Smiths. Contrib. 1853 Vol. VII pag. 12 fig. 33, 34. — *Perid. div. v. obliqua* Annay.)

March: N. of Scotland; S. of Iceland; W. of Norway, 58° N. 6° E.; 41° N. 60° W.

April: W. and S. of Iceland; Färöe Channel; 59° N. 28°—46° W.; 43° N. 52° W.

May: S. Iceland to Rockall (maximum at 59°—61° N.), to the Shetlands and E. Scotland; 57°—61° N. 20°—49° W.; 58° N. 5° E. to 65° N. 8° E.; 42° N. 45° W. to 40° N. 72° W.

June: SW. and S. of Iceland to the Färöes (not rare) and the Shetlands; 62° N. 2° E. to 69° N. 15° E.; 71°—72° N. 21°—23° E.; 57° N. 34°—46° W.; 63°—69° N. 55° W.; 40°—44° N. 9° W.

July: round Iceland to the Färöes (common), the Shetlands, 64° N. 3° W. and 59° N. 2° E.; 69° N. 13°—15° E.; 60° N. 17° W. to the south of Greenland, where abundant.

August: N., S. and E. of Iceland to the Färöes and the S. of the Shetlands (maximum); 62° N. 53° W. to Disco; 80°—81° N. 10°—19° E.

September: N. and S. of Iceland; Färöes; Färöe Channel; S. of the Shetlands; between Norway and Spitzbergen; E. Greenland (65° N.); 58° N. 39° W.; SW. of Cape Farewell (maximum) to Disco, along 55° W.

October: S. Iceland to the Färöes; 58° N. 47° W. to 62° N. 56° W.

November: S. Iceland; Färöes; 47° N. 41° W. to 50° N. 67° W.

December: Färöes; 48° N. 40° W. to 43° N. 61° W.

1899 *January:* 48° N. 39° W.; 43° N. 57° W.; 40° N. 66° W.

March: 66° N. 14° W.

April: 36° N. 74° W.

May: Färöes, rare; 60° N. 2°—3° W.; 62° N. 2° E. to 56° N. 1° E., as a rule common; 48° N. 45° W. (rare) to 47° N. 57° W. (common).

June: along the coast of Norway, from 62° N. 2° E. to 70° N. 20° E., thence to Beeren Island, more or less scarce.

¹ Ostenfeld's data used.

July: 71° N. 32° E. to 78° N. 53° E., common at 75° N. 49° E.; 51° N. 47° W. to 52° N. 54° W., rare.

August: 72° N. 26° E. to 78° N. 47° E., as a rule not rare.

September: 79° N. 11° E. to 73° N. 18° E., rare to common; 67° N. 3° W. to 61° N. 1° E., rare; 53° N. 52° W., rare.

November: 52° N. 48° W., rare.

Temperature: 8.s, mean of 15 obs., max. 12, min. 3.s (only such samples calculated as contained this species abundantly).

Salinity: 34.44, mean of 15 obs., max. 35.50, min. 32.57.

Plankton-type. Occurs in the Bering Sea. — *T.* and *Ny.*

PERIDINIUM DIABOLUS Gr.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 13, 20.)

1898 *January*: 11°—16° N. 20°—18° W.

March: 21° N. 18° W.

May: 41° N. 51° W.

June: 40°—44° N. 9°—10° W.

September: Azores.

May: 35° N. 75° W.

Temperature: 14.s to 24.

Salinity: 36 to 36.m.

Plankton-type. This species occurs in the Indian Ocean. It belongs in the Atlantic to the Styli-plankton of the eastern tropical or subtropical region. — *S.*

PERIDINIUM DIVERGENS Ehr.¹

(Schott: D. Peridineeae d. Plankton-exp. Pl. XII fig. 43.)

1898 *January*: 8° N. 21° W. to 12° N. 19° W.; 24° N. 40° W.

February: Caribbean Sea; 21°—26° N. 74° W.

March: 2° N. 24° W. to 18° N. 19° W.; 7° N. 55° W.; Caribbean Sea; 33° N. 32° W.

April: 47° N. 40° W.; 59° N. 22° W.; 60° N. 4° W.; 64° N. 28° W.

¹ Ostenfeld's, but not Murray's & Whitting's data used.

May: 60° N. 4° W. to 59° N. 23° W.; 63° N. 10° W. to 64° N. 23° W.; 66° N. 9° E.

June: 29° N. 36° W.; 44° N. 16° W.; 40°—44° N. 10°—9° W.; 57° N. 38° W.; 63° N. 19° W. to 60° N. 4° W.

July: Azores; 31° N. 39° W. to 21° N. 58° W., sparingly; 25°—38° N. 74° W.; 41° N. 58° W.; area between 58° N. 33° W., S. Iceland and N. Scotland.

August: 30°—38° N. 74°—73° W.; 40°—41° N. 66°—57° W.; area between the Azores, 56° N. 13° W., 45° N. 40° W. and 56° N. 33° W.; area between the Shetlands, 63° N. 10° W. and 63° N. 21° W.; E. Greenland at 65° N.; 78° N. 12° E.

September: 8° N. 25° W.; Azores to 26° N. 39° W., sparingly; 46° N. 11° W.; 47° N. 9° W. to 49° N. 3° W.; area between 56° N. 36° W., S. Iceland, the Shetlands and 56° N. 13° W.; 63° N. 27° W. to 65° N. 30° W.; 70° N. 21° E. to 73° N. 19° E.

October: Azores; area between 58° N. 32° W., 59° N. 3° W. and 63° N. 16° W.

November: 18° S. 31° W.; 29° N. 43° W.; 41° N. 68° W. to 42° N. 64° W.; 56° N. 36°—17° W.; S. Iceland to the Shetlands.

December: Caribbean Sea; 19° N. 58° W.; 25° N. 52° W.; 34° N. 38° W.; Azores; Canaries; 41°—43° N. 66°—57° W.; 62° N. 10° W.

1899 *January:* 32° N. 16° W.; 35° N. 9° W.

March: 10° N. 30° W.; 14° N. 50° W.; 24° N. 40° W.; Azores; 55° N. 16° W.

April: area between 37° N. 9° W., 41° N. 17° W. and 46° N. 13° W.; 32° N. 75° W.

May: 57° N. 3° E.

June: 20° S. 1° E.; 6° S. 16° W.; 21° N. 45° W.; 27° N. 39° W.; Azores; 62° N. 2° E. to 67° N. 11° E.

July: 11°—12° N. 26°—27° W.; 38° N. 39° W. to 48° N. 23° W.

August: 48° N. 20° W. to 49° N. 11° W.; 55° N. 9° W. to 56° N. 31° W.

September: 72° N. 18° E.; 56° N. 17°—33° W.

October: 52° N. 21° W.

November: 51° N. 13 and 28° W.

Temperature: 15._s, mean of 77 obs., max. 28, min. 6._s.

Salinity: 35.₃₇, mean of 73 obs., max. 37.₅₀, min. 31.₀₀.

Plankton-type. The typical *Perid. divergens* occurs in the Mediterranean, the Red Sea, Indian Ocean and in the whole tropical and temperate Atlantic, but is rather rare in the Sargasso Sea and Florida Current. Its principal area of distribution is between the Azores and Iceland to Scotland, whence it enters the North Sea and the Skagerak and follows the coasts of Norway towards Spitzbergen, thus from 20° S. to 78° N. It enters, as a constant, but scarce constituent, the Tripos-plankton of the North Sea. — *S. (D).*

FERIDINIUM (DIVERGENS VAR.) ELEGANS CL.

(K. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 15, 16.)

1898 *January*: 12° N. 50° W.; 32° N. 74° W.

March: 4° S. 10° W.; 7° N. 17° W.; 9° N. 59° W.

May: area between 23° N. 45° W., 29° N. 39° W. and 28° N. 47° W.

June: 19° N. 63° W.; 31° N. 50° W.; 29° N. 36° W.

July: 21° N. 58° W.; 33° N. 74° W.; 51°—42° N. 58°—48° W.

August: Caribbean Sea; 34° N. 73° W.; 40° N. 66° W. to 44° N. 42° W.

September: 9° N. 53° W.; 20° N. 74° W.; 41° N. 65° W.

October: 21° S. 36° W.; 26° N. 76° W.; 34° N. 74° W.

November: 8° N. 38° W.; 26° N. 48° W.; 42° N. 64° W. to 47° N. 41° W.; 36° N. 15° W., Canaries.

December: 18° N. 67° W.

1899 *January*: 34° N. 12° W.

March: 21° N. 43° W.

April: 36° N. 74° W.

May: 35° N. 75° W.

July: 11°—12° N. 26°—27° W.

Temperature: 23._s, mean of 43 obs., max. 28.₁, min. 10.

Salinity: 35.₈₁, mean of 40 obs., max. 37.₂₅, min. 32.₈₇.

Plankton-type. Occurs in the Indian Ocean. — *D.*

PERIDINIUM EXIGUUM Gr.

(Kongl. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VIII fig. 5.)

1899 *August*: Azores, very rare.**Temperature:** 21.3.**Salinity:** 36.25.**Plankton-type.** My specimens were found in Styli-plankton, contaminated by some Desmo-plankton.PERIDINIUM GLOBULUS STEIN.¹

SCOTT: D. Peridinium d. Plankton exp. Pl. XV fig. 48.)

1898 *January*: 11° N. 20° W. to 21° N. 17° W. and the Azores; 14° N. 49° W.; 29°—35° N. 74° W.*February*: 21°—19° N. 50°—52° W., Caribbean Sea; 21°—34° N. 74°—73° W.*March*: 11°—16° N. 19°—17° W.; Azores to 45° N. 19° W. and to 29° N. 45° W.; 10° N. 53° W.; Caribbean Sea; 32° N. 74° W.*April*: area between 10° N. 53° W., 19° N. 52° W. and 16° N. 56° W.; Caribbean Sea; 29° N. 38° W. to 41° N. 20° W.*May*: 6° N. 56° W.; Caribbean Sea; 20° N. 60° W. to 22°—24° N. 53°—51° W.; 31°—34° N. 45°—40° W.; area between 38° N. 21° W., 47° N. 13° W., 49° N. 22° W. and 41° N. 51° W.; 57° N. 28° W.*June*: 48° N. 33° W.; 60° N. 4° W.*July*: 31° N. 39° W.; Azores; 41°—42° N. 58°—48° W.; 58° N. 36° W. to 60° N. 23° W. and 59° N. 13° W.*August*: Azores; 49° N. 20° W.; SW. of Iceland; 40°—41° N. 59°—50° W.*September*: Azores; 46° N. 11° W.; area between 60° N. 4°—21° W. and 63° N. 25° W., thence across Denmark's Sound to E. Greenland, at 65° N. 38° W.*October*: 59° N. 3° W. to 58° N. 32° W.; S. of Iceland.*November*: 5° S. 34° W.; 13° N. 27° W., 56° N. 20° W.;¹ Murray's & Whitting's and Ostenfeld's data used.

40° N. 67° W.; 53° N. 61° W.; 48° N. 41° W.; S. of Iceland to the Faröes and 60° N. 4° W.

1899 *January*: off Gibraltar; Canaries.

February: 32° N. 46° W.

March: Azores.

April: 42°—44° N. 18°—15° W.

June: 5°—15° S. 17°—5° W.

July: 11° N. 26° W. to 23° N. 36° W.; area between 38°—40° N. 39°—38° W. and 45° N. 31° W.

September: 56° N. 33° W.

October: 56° N. 38° W.

Temperature: 20._s, mean of 69 obs., max. 27._s, min. 8._s.

Salinity: 35.₂₃, mean of 50 obs., max. 38.₂₄, min. 33.₂₈.

Plankton-type. I have found this species in samples from the Red Sea. It enters the Atlantic W. of S. Africa, occurs rarely in the Brazil current, in the spring N. of S. America, in the Caribbean Sea and the Florida Current, but is less abundant in the western than in the eastern Atlantic, where it spreads from the Cape Verde Islands towards the Azores. In May—July it occurred between 40° and 50° N., extended in July to 60° N., in August to Iceland and in September to E. Greenland. It has been seen only rarely in the northern and southern parts of the Sargasso Sea — S.

PERIDINIUM HINDMARCHII MURR. & WHITT.¹

(Trans. Linn. Soc. London 2nd. Ser. Bot. Vol. V. part. 9 Pl. XXIX fig. 1.)

1897 *December*: 29° N. 36° W., very rare; 25° N. 50°—51° W.; Caribbean Sea.

1898 *March*: 34°—39° N. 39°—32° W.; Caribbean Sea.

April: 22°—19° N. 47°—60° W.; 19°—16° N. 50°—56° W.

Temperature: 23._s, mean of 12 obs., max. 27._s, min. 15._s.

Plankton-type: *h*.

¹ Murray's & Whitting's data used.

PERIDINIUM MICHAËLIS Ehr.¹

SCHEER: D. Penetration d. Plankton-exp. Pl. XIV fig. 46.

- 1898 *January*: 15°—21° N. 18°—17° W.; 44° N. 17° W.
February: 27° N. 41° W. to 34° N. 31° W. (Murr. & Whitt.).
March: 7° N. 55° W.; Caribbean Sea; 34° N. 39° W. to 34° N. 32° W.; 21° N. 18° W. to 27° N. 16° W.; 42° N. 21° W.
April: 10° N. 53° W.; Caribbean Sea; Azores to 41° N. 21° W.; 41° N. 45° W. to 48° N. 30° W.; area between 29° N. 38° W., 16° N. 56° W. and 26° N. 49° W. (Murr. & Whitt.).
May: 41° N. 65° W. to 50° N. 21° W.; 63° N. 13° W.; 16°—20° N. 58°—54° W. (Murr. & Whitt.); 33°—34° N. 42°—40° W., (Murr. & Whitt.).
June: 31° N. 17° W.; 42° N. 9° W.; Azores; 44° N. 26° W.; 48° N. 33° W.; 60° N. 4° W.; 62° N. 14° W.; Westmanns ö.
July: Azores; 49° N. 22° W.; 40° N. 69°—67° W.; 58° N. 32° W.; 60° N. 23° W.; Färöes; Shetlands.
August: Azores; 48° N. 23° W.; 41° N. 50° W.; Disco, abundantly; 60° N. 23° W.; 60° N. 17° W.; Shetlands.
September: Azores; 41° N. 58° W.; 46° N. 11° W.; Shetlands; Färöes; 63° N. 25° W.; W. Greenland (65°—60° N. 55°—53° W.).
October: Azores; Shetlands.
November: 0° S. 34° W.; 4° N. 30° W.; 13° N. 27° W.; Canaries; Azores; Shetlands; 48° N. 41° W.
December: Azores.
- 1899 *January*: Canaries; 35° N. 9° W.; 48° N. 30° W.; 40° N. 66° W.
March: Azores.
April: area between 41°—42° N. 17°—18° W. and 46° N. 13° W.
May: 50° N. 39°—33° W.; 58° N. 9° W.; 61° N. 5° W.
June: 20° S. 1° E.; 5° S. 17° W.; 1° N. 23° W.
July: 12°—15° N. 27°—29° W.; 38° N. 39° W. to 48° N. 25° W.
August: 48°—49° N. 20°—11° W.

¹ Murray's & Whittig's and Ostenfeld's data used.

September: 73° N. 19° E. to Breen Island and the W. of Spitzbergen to 80° N. 13° E.

November: 51° N. 13° W.; 52° N. 48° W.

Temperature: 16.4, mean of 14 obs., max. 22.5, min. 6.3 (no data relating to a rare occurrence of this species used).

Salinity: 35.56, mean of 12 obs., max. 36.41, min. 32.56.

Plankton-type. According to my notes and OSTENFELD'S data this species is a typical Stylioplankton-form with essentially eastern distribution. It has been seen only rarely along the N. coast of S. America and not in the Florida Current. It enters the Atlantic west of S. Africa, spreads from the Cape Verde Islands to the Azores and occurs in May across the Atlantic between 40° and 50° N. It was seen in June between the Shetlands and Iceland, in August at W. Greenland and in September (1890) W. of Spitzbergen. I have never found it in any collection from the Sargasso Sea, but MURRAY & WERRING mention it from that region. — S.

PERIDINIUM OCEANICUM VANHÖFFS.

(1) Flora u. Fauna Grönlands Pl. V. fig. 2. 1897. *P. divergens* var. *obliqua* ALIV.
1898 *P. divergens* var. *SCUDER* D. Peridineaen J. Plankton expedition Pl. XIII
(fig. 44)

1898 *January*: 7° N. 53° W.; 21° N. 17° W.

March: 18° N. 18° W. to 25° N. 16° W.; Azores 41°—43° N. 56°—48° W.

April: 41° N. 19° W.; 50° N. 9° W.; 42°—44° N. 47°—45° W.; Färöes; 58°—59° N. 22°—50° W.; 62° N. 50° W.

May: Azores to 41° N. 16° W.; across the whole Atlantic, between 40°—50° N., from 42° N. 61° W. to 50° N. 14° W.; 58° N. 45° W. to 60° N. 31° W.; 61° N. 20° W.

June: 19° N. 63° W.; area between the Azores, Lisbon, Cape Finisterre and 45° N. 26° W.; 42° N. 50° W.; 48° N. 33° W.

July: Azores; 42° N. 48° W.; 49° N. 22° W.; 58° N. 44° W. to 60° N. 27° W.; 63° N. 14° W.

¹ Ostenfeld's data used.

August: Azores; 41° N. 50° W.; 50°—49° N. 10°—14° W.; 55°—54° N. 41°—47° W.; 60° N. 3° W. to 63° N. 15° W.

September: Azores; 56° N. 28° W. to 55° N. 43° W.; area between the Shetlands, 60° N. 10° W. and 63° N. 7° W.; 62° N. 21° W.; 65° N. 36° W.; 59° N. 34° W. to 58° N. 39° W.; 60° N. 55° W.

October: Shetlands to 63° N. 14° W. and 60° N. 10° W.; 59° N. 21° W. to 58° N. 48° W.

November: Shetlands to 63° N. 13° W.; 56° N. 22°—29° W.; 52° N. 38° W.; 53° N. 50° W.; 42° N. 64° W. to 40° N. 67° W.

December: 22° N. 56° W.; Azores (common); 41° N. 66° W. to 62° N. 10° W. (very rare).

1899 *January:* 41° N. 69° W.

February: 32° N. 47° W.

March: 46°—37° N. 29°—26° W.; 64° N. 12° W.

April: 32° N. 75° W.

May: 50° N. 33°—39° W.; 35° N. 75° W.

June: 21° N. 45° W.

July: 58° N. 23° W.; 57° N. 31° W.

August: 55° N. 26° W.; 56° N. 38° W.

September: 56° N. 30° W. to 54° N. 40° W., as a rule common.

October: area between 56° N. 23°—38° W. and 53° N. 25°—37° W., common in the west.

November: 51° N. 28° W., not rare.

Temperature: 12.8, mean of 32 obs., max. 22, min. 3 (no observations relating to a rare occurrence considered).

Salinity: 35.45, mean of 28 obs., max. 36.51, min. 34.16.

Plankton-type. This species occurs in the Red Sea and the Indian Ocean. It is a typical Stylioplankton-form, with essentially eastern distribution, occurring only rarely North of S. America, in the Caribbean Sea and the Florida Current. The principal area of distribution is from the Azores northwards, in May between 40° and 50° N., across the whole Atlantic, in July round the S. end of Greenland, in October from the Shetlands across the Irminger Sea and into Davis's Strait. It appeared in November north and south of the Newfoundland Banks — S.

PERIDINIUM OVATUM (PORCHET).²

(SCHÜTZ, D. Peilinnocn d. Blankton-exped. Pl. XVI.)

- 1898 *April*: 39° N. 74° W.
May: 72° N. 13° W.; S. of Iceland; Färöe Channel; N. of Scotland; Shetlands to Norway; 62° N. 4° E. to 66° N. 9° E.; S. of Iceland and N. of Rockall to 28° W.; SW. of Greenland; 50° N. 22° W.
June: N. and S. of Iceland; 57° N. 34°–38° W.; W. of Greenland, 63°–66° N. 55°–55° W.; 67°–68° N. 10°–13° E.; SW. of Spitzbergen; W. of Portugal, 40°–42° N. 10°–9° W.
July: N. and S. of Iceland; N. of the Färöes; S. of the Shetlands; 59° N. 21° W. towards Cape Farewell; 78° N. 1° E.—3° W. (deep sea hauls Auriv.).
August: SW. and S. of Iceland; Färöe Channel; Irish Channel; SW. and N. of Spitzbergen; E. of Greenland (65° N.); 52° N. 55° W.
September: N. and S. of Iceland; between Iceland, the Färöes and Rockall; S. of the Färöes; 65°–66° N. 36°–31° W.; 56° N. 36° W.; from Cape Farewell to Disco; Beeren Island; Spitzbergen.
October: S. Iceland to the Färöes; SW. of Cape Farewell.
November: S. of Iceland; 51° N. 20° W.; 47° N. 41° W. to 45° N. 52° W.
December: 63° N. 19°–21° W.; 42° N. 49° W. to 43° N. 61° W.
- 1899 *January*: 45° N. 49° W.; 40° N. 66° W.
April: 46° N. 13° W.
May: N. and S. of Iceland; between Iceland and the Färöes; 62° N. 7° W. (rare) to 59° N. 2° W. (common) thence to 56° N. 1° W. (very common).
June: Westmanna ö, rare; 62° N. 1°–2° E., rare; 64° N. 7° E. to 72° N. 19° E. (common to rare), thence to Spitzbergen, 78° N. 12° E., at several points common.
July: 78°–80° N. 11°–14° E., more or less common; 71° N. 32° E., rare; 71°–72° N. 21°–22° W., rare; 57° N. 31° W.

² Ostenfeld's data used.

August: 71° N. 20°—23° W., rare; 73° N. 31° E. to 76° N. 41° E.

September: 61° N. 1° E., rare (haul from 100 m.); 78° N. 12° E. to 74° N. 18° E., rare to common; 51° N. 28° W., rare.

Temperature: 6.4, mean of 12 obs., max. 14.8, min. 2; (only such samples as contained this species abundantly have been considered).

Salinity: 34.66, mean of 11 obs., max. 34.86, min. 32.45.

Plankton-type: *T.* (*Ns*).

PERIDINIUM PALLIDUM Ostr.¹

Bahttagelser over overfladevandets temperatur, saltindhold og plankton paa islandske og grønlandske skibe-ruter i 1898 pag. 60 K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII (p. 21, 22.)

1898 *April*: S. of Iceland; 59° N. 10° W. to 59° N. 22° W.; 39° N. 74° W., not rare.

May: S. of Iceland; 59°—61° N. 2°—28° W.

June: S. Iceland to Scotland and to the Färöes and the Shetlands; 57° N. 34°—38° W.; 63°—66° N. 56°—55° W.

July: S. Iceland to the Färöes and Scotland; 60° N. 17° W. to S. of Cape Farewell.

August: round Iceland; Iceland to Scotland and to E. Greenland (65° N.); 62°—66° N. 56°—55° W.; 48° N. 24° W.

September: N. and S. of the Färöes; 59° N. 1° W.; S. Iceland to E. Greenland; 59° N. 50° W. to Disco.

October: S. of Iceland; W. of the Färöes; 62° N. 56° W.

1899 *June*: 62° N. 2°—1° E., rare; 74° N. 24° E., rare.

July: 71° N. 32° E. to 78° N. 53° E., more or less scarce; 51° N. 47° W. to 52° N. 54° W., not rare.

August: 71° N. 20° W., rare; 72° N. 26° E., rare; 75° N. 38° E., rare.

September: 75° N. 17° E. to 79° N. 11° E., rare; 52° N. 55° W., rare; 56° N. 33° W., rare.

October: 53° N. 37° W., rare.

¹ Ostenfeld's data used.

Temperature: 8.6, mean of 45 obs., max. 19.4, min. 0.
Salinity: 34.81, mean of 45 obs., max. 35.97, min. 32.42.
Plankton-type. Arctic species. — *T. (N2)*.

PERIDINIUM PEDUNCULATUM Schürr.¹

(D. Peridinea d. Plankton-exp. Pl. XV fig. 48.)

- 1898 *May:* 58° N. 21° W.
June: 60° N. 4° W.
July: 31°—34° N. 39°—33° W.; 41° N. 58° W.; 58° N. 27° W.;
 63° N. 14° W.; 60° N. 4° W.
August: Azores; 62° N. 18° W.
September: 50° N. 26°—4° W.
October: 57° N. 27° W. to 60° N. 4° W.
November: 45° N. 7° W.; 56° N. 23° W.; 47° N. 41° W. to
 40° N. 67° W.; Färöes.
December: 53° N. 57° W.
- 1899 *April:* 44° N. 15° W.
July: 23° N. 36° W.; 40° N. 38° W. to 48° N. 25° W.
November: 51° N. 21° W.

Temperature: 14.5, mean of 38 obs., max. 25.3, min. 7.
Salinity: 35.0, mean of 36 obs., max. 37.06, min. 33.08.
Plankton-type. Noted from Naples (Schürrer). — *S.*

PERIDINIUM PELLUCIDUM (Héron)²

(Schürr: D. Peridinea d. Plankton-exp. Pl. XIV fig. 45.)

- 1898 *April:* 43° N. 50° W., common.
May: 58°—60° N. 13°—31° W.
June: S. Iceland to Scotland; 57° N. 34°—42° W.; 59° N. 51°
 W. to Disco; SE. of Spitzbergen.
July: S. Iceland; between Iceland and the Färöes to Scotland;
 59° N. 21° W. to S. of Cape Farewell; 78° N. 7°—3° W.

¹ Ostenfeld's data used.

August: SW. and S. of Iceland; Färöes; Shetlands; E. Greenland (65°—66° N.); round Spitzbergen, more or less abundant.

September: SW. and S. of Iceland; 60° N. 4°—26° W.; Disco; S. of Spitzbergen.

October: S. Iceland to NE. Scotland; SW. of Cape Farewell; 41° N. 67° W.

November: S. Iceland to Scotland; 48° N. 49° W. to 40° N. 67° W.

December: 47° N. 46° W. to 43° N. 61° W.; 29° N. 14° W.

1899 *January:* 40° N. 66° W.; 43° N. 57° W.

March: 46° N. 11° W.

June: 41° N. 17° W. to 46° N. 13° W., rare.

May: N. of Iceland, 60° N. 20°—24° W.; Färöes, rare, to 56° N. 1° W., common; 58° N. 9° W.; 50° N. 33° W., common.

June: 64° N. 7° E. to 72° N. 18° E., not rare; 73° N. 18° E.; 80° N. 16° E. (common).

July: 74°—70° N. 20°—21° W., rare; 72° N. 23° W., common; 79° N. 10° E. to 75° N. 48° E., not rare to common; 48° N. 23° W.; common; 53° N. 51° W., not rare.

August: 71° N. 30° W., very rare; 75°—76° N. 38°—41° E., rare.

September: 74° N. 18° E. to 81° N. 16° E., as a rule rare; 52° N. 55° W., rare.

November: 51° N. 28° W., rare.

Temperature: 5.5, mean of 12 obs., max. 18.5, min. —0.5 (only such samples as contained this species abundantly considered).

Salinity: 34.55, mean of 12 obs., max. 35.55, min. 32.55.

Plankton-type. Arctic species; its occurrence at Naples (Scambrone) is therefore very strange. — *T. (N.)*.

¹ Ostanfeld's data used.

PHALACROMA CUNEUS SCHÜTT.

D. Peridoneon d. Plankton-exp. Pl. III fig. 14.)

1898 *January*: 6° N. 26° W.; 16° N. 48° W.; 35° N. 74° W.*February*: 21° N. 74° W.*March*: Caribbean Sea; 25° N. 41° W.; 37° N. 24° W.; 40° N. 20° W.*April*: Caribbean Sea.*May*: 13° N. 51° W.*June*: 34° N. 32° W.*July*: 20° N. 58° W.; 26° N. 48° W.*August*: Azores.*September*: 33° N. 31° W.; 33° N. 74° W.*October*: Azores.*November*: 13° N. 27° W.; 26° N. 48° W.; 29° N. 19° and 43° W.*December*: 28°—29° N. 17°—14° W.; 28° N. 47° W.1899 *January*: 35° N. 9° W.; 34° N. 42° W.*June*: 3° S. 20° W.*July*: 28° N. 40° W.**Temperature**: 22., mean of 28 obs., max. 27., min. 13.s.**Salinity**: 36.44, mean of 22 obs., max. 37.44, min. 35.44.**Plankton-type**. Occurs in the Mediterranean and the Indian Ocean. — *D.*PHALACROMA DORYPHORUM STRICK.¹

(SCHÜTT: D. Peridoneon d. Plankton-exp. Pl. IV fig. 18.)

1897 *December*: 0° N. 31° W. and 9° N. 29° W.; Caribbean Sea; 23°—25° N. 51°—50° W.; 23° N. 43° W.; 29° N. 36° W.; Azores.1898 *January*: 0°—10° N. 26°—25° W.; 7° N. 53° W.; 29°—32° N. 74° W.; Azores to 32° N. 34° W.*February*: 19° N. 52° W. to 31° N. 35° W.; Caribbean Sea.*March*: 10° N. 20° W.; 10° N. 53° W.; Caribbean Sea; 29° N. 45° W. to 34° N. 39° W.; 39° N. 32° W.¹ Murray's & Whiting's data used.

April: 12° N. 51° W.; Caribbean Sea; 16° N. 56° W. to 26° N. 43° W.; 30° N. 23° W. to 41° N. 20° W.

May: Caribbean Sea; 16° N. 56° W. to 32° N. 42° W.; 38° N. 21° W. to 41° N. 16° W.

June: 31° N. 17° W.; 19° N. 63° W.; 48° N. 33° W.

July: Caribbean Sea; 29° N. 74° W.; 41° N. 58° W.; 26° N. 48° W. to 36° N. 28° W.; 41° N. 58° W.

August: 22°—30° N. 75° W.; 40° N. 67° W. to 40° N. 58° W. Azores.

September: Azores; 41° N. 65° W.; 57° N. 14° W.

October: Azores; 42° N. 57° W.

November: 8° N. 28° W.; 13° N. 27° W.; 29° N. 19° W.; 34° N. 10° W.; Azores; 48° N. 23° W.

December: Azores.

1899 *January*: Canaries; Madeira to 35° N. 9° W.

March: Azores.

June: 12° S. 9° W.; 9° N. 25° W.; 27° N. 39° W.

July: 11°—12° N. 26°—27° W.

Temperature: 22, mean of 55 obs., max. 28.4, min. 14.4.

Salinity: 35.34, mean of 41 obs., max. 38.45, min. 33.35.

Plankton-type. This species occurs in the Mediterranean, the Red Sea, the Indian Ocean and the Pacific. — *D.*

PHALACROMA HINDMARCHII Munn. & Winter.

(Trans. Linn. Soc. Lond. 2nd Ser. Bot. Vol. V part. 9 pl. XXXI fig. 5.)

1897 *December*: 29° N. 36° W.

1898 *February*: 25°—28° N. 44°—39° W.

March: 14°—16° N. 64°—68° W.

April: 19°—22° N. 52°—47° W.

July: 24° N. 54° W.; 29° N. 74° W.

August: 25° N. 74° W.; 44° N. 41° W.

October: 34° N. 74° W.

November: 22° N. 53° W.; 26° N. 48° W.

December: 18° N. 67° W.

¹ The punctation of the membrane is much too coarse on the figure quoted.

- 1899 *April*: 28° N. 75° W.
June: 9° N. 25° W.
Temperature: 25.2, mean of 16 obs., max. 28, min. 21.1.
Salinity: 36.37, mean of 10 obs., max. 37.13, min. 34.33.
Plankton-type: *D*.

PHALACROMA JOURDANI (GOURNET).

(Scienc. D. Périodique d. Plankton-exp. Pl. IV fig. 20.)

- 1898 *June*: 24° N. 58° W.
August: 40° N. 67° W. to 44° N. 41° W.
September: 43° N. 18° W., 47° N. 9° W.; 41° N. 65° W.
December: 25° N. 52° W.
 1899 *January*: 34° N. 12° W.
March: 35° N. 16° W.; 21° N. 63° W.
Temperature: 25.3, mean of 8 obs., max. 28, min. 15.3.
Salinity: 35.31, mean of 7 obs., max. 37.23, min. 34.33.
Plankton-type. Occurs in the Mediterranean. — *S?* *D?*

PHALACROMA MINUTUM G.

(K. Vel. Akad. Handl. Vol. XXXIV n. 1 Pl. VIII fig. 10, 11.)

- 1899 *July*: 41° N. 57° W.
August: 41° N. 62° W.
Temperature: 22 to 24.3.
Salinity: 33.33 to 36.33.
Plankton-type: *D?*

PHALACROMA OPERCULATUM STRIX.¹

(D. Org. d. Infusionsth. Pl. XVII fig. 7—10.)

- 1897 *December* and
 1898 *January*: 15° S. 37° W.; 4° N. 29° W.; 12° N. 50° W.; Car-
 ibbean Sea; 23°—25° N. 51°—50° W.; 19° N. 45° W. to
 the Azores.

¹ Murray's & Whiting's data used.

1898 *January*: 15°—17° S, 37°—38° W.; 9°—10° N, 26°—25° W.; 16° N, 18° W.; 25°—35° N, 74° W.; 32° N, 34° W. to the Azores.

February: 19° N, 52° W. to 28° N, 30° W.; Caribbean Sea; 30° N, 74° W.

March: Caribbean Sea; 18° N, 46° W.; 29° N, 45° W. to 42° N, 22° W.

April: area between 10° N, 53° W., 26° N, 43° W and 19° N, 58° W.; Caribbean Sea; area between 30° N, 22° W., 32° N, 34° W, and 41° N, 20° W.

May: Caribbean Sea; 24°—26° N, 51°—52° W. to the Azores and thence to 47° N, 13° W., 41° N, 56° W.

June: 27°—30° N, 55°—53° W.; Azores; 31° N, 17° W.

July: 26°—29° N, 48°—44° W.; Azores; 41° N, 67° W.

August: Azores; 43° N, 53° W. to 44° N, 42° W.

September: 33° N, 31° W.; Azores; 29° N, 74° W.; 41°—42° N, 65°—57° W.

October: Azores.

November: 36° N, 14° W.; Azores.

December: 19° N, 58° W., 24° N, 52° W., 36° N, 38° W.; Azores.

1899 *January*: 29° N, 16° W.; 34° N, 12° W.; 35° N, 9° W.

March: 21° N, 43° W.

April: 28° N, 75° W.

June: 5° S, 17° W.; 24° N, 42° W.; 27° N, 39° W.

July: 12° N, 27° W.

Temperature: 22.1, mean of 60 obs., max. 28, min. 16.4.

Salinity: 36.23, mean of 42 obs., max. 37.23, min. 32.23.

Plankton-type. Occurs in the Mediterranean, the Red Sea and the Indian Ocean. — *D.*

PHALACROMA RAPA STEIN.¹

(*D. Org. d. Infus. P.* XIX fig. 5—8. *P. nava* STEINER *D. Peridoneen d. Plankton exp.* Pl. IV fig. 18.)

1897 *December*: 12° N, 50° W.; Caribbean Sea; 23° N, 51° W. to 25° N, 50° W.; Azores.

¹ Murray's & Whitting's data for *P. nava* used.

1898 *January*: 17° S. 38° W.; 8° N. 21° W.; Azores to 33° N. 31° W.

February: Caribbean Sea; 21° N. 74° W.

March: 11° N. 19° W.; 12° N. 51° W.; Caribbean Sea; 29° N. 45° W. to 34° N. 39° W.; Azores.

April: 15° N. 67° W. to 22° N. 47° W.

May: Azores; 22° N. 53° W. to 32° N. 42° W.; Caribbean Sea.

June: Canaries; 42° N. 50° W.

July: 34° N. 33° W.

August: 23° N. 74° W.

September: Azores; 41° N. 65° W.; 42° N. 57° W.

October: Azores.

November: 13° N. 27° W.; 34° N. 40° W.; Azores.

December: Porto Rico; Azores.

1899 *January*: 34°—35° N. 12°—9° W.

March: 35° N. 16° W.; Azores.

April: 41°—42° N. 17°—18° W.; 36° N. 74° W.

June: 20° S. 1° E. to 14° S. 7° W.; 25° N. 42° W.

July: 28° N. 40° W.

Temperature: 21.1, mean of 39 obs., max. 27.4, min. 13.4.

Salinity: 35.50, mean of 28 obs., max. 37.13, min. 33.44.

Plankton-type. Found in the Pacific. — *D.*

PODOLAMPAS BIPES STEIN.¹

(Scaffer: D. Peridinea 4. Plankton exp. Pl. XIX fig. 19.)

1807 *December*: 33° N. 24° W. to 12° N. 50° W.; 23°—25° N. 51°—50° W.; Caribbean Sea.

1898 *January*: 8°—10° N. 21°—25° W.; 14° N. 49° W.; 25°—32° N. 74° W.; Azores to 32° N. 34° W.

February: Caribbean Sea; 21°—34° N. 74°—73° W.; 31° N. 35° W. to 19° N. 51° W.

March: 10°—16° N. 20°—18° W.; 9° N. 59° W.; 15° N. 49° W.; Caribbean Sea; 32° N. 74° W.; 30° N. 43° W.

April: 7° N. 55° W.; Caribbean Sea; 31° N. 75° W.; 40° N. 30° W. to the Azores; 32° N. 34° W. to 17° N. 72° W.

¹ Murray's & Whitting's data used.

- May*: Caribbean Sea; 16°—20° N. 58°—60° W. to 32° N. 42° W.
- June*: 10° N. 53° W.; 19° N. 63° W.
- July*: Caribbean Sea; 30° N. 67° W. to 42° N. 48° W.; Azores; 26° N. 48° W.
- August*: Caribbean Sea; 25° N. 74° W.; 40° N. 67° W. to 44° N. 42° W.; 48° N. 24° W.
- September*: 8°—9° N. 25°—24° W.; 44° N. 16° W. to 46° N. 11° W.; 41° N. 65° W. to 42° N. 57° W.
- October*: 42° N. 15° W.
- November*: 4° N. 30° W. to 24° N. 21° W.; 34°—36° N. 10°—14° W.; 45° N. 7° W.; 42° N. 63° W.
- December*: Caribbean Sea; Canaries; 43° N. 57° W.
- 1899 *January*: 33°—34° N. 15°—12° W.
- February*: 32° N. 47° W.
- March*: 24° N. 40° W.; 35° N. 16° W.
- April*: area between 41° N. 17° W., 42° N. 18° W. and 44° N. 15° W.
- May*: 35° N. 75° W.
- June*: 16° S. 3° W. to 9° N. 25° W.; 27° N. 38° W.
- July*: 11° N. 26° W.; 25° N. 37° W.; 40° N. 38° W. to 48° N. 25° W.
- September*: 51° N. 13° W.; 53° N. 43° W.

Temperature: 23, mean of 82 obs., max. 28, min. 13

Salinity: 35.74, mean of 64 obs., max. 37.52, min. 33.20

Plankton-type. Occurs in the Mediterranean, the Red Sea, the Indian Ocean and the Pacific. It belongs to the tropical Atlantic, at least from 16° S., and advances from July to September (maximum in August) beyond 40° N. (isolated specimens beyond 50° N.), in November to the Bay of Biscay. — *D.*

PODOLAMPAS PALMIPES STEIN.¹

(SCOTT D. Peridinium d. Plankton-expedition Pl. XVIII fig. 68)

1897 *December*: and

1898 *January*: 9° N. 25° W. to 16°—21° N. 17°—18° W.; 34°—35° N. 30°—31° W.; Sargasso Sea; Caribbean Sea.

¹ Murray's & Whiting's and Ostenfeld's data used.

February: 27° N. 41° W. to 31° N. 35° W.; whole Caribbean Sea; 30° N. 74° W.

March: Caribbean Sea; 32° N. 74° W.; 29° N. 45° W. to the Azores; 49° N. 33° W.

April: Caribbean Sea; 15°—16° N. 49°—56° W.; 26° N. 43° W. to the Azores.

May: Caribbean Sea; 27° N. 49° W. to 34° N. 40° W.; area between the Azores, 45° N. 43° W. and 49° N. 23° W.

June: Canaries.

July: 31° N. 38° W.; Azores.

August: 40° N. 66° W. to 42° N. 48° W.; 48°—49° N. 24°—14° W.; 68° N. 8° W.; 60° N. 30° 30' W.

September: 46° N. 11° W.; 57° N. 14° W.; 60° N. 26° W.

October: 57° N. 27° W. to 59° N. 21° W.; 60° N. 4°—6° W.

November: 49° N. 12° W.; 56° N. 17°—30° W.; 53° N. 50° W.

December: 25° N. 52° W.

1899 *January*: 35° N. 9° W.; 48° N. 39° W.

March: 37° N. 26° W.

April: 41°—44° N. 17°—15° W.

June: 20° S. 1° E. to 5° S. 17° W.; 9° N. 25° W.

July: area between 12° N. 27° W., 43° N. 35° W. and 33° N. 41° W.

September: 54° N. 48° W.

November: 51° N. 21° W.

Temperature: 19.₂, mean of 51 obs., max. 27.₂, min. 7.₂.

Salinity: 35.₀₀, mean of 37 obs., max. 37.₀₀, min. 32.₀₀.

Plankton-type. This species belongs both to the Styli- and Desmo-plankton. When in May the water with Desmo-plankton expands to the north and becomes mixed with water containing Styli-plankton, the species of the Desmo-plankton, which can stand the lowering of the salinity and the temperature, follow the Styli-plankton towards Iceland and the Färöe Channel, where this species arrives in August and September. This species occurs in the Mediterranean, the Red Sea, Indian and Pacific — *D. S.*

PROTOCERATIUM RETICULATUM CLAP. & LACHM.¹

Scienc. B. Peridinaceæ d. Plankton-exped. Pl. VII fig. 28.

1898 *January*: 36° N. 74° W.

February: 26° 34° N. 74° W.

August: 60° N. 53° W., common.

September: 60° N. 4° W., rare.

October: 57° N. 27° W. to 60° N. 6° W., rare.

November: 42° N. 64° W.; 60°—63° N. 4°—16° W.

Temperature: at Disco (where common) 5.3, in the Irminger Sea (where rare) 10.3, mean of 7 obs., max. 11.3, min. 6.3; in the NW. of N. America (rare) 18.3, mean of 4 obs., max. 21°, min. 16.3.

Salinity: 32.3, (Disco); 35.33 (Irminger Sea, max. 35.48, min. 35.19).

Plankton-type. The absence of this species in the tropical and temperate Atlantic, its abundance off the W. Greenland and its scarcity in the Irminger Sea point to the conclusion that it is an arctic or northern neritic species, that drifts with the southward American Current and into the Irminger Sea. — SCANDON mentions it from Naples. — *Ns.*

PYROPHACUS HOROLOGIIUM STRICK.²

B. Org. d. Infus. Pl. XXIV, XXV fig. 1.

1897 *December* and

1898 *January*: 20° N. 18° W. to 16° S. 37° W.; 12°—16° N. 50°—48° W.

February: 6°—5° S. 10°—0° E.; Caribbean Sea; 21° N. 74° W.

March: 6° S. 4° W. to 7° N. 17°—22° W.; 23° N. 28° W.;

25° N. 16° W.; 10° N. 53° W. to 18° N. 46° W.; Caribbean Sea.

April: area between 10° N. 53° W., Barbados, 22° N. 47° W. and 18° N. 46° W.; Azores.

May: 11° N. 52° W. to 29° N. 39° W.; Azores; 48° N. 33° W.

¹ Ostenfeld's data used.

² Ostenfeld's and Murray's & Whiting's data used.

June: area between 10° N. 53° W., 19° N. 63° W., 33° N. 48° W. and 29° N. 36° W.; 42° N. 50° W.; 48° N. 33° W.; 60° N. 4° W.

July: Caribbean Sea; 25°—38° N. 74° W.; 41° N. 60° W., 44° N. 39° W.; 51° N. 30° W.

August: 22° N. 74° W. to 31° N. 73° W.; 40° N. 67° W. to 42° N. 50° W.; Azores; 61° N. 8° W.

September: 12° N. 27° W.; 9° N. 53° W.; 25° N. 74° W.; 47° N. 33° W.; Azores; 59° N. 2° W. to 60° N. 6° W.; 66° N. 18° W.

October: 34° N. 74° W.; 58° N. 32° W. to 60° N. 3° W.

November: 8° N. 28° W.; Cape Verde Islands; 22° N. 53° W.; 47° N. 41° W.; 60°—61° N. 1°—5° W.

December: Caribbean Sea; Canaries.

1899 *May*: 35° N. 75° W.

June: 20° S. 1° E. to 4° S. 19° W.; 15° N. 50° W.; 21° N. 45° W.

July: 11° N. 26° W.; 40° N. 38° W.

Temperature: 23.5, mean of 77 obs., max. 28.2, min. 7.

Salinity: 35.75, mean of 57 obs., max. 37.66, min. 33.50 (exceptionally 20.27).

Plankton-type. Occurs in the Red Sea, the Indian Ocean and the Pacific. It enters the Atlantic W. of S. Africa, advances towards the Cape Verde Islands, follows the Equatorial Current into the Caribbean Sea, the Florida Current and spreads into the Sargasso Sea. It goes in July—August beyond 40° N. and advances thence towards Iceland and the Färöe Channel as well as towards the Azores and the Canaries. In the North Sea it enters the Tripos-plankton. — *D. (S)*.

STEINIELLA FRAGILIS SCOTT.

(B. Peridinium d. Plankton-expedition Pl. VI fig. 26.)

1898 *July*: 39° N. 23° W.

- September*: 47° N. 9° W.
 1890 *January*: 29° N. 16° W.

Temperature: 16.8 to 21.6.

Salinity: 35.75 to 36.52.

Plankton-type. Found at Naples (Stauröben) S. 2.

STEINIELLA NITRA SCHOTT.

(D. Peridinner d. Plankton-exped. Pl. VII. Fig. 27).

- 1897 *December*: 12°—16° N. 50°—48° W.
 1898 *January*: 29° N. 74° W.
February: 26°—34° N. 74° W.
March: 11° N. 19° W.; 7°—9° N. 55°—59° W.; 32°—37° N.
 74° W.
April: 12° N. 51° W.
May: 11°—13° N. 52°—51° W.; 26° N. 52° W.
July: 39° N. 28° W.; 33° N. 74° W.
August: 42° N. 50° W.
September: Azores; 38° N. 74° W.
November: 29° N. 43° W.; 36° N. 14° W.
December: 18° N. 67° W.; Azores.
 1899 *January*: 29° N. 16° W.; 33° N. 15° W.
February: 34° N. 40° W.
June: 18° N. 47° W.

Temperature: 22.2, mean of 27 obs., max. 27, min. 9.15.

Salinity: 35.22, max. 37.05, min. 33.26.

Plankton-type. This species appears rarely in the Cape Verde region, follows the Equatorial Current to the north of S. America, enters the Caribbean Sea and the Florida Current, in July—August to about 40° N., spreads thence towards the Azores and reaches the Canaries in the winter. It occurs in the Mediterranean.
 — D.

STEINIELLA PUNCTATA Cl.

(Kongl. Vet. Akad. Handl. Vol. XXXIV G. 1 Pl. VIII fig. 4.)

1898 August: 48° N. 24° W.

Temperature: 19.1.

Salinity: 35.03.

Plankton-type: S.

Diatomaceæ.

ACHNANTHES TÆNIATA GRUN.

Gr. & Grun. Arct. Diatom. Pl. I fig. 5.

- 1898 *May*: 60° N. 4° W. to 57° N. 44° W. (sparingly).
June: S. of Iceland, very rare.
 1899 *June*: 75° N. 20° E.

Temperature: — 0.3.

Salinity: 35.92 (evidently too high).

Plankton-type. Noted from Hudson Bay and the shores of the Arctic Seas, the Baltic (at Bornholm, in the Bay of Finland and at Åland, always in the spring). — *Ny*.

AMPHIPRORA HYPERBOREA GRUN.

A. paludosa v. ? fig. GRUN. Gr. & Grun. Arct. Diat. Pl. IV 5. 85. VANDÖFFEN
 Geöl.-Expedition 1891-93. Pl. III fig. 15.)

- 1899 *June*: 75° N. 20° E.
July: 74°—75° N. 20°—18° W.

Temperature: — 0.4, mean of 3 obs., max. — 0.5, min. — 0.5.

Salinity: 32.55, mean of 3 obs., max. 34.30, min. 29.05.

Plankton-type. Noted from E. and W. Greenland, Spitzbergen and Kara Sea. — *Ny*.

* Osterfeld's data used.

ASTERIONELLA JAPONICA CL.¹

(*A. spatulifera* Cl. Öfvers. af K. Sv. Vet. Akad. Förh. 1897 n. 3 pag. 101.
A. glacialis Castrac.)

1898 *April to July*: more or less abundant along the south coast of Iceland and at Westmannaö.

1899 *May to June*: Westmannaö.

Temperature: 8.4, mean of 16 obs., max. 10.2, min. 5.

Salinity: 34.96, mean of 16 obs., max. 35.11, min 33.62, exceptionally 26.21.

Plankton-type. Noted from the Antarctic regions (*A. glacialis* Castr.), from Japan, the Hebrides, western and southern North Sea, Plymouth. — *Ns.*

ASTERIONELLA NOTATA GAUX.

(VAN HEURCK Sya. Pl. LH fig. 3.)

1898 *June to August*: Azores.

December: 18° N. 67° W.

Temperature. 22.2, mean of 4 obs., max. 26.8, min. 19.2.

Salinity: 34.88 and 36.93.

Plankton-type. Gauxow mentions this species from Honduras, Barbados and the Adriatic, SCHROEDER from Naples. Seems to be a neritic form of the tropical Atlantic. — *Nr.*

ASTEROLAMPRA MARYLANDICA EHR.

(Grev. Trans. W. Soc. Vol. VIII 1860 Pl. III fig. 2-4.)

1898 *February*: 15°—16° N. 71° W.; 21° N. 74° W.

March: 10° N. 53° W.

May: 29° N. 39° W.,

June: 10° N. 53° W.

August: 29° N. 74° W.

September: 9° N. 53° W.

November: 26° N. 48° W.

¹ Ostenfeld's data used.

December: 18° N. 67° W.; 34° N. 38° W.

1899 *March*: 18° N. 45° W.

April: 36° N. 74° W.

June: 18° N. 47° W.; 21° N. 46° W.

Temperature. 24.1, mean of 15 obs., max. 28, min. 19.4.

Salinity: 36.19, mean of 11 obs., max. 37.19, min. 35.01.

Plankton-type. This species is confined to the tropical Atlantic, west of 38° W., northern limit 36° N. It occurs in the Red Sea and the Indian Ocean. — *D.*

ASTEROLAMPRA ROTULA GARY.

(Trans. Me. Soc. Vol. VIII 1866 Pl. III (fig. 5))

1897 *December* and

1898 *January*: 32° N. 24° W. to 34° N. 30° W.; 12° N. 50° W.;
25°—35° N. 74° W.

February: 13°—16° N. 70°—71° W.; 21°—34° N. 74°—73° W.

March: 33° N. 32° W.; 10° N. 53° W.; 32° N. 74° W.

May: area between 17° N. 50° W., 20° N. 50° W., 28° N.
45° W. and 29° N. 30° W.

June: 28°—30° N. 53°—52° W.

July: 26° N. 48° W.; 21° N. 58° W.; 15° N. 71° W.; 29° N.
74° W.

August: 22°—25° N. 74° W.

September: 30° N. 74° W.

October: 21° S. 36° W.; 23° N. 76° W.

November: 19° S. 31° W.; 32° N. 38° W.; 29° N. 43° W.

December: 14° S. 36° W.; 18° N. 67° W.; 25° N. 52° W.

Temperature: 27.5, mean of 35 obs., max. 28, min. 16.1.

Salinity: 36.58, mean of 22 obs., max. 37.21, min. 34.88.

Plankton-type. Occurs chiefly in the tropical, western Atlantic; northern limit 33°—34° N. Outside the Atlantic in the Indian Ocean. — *D.*

ASTEROMPHALUS HOOKERI Em.

(*A. etiopticus* Gr., Kungl. Sv. Vet. Akad. Handl. Vol. XXXIV n. 4 pag. 19
Pl. VIII (g. 7-9.)

1898 *February*: 60°-61° N. 3°-5° W.

June: 65° N. 31° W.

July: 78° N. 3° W. (deep sea haul).

Temperature: 5.0, mean of 8 obs., max. 7.0, min. 3.0.

Salinity: 34.00, mean of 7 obs., max. 35.03, min. 33.07.

Plankton-type. Noted from the northern Atlantic, usually in *Tricho-* or *Chyto-*plankton. It was not very rare in 1896 west of Spitzbergen, but extremely rare in 1898 and 1899. — *T.*

Remarks. This species occurs abundantly in the southern Atlantic and southern Indian Ocean. It is perhaps a variety of *A. Hookei* (Grev.: T. Mic. Soc. Vol. VIII 1850 Pl. IV fig. 18), which has been found in soundings from Karitschatka.

ASTEROMPHALUS HEPTACTIS RAUPE.¹

(A. Schreb. Ab. Pl. XXXVIII fig. 5-8.)

1898 *March*: area between 44° N. 17° W., 50° N. 18° W., 55° N. 12° W. and 55° N. 13° W.; 65° N. 2° E.

April: area between 39° N. 24° W., 50° N. 9° W. and 49° N. 23° W.; 62° N. 2° E.

May: 50° N. 22° W.

July: 40° N. 58° and 67° W.

August: 60° N. 3° W.

September: 59° N. 2° W.

October: 59° N. 1° W.

November: area between 55° N. 35° W., 55° N. 21° W. and 56° N. 23° W.; 9° S. 34° W.

December: 26° S. 45° W.

1899 *April*: 46° N. 13° W.

November: 51° N. 13° W.

Temperature: 13.0, mean of 21 obs., max. 28, min. 7.0.

Salinity: 35.00, mean of 19 obs., max. 37.00, min. 33.00.

Plankton-type: S.

¹ Osterfeld's data not used.

BACTERIASTRUM DELICATULUM Cl.¹

(Fiftenth annual report of the Fishery Board for Scotland, for the year 1893,
 pag. 298 fig. 15.)

- 1898 *January*: 35° N. 75° W.
February: Caribbean Sea; 34° N. 73° W.
March: area between the Azores, 45° N. 13° W., 48° N. 18° W. and 40° N. 40° W.; 41° N. 66° W.
April: 39° N. 24° W. to the Engl. Channel and thence along 49° N. to 29° W.; 42° N. 47° W.
May: 59° N. 14° W.; from 57° N. 25° W. to 60° N. 9° W.
June: 60°—62° N. 4° W.—2° 30' E.
July: between 58° N. 33° W., 60° N. 23° W. and 59° N. 15° W. From 41° N. 60° W. to 40° N. 69° W.
August: Azores (common); from 63° N. 25° W. to 65° N. 33° W.; 41° N. 65° W.
September: SW. of Iceland, Denmark's Sound, Färöe Channel.
October: between 60° N. 4° W. and 59° N. 16° W.
November: Azores; S. and S. E. of Iceland.
December: Färöes.
- 1899 *April*: 46°—48° N. 13°—9° W.
June: 62° N. 1° E.
October: 65° N. 31° W.

Temperature: 14.7, mean of 35 obs., max. 26.8, min. 9.

Salinity: 35.22, mean of 27 obs., max. 36.20, min. 31.81.

Plankton-type. This species appeared in January and February in the tropical western Atlantic and in March simultaneously between the Azores and the British Islands and east of New York. In May it had advanced towards the Färöe Channel and reached in June mid-way to Norway, in August to Iceland and Denmark's Sound. It occurs in the Red Sea. — S. (typical).

¹ Ostenfeld's data used.

BACTERIASTRUM ELONGATUM Gr.

(A Treatise on the Phyto-plankton Pl. I fig. 19.)

1898 *January*: 7° N, 53° W.*March*: area between 30° N, 35° W., 45° N, 43° W., 49° N, 22° W and 43° N, 41° W.; 41° N, 66° W.*April*: area between 39° N, 24° W., 48° N, 33° W. and 48°—50° N, 8°—9° W.*May*: between 48° N, 30° W and 50° N, 14° W.*June*: 62° N, 2° 30' E.*July*: from 40° N, 67° W, to 42° N, 48° W.*August*: 40° N, 59° W.; Azores.*November*: 53° N, 23° W.; Azores.**Temperature**: 16.8, mean of 24 obs., max. 28, min. 9.8.**Salinity**: 34.61, mean of 23 obs., max. 36.25, min. 33.36.**Plankton-type.** Occurs in the Indian Ocean, the Bay of Bengal and, according to SCHROEDER, at Naples. — S.**BACTERIASTRUM HYALINUM** LAUDER.

(Trans. Mic. Soc. 1864 Vol. XII Pl. III fig. 7.)

1897 *December*: 12° N, 50° W.1898 *January*: 12°—16° N, 19°—18° W.*February*: 13°—16° N, 70°—71° W.**Temperature**: 27.7, mean of 5 obs., max., 26.5, min. 20.**Temperature.** Noted from Hongkong and seems to be a tropical, neritic form. — N.

BACTERIASTRUM VARIANS LAUDER.

(VAN HEUBCK Synops. Pl. LXXX fig. 3-8.)

- 1898 *January*: 7° N. 54° W.
May: 58° N. 15° W.; 7° N. 54° W.
September: 9° N. 53° W.
November: 50° N. 20° W.; 56° N. 30° W.; 40°-42° N. 67°-63° W.
- 1899 *March*: 35° N. 16° W.; 35° N. 29° W.; 46°-47° N. 8°-11° W.
April: 44°-46° N. 15°-13° W.; 32° N. 75° W.
October: 53° N. 31° W.

Temperature: 9.6 to 28.**Salinity**: 32.42 to 36.13.**Plankton-type**. Noted from the coasts of warmer seas, from the southern coast of the North Sea and the Engl. Channel. — *No.***BIDDULPHIA AURITA** (LYNGB.)

(Van Heubck Syn. Pl. XXVIII fig. 4-8.)

- 1898 *March*: 52° N. 6° E.; Färöes.
April: 63° N. 18° W.; Westmannaö.
May: Westmannaö; 72° N. 16° W.
- 1899 *February*: Färöes.
March: Färöes; 65° N. 24° W.; 66° N. 20°-24° W.
April: Färöes; Westmannaö.
June: 75° N. 20° E.

Temperature: 4.1, mean of 16 obs., max. 9.8, min. — 1.4.**Salinity**: 34.38, mean of 15 obs., max. 35.26, min. 33.46; exceptionally 26.5.**Plankton-type**. Decidedly arctic species. It occurs in Hudson Bay and, according to LEIDERMANN, in the northern Pacific. — *T., No.*

BIDDULPHIA CHINENSIS GREV.

(J. Micr. Soc. Vol. XIV, 1866 Pl. IX fig. 18.)

1898 *March*: 7° N. 55° W.*June*: 10° N. 53° W.**Temperature**: 26.5 to 27.2.**Salinity**: 36.51.**Plankton-type.** Occurs in the Gulf of Bengal, at Java, Hongkong, Jedo Bay (Japan). Tropical neritic form. — *Nz.***BIDDULPHIA MOBILENSIS** (BAIR).

(VAN HUMBOLDT Syn. Pl. Cl fig. 4-6.)

1898 *January*: 21° N. 17° W.; 48° N. 0° W.*March*: 45° N. 2° W.; 62° N. 2° E.*April*: 60° N. 4°—2° W.*August*: Azores; 55° N. 5° W.*October*: Azores; 42° N. 50° W.*November*: 60° N. 4° W.1899 *April*: 49° N. 7° W.**Temperature**: 14.4, mean of 9 obs., max. 23.7, min. 6.**Salinity**: 35.50, mean of 7 obs., max. 36.55, min. 32.51.**Plankton-type.** This species is evidently a neritic form, which occurs only exceptionally in the oceans. It abounds round the British Islands. SCHEMIDT mentions it from Naples. — *Nz.***CERATAULINA BERGONII** H. PERAGOLLO.¹

(Diatomiste Pl. XIII fig. 15, 16. — Cf. Bib. Kongl. Sv. Vetensk. Akad. Handl. Vol. XX 3. Pl. I. fig. 6.)

1898 *January*: 7° N. 53° W.*March*: 7° N. 55° W.; 36° N. 29° W.; 45° N. 36° W.; 43° N. 49° W.*April*: 47°—48° N. 40°—33° W.¹ Ostenfeld's data used.

- May*: area between 58° N. 21° W., 61° N. 28° W., Westman-
naö, Färöes and the Shetlands.
- June*: 62° N. 2° 30' E.
- July*: 61° N. 1° W.
- August*: Azores; 62°—61° N. 6°—10° W.; 63°—64° N. 25°—
27° W.
- September*: 63° N. 25° W.
- October*: between 61° N. 5° W. and 63° N. 12° W.
- November*: 45° N. 50° W.; 43° N. 64° W.
- 1899 *February*: 34° N. 40° W.; Färöes.
- April*: Färöes.
- May*: 58° N. 2° W.; 58° N. 3° E.
- September*: W. of Spitzbergen. from 80° N. 13° E. to 75° N.
17° E.
- Temperature**: 11.3, mean of 28 obs., max. 26.1, min. 3.31.
- Salinity**: 34.35, mean of 24 obs., max. 36.35, min. 32.35.
- Plankton-type**. Noted from the Mediterranean. — *S* (or *N₁₀*).

CHÆTOCEROS ATLANTICUS Cl.¹

(Bih. Kongl. Sv. Vetensk. Akad. Handl. Vol. 1 n. 13 Pl. II fig. 8, 1873).

- 1898 *January*: 37° N. 73° W.; 63° N. 19° W.
- February*: 38° N. 73° W.; 50° N. 10° W.; 60° N. 3° W.
- March*: 43° N. 45° W. to 40° N. 71° W.; 49° N. 18° W.; W.
and S. of Iceland (64° N. 25° W.; 61° N. 23° W.); W. of
the Färöes to the Shetlands.
- April*: 43° N. 50° W. to 40° N. 70° W.; 62° N. 50° W.;
48° N. 8° W. — Abundant at 75°—74° N. 9°—5° W., thence
less abundant to 73° N. 5° W.
- May*: 59° N. 49° W.; very abundant from 77° N. 2° W. to
70° N. 15° W.; 68° N. 17° W.; Färöes to 59° N. 10° W.;
58° N. 23°—35° W.
- June*: 63° N. 56° W.; 66° N. 55° W.; 68° N. 13° E.; 74° N.
23° E.; Denmark's Sound; NW. and S. of Iceland; SW. of

¹ Ostenfeld's data used.

the Färöes; W. of the Shetlands to 62° N. 2° 30' E.; 57° N. 3½° W.

July: 63° N. 14° W.; 61° N. 8° W.; Färöes; 60° N. 23° W.

August: 69° N. 53° W.; 65° N. 33° W.; Färöes; Färöe Channel; 77° N. 9° E. to 78° N. 12° E., everywhere rare.

September: 59° N. 50° W. to 65° N. 55° W.; round Iceland; from the Färöes to the Shetlands; between Spitzbergen and Beeren Island, everywhere rare.

October: S. of Iceland; Färöes; N. of Scotland; SW. of the Shetlands; N. N.W. of Rockall.

November: S. of Iceland to the Färöes and the Shetlands; 45° N. 50° W.; 56° N. 30° W.; 51° N. 20° W.

December: Färöes; rare between 41° N. 66° W. and 47° N. 45° W.

1899 *January*: 43° N. 57° W. to 41° N. 69° W.; Färöes.

February: Färöes.

March: 66° N. 25° W.; 65° N. 13° W. to 62° N. 8° W.

April: Westmannaö; Färöes.

May: Färöes; Shetlands; 62° N. 2° E.; 58° N. 8° E.; 51° N. 20° W.; 48° N. 45° W. to 47° N. 57° W.

June: 73° N. 4°—6° W.; Jan Mayen; from 67° N. 3° W. to 62° N. 1° E.; 64° N. 7° E.; from 72° N. 19° E. to 77° N. 14° E.

July: 74° N. 20° W.; 79° N. 10° E.; 74° N. 41° E.; 53° N. 51° W.; 52° N. 54° W.; 51° N. 47° W.

August: 75° N. 38° E.

Temperature: 5.1, mean of 35 obs., max. 16, min. — 1.2. Only such samples considered as contained this species abundantly.

Salinity: 34.02, mean of 35 obs., max. 35.06, min. 32.01.

Plankton-type. Occurs in the Bering Sea. — *T*.

CHÆTOCEROS BOREALIS BAILL.¹

(Cf. A Treatise on the Phyto-plankton Pl. I fig. 2.)

- 1898 *March*: 47° N. 27° W.; 42° N. 42° W.; 41° N. 66° W. to 40° N. 72° W.
April: 74° N. 5° W.; 60° N. 2° W.; 43° N. 50° W. to 40° N. 70° W.; 39° N. 24° W.
May: 73° N. 10°-13° W.; area between the Färöes, 59° N. 1° W. and 62° N. 2° E.; 48°-49° N. 30°-33° W.
June: 74° N. 23° E.; 62° N. 2° E.; Färöes.
July: Färöes; 59° N. 2° W.
August: round Spitzbergen; 77° N. 12° E., 80° N. 11° E. to 81° N. 24° E., 79° N. 33°-34° E.; Färöes; 59° N. 2° W.
September: 76° N. 13° E.; 75° N. 17° E.; 66° N. 18° W.; 60° N. 2° W.
November: Färöes.
- 1899 *March*: 62° N. 8° W.
May: 58° N. 3° E. to 61° N. 1° E.
June: 73° N. 18° E. to 72° N. 19° E.; area between 67° N. 3° W., 62° N. 1° E. and 64° N. 7° E. (very abundant).
July: 79°-80° N. 10°-14° E.; 70°-74° N. 21°-20° W.; 62° N. 0° W.; 52° N. 54° W.;
August: 73° N. 25° W.
September: 77° N. 14° E.
October: 43° N. 31° W.

Temperature: 4.1, mean of 19 obs., max. 9.9, min. -0.9.**Salinity:** 34.56, mean of 19 obs., max. 35.31, min. 32.34.²**Plankton-type:** typical arctic form. Nevertheless it occurs, according to SCHMIDTZ, at Naples. — *T.*¹ Ostenfeld's data not used.² The above means relate to samples in which this species was common or at least not rare.

CHÆTOCEROS BOTTNICUS Cl.

(Bil. Kongl. Sv. Vetensk. Akad. Handl. Vol. XXI, 4, n. 8 pag. 14 Pl. 1.)

- 1898 *May*: 72° N. 13° W.
 1899 *May*: 75° N. 2° 30' E.
July: 74° N. 20° W.

Temperature: —0. to —1.**Salinity:** 29.55 to 34.51.

Plankton-type. This species is evidently an arctic neritic form, only occasionally occurring in the oceans. It is common in the whole Baltic. — *Ny.*

CHÆTOCEROS (BOREALIS VAR.) BRIGHTWELLII Cl.

(Cl. a Treatise on the Phyto-plankton Pl. I fig. 2.)

- 1898 *March*: 58° N. 6° E.; 41° N. 60° W.
April: 41° N. 58° W.
June: 68° N. 13° E.; 65° N. 29° W.
September: 73° N. 19° E. to 76° N. 13° E.
 1899 *May*: 61° N. 1° E.
June: 62° N. 2° E.; 72°—74° N. 19°—18° E.
July: 74°—71° N. 20°—21° W.
August: 73° N. 25° W.

Temperature: S.a. mean of 12 obs., max. 16, min. 5.51.**Salinity:** 35.50, mean of 12 obs., max. 35.54, min. 34.51.

Plankton-type. This species occurs usually associated with Tricho- and Chæto-plankton, but was remarkably scarce in 1898 and 1899. Scudöorn mentions it from Naples. — *T.*

CHÆTOCEROS CINCTUS GRAN.¹

(Den Norske Nordhavaexped. 1876—78 Dial. etc. Pl. II fig. 29—27.)

- 1898 *May*: Shetlands; Orkneys.
June: 60° N. 4°—8° W., very rare; 63° N. 13° W., rare; 63° N. 18° W., not rare; S. of Iceland, common.

¹ Ostenfeld's data used.

July: S. of Iceland, common.

August: SW. of Iceland; 65° N. 36° W., common; 60° N. 3° W.

September: 63° N. 25° W., rare.

Temperature: 9.1, mean of 17 obs., max. 11.8, min. 2.4 (common).

Salinity: 35.86, mean of 17 obs., max. 35.94, min. 31.82 (common).

Plankton-type. This species seems to be an inhabitant of the fjords in the south Iceland, from where it becomes drifted towards the Orkneys and the Shetlands and on the other side towards Greenland. I have noted this species in samples from Puget's Sound.
—Ns.

CHÆTOCERUS CONSTRICTUS GRAN.¹

(Den Norske Nordhavz Exped. 1876-78, *Diag.* Pl. I fig. 11-13 Pl. III fig. 42.)

1898 *March*: 41° N. 60°-70° W. (common); 58° N. 6° E. (common).

April: 40° N. 70° W.; 39° N. 24° W.

May: 59° N. 9° W. to the Shetlands (not rare); 61° N. 0° 47' -1° 30' W. (common); Färöes (rare).

June: S. of Iceland (rare); Färöes (rare).

July: Westmannaö (not rare); Färöes (rare).

August: Färöes (rare); N. of the Orkneys (not rare).

September: Westmannaö (very rare).

October: Färöes (rare).

November: 45° N. 52° W. (not rare).

December: 42° N. 49° W. to 41° N. 66° W. (not rare).

1899 *April*: Färöes.

May: Färöes; 61° N. 6° W.; 58° N. 7° E. (very common).

June: 61° N. 1° E.

Temperature: 8.4, mean of 15 obs., max. 12, min. 5.

Salinity: 34.68, mean of 15 obs., max. 35.24, min. 32.39 (common).

¹ Ostenfeld's data used.

Plankton-type. I have found this species in plankton from Jedo Bay, Japan. It seems to inhabit the fjords on the south side of Iceland and the region of the Newfoundland Banks. It occurs only occasionally in the ocean. Common in the Skagerak (winter). — *Ns.*

CHÆTOCEROS CONTORTUS SCHOTT.

(Ber. d. Deutsch. Bot. Gesellsch. Vol. XIII, 1895. Pag. 42.)

- 1898 *March:* 58° N. 6° E. (common); 7° N. 55° W.
April: 39° N. 24° W.
May: 49° N. 20° W.
June: 64° N. 22° W. to 63° N. 13° W.; 10° N. 53° W.
 (abundant).
July: 65° N. 14° W.
August: Färöes.
September: Azores.
November: 45° N. 50° W. (not rare).
December: 45° N. 52° W. (not rare) to 42° N. 63° W. (rare).
 1899 *April:* 48° N. 9° W. (common); 46° N. 13° W. (rare).
May: Westmannaö; Färöes (rare); 58° N. 4°—7° E.
June: Westmannaö (rare).
September: 75° N. 18° E.

Temperature: 9.1, mean of 16 obs., max. 11, min. 4.3 (for the northern Atlantic only).

Salinity: 34.48, mean of 15 obs., max. 35.75, min. 32.52, (for the northern Atlantic only).

Plankton-type. This species seems to be a neritic form, occurring both in boreal and tropical regions. — *Ns (N?)*.

CHÆTOCEROS CRIOPHILUS Casto.

(G. A. Treatise on the Phyto-plankton Pl. I fig. 6.)

- 1898 *March*: 23° N. 17° W.; 40° N. 69° W.
April: 40° N. 19° W.; 40°—41° N., 70° and 58° W.
May: 42° N. 45° W.; 70°—72° N. 14°—16° W.; 67°—68° N.
 25°—21° W.; 62° N. 2° W.
June: 66° N. 26° W. to 67° N. 29° W. and thence to 69° N.
 15° W. (common); 68° N. 13° E.; 73° N. 23° E.
July: 62° N. 0° W.
August: Färöes; 76°—80° N. 12°—11° E.; 81° N. 24° E.
September: 60° N. 3° W.; Azores; 75°—76° N. 17°—13° E.
October: Azores.
November: 45°—48° N. 52°—49° W.
December: 45° N. 51° W. to 41° N. 66° W.
- 1899 *May*: 65° N. 13° W. to 67° N. 16° W.
June: 68° N. 3° W. to 70° N. 13° W. (everywhere common),
 71° N. 10° W. to 73° N. 4° W. (at some spots common).
August: 73° N. 22°—24° W. (rare).
September: 72° N. 16° W. (rare).

Temperature: 6.3, mean of 46 obs., max. 20.2, min. —1.3.**Salinity**: 34.22, mean of 45 obs., max. 36.55, min. 31.98.**Plankton-type**. Decidedly arctic, pelagic species. — *T.*

CHÆTOCEROS CURVIVETUS Gr.

(GRAN B. KORSKÖ Nordlav-Expedition 1876—78 Protophyta. Pl. III fig. 43.)

- 1898 *January*: 11° N. 20° W. to 20° N. 18° W.
March: 21° N. 18° W.; 23° N. 17° W.; 58° N. 6° E.; 7° N.
 55° W.; 33° N. 48° W.
June: 42° N. 9° W.
August: 58° N. 2° W.; 60° N. 2°—3° W. (rare).
September: 59°—60° N. 2° W.; 66° N. 18° W.

Temperature: 14.1, mean of 12 obs., max. 25.9, min. 6.**Salinity**: 34.22, mean of 6 obs., max. 35.47, min. 33.18.**Plankton-type**. Neritic form of the temperate Atlantic, occurring only occasionally in the ocean. — *Nm.*

CHÆTOCEROS DANICUS Cl.

(Diatoms of Finland. P. III fig. 18, 19).

1898 *March*: 21° N. 18° W.; 41° N. 21° W.1899 *May*: 58° N. 4°—7° E. (very common).**Temperature:** 14.5—15.

Plankton-type. This species is evidently no oceanic form and occurs along the coasts of the temperate eastern Atlantic. Found in Puget's Sound. — *Nm.*

CHÆTOCEROS DEBILIS Cl.¹

(GRAN D. Norske Nordhavs-Expedition, Protopyta Pl. II fig. 14, 15).

1898 *March*: 58° N. 6° E. (common); Färöes (rare); 63° N. 18° W. (not rare); 41° N. 60° W. (common) to 40° N. 69° W. (not rare).

April: abundant along the south coast of Iceland and at the Färöes; 42° N. 47° W. to 40° N. 70° W. (common)

May: 59° N. 49° W., common; Westmannaö, common; Färöes, not common.

June: 66° N. 2½° W. (rare); South of Iceland, 63° N. 13°—22° W., very common; Färöes, rare; 42° N. 9° W. (rare).

July: Westmannaö, very common; Färöes, rare; Shetlands, very common.

August: E. Greenland, 65° N. 35° 33' W., common; W. Greenland, 69° N. 53° W., not rare; SW. and S. of Iceland, common; Färöes, common; Shetlands, rare; 54° N. 5° W., rare.

September: E. Greenland, 65° N. 36° W., very rare; W. Greenland, 69° N. 53° W., rare; Westmannaö, common; 60° N. 2° W. (not rare).²

¹ Ostenfeld's data used.² In my paper in Öfvers. Kongl. Sv. Vet. Akad. Forh. 1899 n. 8 the Engl. Channel has been erroneously indicated.

October: rare off S. Iceland and off the Shetlands.

November: rare from the S. of Iceland to the Färöes, where common; 48° N. 49° W. to 45° N. 50° W. (more or less rare).

December: Iceland, rare; 46° N. 51° W. to 41° N. 66° W. (not common).

1899 *January*: Färöes, rare; 44° N. 69° W., not rare.

March: 66° N. 24° W., rare.

April: Westmannaö, not rare; Färöes very common.

May: Westmannaö and Färöes, very common; 61° N. 1° W., rare; 62° N. 2° E., very common.

June: Westmannaö, not rare.

September: 74° N. 18° E., rare; 52° N. 55° W., rare.

Temperature: 7.a, mean of 34 obs., max. 15, min. 2.s.¹

Salinity: 34.c, mean of 33 obs., max. 35.5a, min. 31.5a; exceptionally 26.31.

Plankton-type. I have seen this species in samples from Puget's Sound. *Schröder* mentions it from Naples. — *T*, Ns.

CHÆTOCEROS DECIPIENS Gr.²

(GRAN, D. Norske Nordhavs-Exped. 1876-78. *Protophyta* Pl. 1, fig. 2, Pl. III (p. 34))

1897 *December* and

1898 *January*: 32° N. 33° W. (rare); 62° N. 8° W. (rare).

February: 61° N. 3° W. (very rare).

March: 41° N. 25° W. (not rare); 47° N. 27° W. (common); 48° N. 6° W. (common); 58° N. 6° E. (common); 59° N. 1° E. to 62° N. 11° W. (rare); Färöes (rare); 63° N. 18° W. to 64° N. 25° W. (not rare); 41° N. 60° W. to 40° N. 72° W. (common).

April: area between 39° N. 24° W., 50° N. 9° W. and 49° N. 23° W. (on the whole rare); 43° N. 52° W. to 42° N. 61° W. (common); 73° N. 5° W.; 66° N. 24° W.; 61° N. 50° W.

¹ For the means only such samples have been used as contained this species abundantly.

² Ostenfeld's data used.

- (not rare); 63° N. 23° W. to 63° N. 17° W. (not rare); 60° N. 19° W.; Färöes and Färöe Channel (rare); Shetlands (common); 58° N. 2° W. (not rare); 62° N. 2° E. (not rare).
- May*: 70° N. 15° W. to 72° N. 13°—14° W. (rare); south of Iceland, the Färöes, the Shetlands and 62° N. 2° E., very common everywhere, but rare at 59° N. 1°—2° W. and in the Färöe Channel; not rare at 63° N. 3° E.; more or less rare between 61° N. 6° W. and 58° N. 23° W.; 59° N. 49° W. (not rare); 63° N. 54° W. (common); 45° N. 41° W. to 41° N. 53° W. (common).
- June*: 44° N. 9° W. (very rare); 68° N. 19° W. to 66° N. 27° (not rare); Davis's Strait, 63° N. 56° W. (not rare) and 66° N. 55° W. (common); S. of Iceland (rare); Färöes and Shetlands (common but more or less rare in the Färöe Channel); 62° N. 2° 30' E. (very common); between Finnmarken and Beeren Island, common at 74° N. 23° E.; not rare east of Spitzbergen (76°—77° N. 26°—27° E.).
- July*: more or less sparingly W. S.W. of Iceland, common at Westmannaö and at the Färöes; rare in the Färöe Channel and round the Shetlands, rare at 67° N. 7° W.; rare at 60° N. 17° and 23° W.; not rare at 59° N. 2° W. and west of Spitzbergen, 78° N. 3° W.—4° E.
- August*: 54° 31' N. 5° 12' W. (rare); Shetlands (rare); Färöes (common); Westmannaö (common); from SW. Iceland to E. Greenland (64° N. 21° W. to 65° N. 36° W.) rare; E. of Spitzbergen, 77°—80° N. 10°—34° E., abundant.
- September*: Westmannaö (rare); rare south of Denmark's Sound; Färöes rare; Shetlands, rare; south of Beeren Island, rare.
- October*: rare at Westmannaö; the Färöes to the Shetlands.
- November*: as a rule rare from the south of Iceland to the Färöes; not rare on the Newfoundland Banks and along the American coast, 48° N. 40° W. to 40° N. 68° W.; 48° N. 29° W. (rare); 56° N. 23° W. (rare); 51° N. 20° W. (not rare).
- December*: S. Iceland to Scotland (rare); 47° N. 45° W. to 41° N. 68° W. (rare to common).
- 1899 *January*: Färöes, rare; 45° N. 49° W. to 41° N. 69° W., as a rule rare.
- February*: Färöes, rare.
- March*: rare from 62° N. 8° W. to 65° N. 24° W.

- April*: 44° N. 15° W., rare; 48° N. 9° W., rare; Färöes, common; Westmannö, common.
- May*: as a rule rare from 61° N. 1° E. to the Shetlands and the Färöes, where not rare; rare between the Färöes and Iceland; common at Westmannö; 50° N. 39° W. and 48° N. 45° W., rare; 47° N. 50° W., common.
- June*: Westmannö, common; 62° N. 1° E. to 67° N. 3° W., very common; more or less rare round Jan Mayen; 71° N. 9° W. to 73° N. 4° W. as a rule rare; between Norway and Heeren Island not rare; SW. and S. of Spitzbergen, rare.
- July*: NW. of Spitzbergen, rare; 78° N. 53° E., rare; 75° N. 18° W. to 71° N. 21° W., rare to common; 52°—53° N. 54°—51° W., not rare.
- August*: 80° N. 51° E. and 76° N. 41° E., rare; 70° 50' N. 22° 33' W., common; 71°—73° N. 20°—27° W., more or less rare.
- September*: 81° N. 16° E. to 73° N. 19° E., common to rare; 69° N. 13° W., rare; 53° N. 52° W., rare.
- October*: 53° N. 31° W., rare.

Temperature: 7.5, mean of 47 obs.,¹ max. 13.5, min. 0.5.

Salinity: 34.50, mean of 47 obs., max. 35.00, min. 30.50.

Plankton-type. I have found this species in a collection from Puget's Sound. The mean temperature and salinity prove that this species is an arctic form, which however spreads by currents far to the south and propagates in water of so high a salinity as 35 p. m. — *C.*, *T.* (*C.* in 35 p. m. *T.* in 34 p. m. salinity.)

CHÆTOCEROS DENSUS Cl.

(*C. borealis var. dens*, Cl. A Treatise on the Phyto-plankton Pl. I fig. 3, 4.)

1898 *January*: 12° N. 19° W.; 15° N. 18° W. (common).

March: 25° N. 16° W.; 49° N. 18° W.; 49° N. 2° W.; 45° N. 36° and 40° W. (rare); 41° N. 49° W.

April: 50° N. 3° W.; 47° N. 40° W.

¹ The means are calculated from such samples only as contained this species abundantly.

May: 50° N. 7° W.

June: 42°—54° N. 9° W.

August: 54° N. 5° W.; 58°—59° N. 2° W.

September: 49° N. 3° W.; 59° N. 2° W., rare; 60° N. 2° W., common.

November: 40°—41° N. 66°—67° W. (rare).

December: Azores: 41° N. 69° W. (rare).

1899 *January*: 45° N. 49° W.

February: 34° N. 40° W.

March: 47° N. 8° W., rare.

November: 52° N. 48° W., rare.

Temperature: 13.8, mean of 27 obs., max. 22, min. 8.

Salinity: 35.48, mean of 20 obs., max. 36.03, min. 32.20.

Plankton-type. SCHÄDNER mentions this species from Naples.

— S. No.

CHÆTOCEROS DIADEMA Em.¹

(*C. yabouviensis* Gr. Bib. Kongl. Sv. Vetensk. Akad. Handl. Vol. XXII 3 n. 5 fig. 12.)

1898 *January*: 6° N. 55° W., rare.

March: 48° N. 6° W.; 41° N. 60° W. to 40° N. 70° W., common.

April: W. and S. of Iceland, very common; Färöes, rare; 45° N. 50° W. to 40° N. 70° W., very common.

May: W. of Greenland, 59° N. 49° W. to 63° N. 54° W.

June: W. of Greenland, 59° N. 51° W. to 69° N. 54° W. rare.

August: between Greenland and S. Iceland, common at 65° N. 36° W.; Färöes, rare; N. of Spitzbergen, rare.

September: rare near Beeren Island; W. of Greenland, 60° N. 53° W. (rare).

November: 51° N. 20° W. (rare); 45° N. 50° W. (rare).

December: 45° N. 51° W. (common) to 42° N. 63° W. (rare).

¹ Ostenfeld's data used.

- 1890 *April*: 48° N. 9° W., rare; Färöes, not rare.
May: 61° N. 6° W. (very rare); Färöes.
June: 72° N. 9° W. and 73° N. 6° W. (rare).
September: 75° N. 18° E. to 80° N. 13° E. and 81° N. 16° W.
 (not rare).

Temperature: 6.0, mean of 15 obs.¹, max. 16, min. 1.2.

Plankton-type. The low temperature and salinity prove that this species is to be considered as an arctic neritic form. Its occurrence at the north coast of South America in January 1898 is then of the greatest interest. Noted from Jedo Bay, Japan. — *N*s and *N*g.

CHÆTOCEROS DIDYMUS (Emm).

(G. Bih. Kongl. Sv. Vetensk. Akad. Handl. Vol. XXII. 3 n. 2 Pl. I fig. 3, 4.)

- 1898 *January*: 20° N. 18° W.
March: 21° N. 18° W.; 48° N. 6° W.; 58° N. 6° E.; 43°—
 41° N. 41°—49° W.
May: 48° N. 33° W., rare.
September: 60° N. 2° W., rare.

Temperature: 12.2, mean of 7 obs., max. 18, min. 6.

Salinity: 35.25, mean of 5 obs., max. 35.61, min. 34.56.

Plankton-type. This species is evidently a neritic form, only occasionally occurring in the ocean, and then among Styli-plankton. Occurs in Jedo Bay, Japan, and in Puget's Sound. Schönrock mentions it from Naples. — *N*cc.

CHÆTOCEROS (DIDYMUS VAR.) LONGICRURIS Gr.

(A Treatise on the Phytoplankton Pl. I fig. 11, 17.)

- 1898 *March*: 21° N. 18° W.; 41° N. 21° W.; 42° N. 48° W.
April: 42° N. 47° W.
May: 43° N. 23° W.
August: Azores.
December: 29° S. 49° W., very common.

¹ Only such samples considered as contained this species abundantly.

Temperature: 17.5, mean of 6 obs., max. 23.5, min. 13.

Salinity: 35.25, mean of 4 obs., max. 36.66, min. 34.58 (common).

Plankton-type. This species enters the Styli-plankton, but its rare occurrence in the ocean indicates that it is a neritic form. Occurs in the Mediterranean, the Red Sea and the Gulf of Bengal.
— *Nu, Nl.*

CHÆTOCERUS DIVERSUS Gr.

(*C. div. var. tenuis* Gr., A Treatise on the Phyto-plankton Pl. II fig. 2.)

January: 7° N. 53° W.

1898 *February:* 16° N. 71° W.

March: 7° N. 55° W.; 10° N. 53° W.

June: 10° N. 53° W.

August: 40° N. 66° W.

December: 29° S. 49° W.; 18° N. 67° W.

Temperature: 25.7, mean of 8 obs., max. 27.5, min. 20.7.

Salinity: 34.84, max. 36.64, min. 33.25.

Plankton-type. This species occurs along the coast of South America and follows the Equatorial Current into the Caribbean Sea, continuing with the Florida Current to 40° N., which latitude it reaches, as Desmo-plankton usually does, in August. The occurrence along the coasts and the low salinity indicate it as a neritic form. Noted from the Mediterranean, Red Sea, Indian Ocean and Java.
— *Nl.*

CHÆTOCERUS (ATLANTICUS VAR.) EXIGUA Gr.

(A Treatise on the Phyto-plankton Pl. I fig. 9.)

1898 *January:* 7° N. 53° W.; 44° N. 17° W.

March: 30° N. 35° W. to 45° N. 13° W.; 49° N. 18° W.

April: 49° N. 19° W.; 48° N. 29° W. to 50° N. 9° W.

June: 48° N. 17° W.

August: Azores.

November: Azores; 56° N. 23° W.

1899 *January:* 33° N. 15° W.

March: 34° N. 40° W.

April: 46° N. 13° W.

Temperature: 15.4, mean of 17 obs., max. 26.4, min. 10.8.

Salinity: 35.56, mean of 11 obs., max. 36.52, min. 35.17.

Plankton-type. *C. neapolitanus* SCHROEDER represents this form, which thus occurs also in the Mediterranean. — S.

CHÆTOCEROS FEMUR SCHROED.

(Bez. d. Deutschen Bot. Gesells, 1865 Vol. XIII pag. 55).

1897 *December:* 12° N. 50° W., very rare.

1898 *January:* 7° N. 53° W., rare.

Temperature: 26.4 to 26.5.

Plankton-type: *D.* (or *N*).

CHÆTOCEROS FURCA CL.

(A Treatise on the Phyto-plankton Pl. I fig. 10).

1898 *January:* 6°—7° N. 55°—53° W.

February: 16° N. 71° W.

March: 28° N. 38° W.; 36° N. 29° W. to 41° N. 21°—23° W.;

41° N. 56° W. to 43° N. 48° W.

April: 49° N. 22° W.

May: 41° N. 51° W.

December: 18° N. 67° W.

1899 *March:* Azores.

May: 35° N. 75° W.

Temperature: 18.3, mean of 16 obs., max. 27, min. 11.

Salinity: 35.78, mean of 10 obs., max. 36.56, min. 34.88.

Plankton-type. This species occurs in the region round the Sargasso Sea and belongs to the tropical or subtropical Styli-plankton. It has not been seen beyond 50° N. Found in the Indian Ocean, the Mediterranean and the Red Sea. — S.

CHÆTOCEROS FURCELLATUS Bail.

(Cl. Rh. Kongl. Sv. Vetensk. Akad. Handl. Vol. XXII: 3 n. 4 Pl. II fig. 7. GRAN
Biblid., botan. Hefl. 42 Pl. I fig. 15, 16.)

1808 *May*: 72° N. 14° W. 67° N. 22° W.; Westmannaö, common;
59° N. 49° W., common.

June: 67° N. 24°—26° W.; 59° N. 49° W. to 69° N. 54° W.;
E. of Beeren Island; S. of Spitzbergen.

July: Westmannaö, common; 78° N. 3° W., rare.

August: Westmannaö, very common; 80° N. 11° E. (not rare).

September: 69° N. 53° W.; rare.

1809 *May*: Westmannaö, rare.

June: Westmannaö, rare.

July: 71°—72° N. 21°—22° W., rare; 74° N. 20° W., common;
80° N. 12° E., rare.

September: 74°—75° N. 18° E., rare.

Temperature: 4.5, mean of 21 obs., max. 10.2, min. —1.5.

Salinity: 34.26, mean of 22 obs., max. 34.71, min. 28.00.

Plankton-type. Arctic neritic form. It is noted from Kamtschatka. — *Ny*.

CHÆTOCEROS GRANII Cl.

(Cl. Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 8 pag. 25.)

1809 *June*: 72°—73° N. 18°—19° E.

July: 71° N. 21° W.

Temperature: 1 to 8.22.

Salinity: 31.52 to 35.12.

Plankton-type: *Ny*?

CHÆTOCEROS HIEMALIS Cl.¹

(*C. didymus* var. Cl. A Treatise on the Phytoplankton Pl. I fig. 18.)

1898 *March*: 58° N. 6° E.

July: Westmannaö, rare.

September: 76° N. 13° E., rare.

¹ Since the above was written I have been convinced, that this species is the same as *C. borealis* SCHÜTT, which name has the priority.

- November*: 45° N, 50° W., rare.
 1899 *May*: 58° N, 4°—8° E. (common).

Temperature: 8.1, mean of 4 obs., max. 11, min. 6.
Salinity: 33.25, mean of 4 obs., max. 35.13, min. 32.36; exceptionally 23.52.
Plankton-type: *Ns*.

CHÆTOCEROS LACINIOSUS SCHÜTT.¹

(GRAN, Den Kongske Nordhavs Expedition Pl. 1 fig. 4—7)

- 1898 *April*: 66° N, 24° W., rare.
July: Westmannaö, common.
August: Westmannaö, rare.
September: Disco, not rare.
November: 63° N, 13°—16° W., very rare.
December: 46° N, 50° W. to 43° N, 61° W., rare to common.
 1899 *May*: Westmannaö, rare; 40° N, 4° W., rare.
June: Westmannaö, rare.

Temperature: 8.1, mean of 12 obs., max. 10.4, min. 2.7.
Salinity: 33.27, mean of 12 obs., max. 35.32, min. 31.94.
Plankton-type. Occurs in the northern Pacific (Lemmermann).
 — *Ns*.

CHÆTOCEROS LONGISETUS CL.

(Kongl. Sv. Vetensk. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 25—29)

- 1898 *March*: 7° N, 55° W.

Temperature: 25.9.
Plankton-type: *Ns*.

¹ Ostenfeld's date for *C. lacinosus* Schütt, but not for *C. lac. aff.*, used.

CHÆTOCEROS LORENZIANUS GRAN.

(Cl. A. Trealise on the Phytoplankton Pl. I fig. 13-15).

1897 *December* and1898 *January*: 12°—20° N. 18° W.; Azores; 44° N. 17° W.; 6° N. 55° W. to 19° N. 45° W.; Caribbean Sea; 25°—35° N. 74° W.*February*: 13° N. 79° W. to 34° N. 74° W.*March*: 21°—25° N. 18°—16° W.; Azores; 41° N. 21°—23° W.; 49° N. 18° and 33° W.; 7°—10° N. 55°—53° W.; Caribbean Sea; 28° N. 74° W.; 40° N. 64° W.*April*: Azores; 49° N. 33° W. to 50° N. 9° W.; 7°—10° N. 55°—53° W.; Caribbean Sea; 42° N. 47° W.*May*: Caribbean Sea; 20° N. 60° W.*July*: Caribbean Sea.*August* and *September*: Azores; Caribbean Sea.*October*: Caribbean Sea; 42° N. 64° W.*November*: Azores.*December*: Azores; 18° N. 67° W.1899 *January*: 33° N. 15° W.*February*: 32°—34° N. 47°—40° W.*March*: 47°—49° N. 8°—9° W.*April*: 46° N. 13° W. to 49° N. 7° W.; 32° N. 75° W.**Temperature**: 19.1, mean of 43 obs., max. 28.1, min. 11.**Salinity**: 35.75, mean of 29 obs., max. 36.04, min. 34.79.**Plankton-type.** This species occurs in the tropical and temperate Atlantic, round the Sargasso Sea, has in the spring the same distribution as the Styli-plankton in general, but reaches scarcely beyond 50° N. Although of frequent occurrence in the Desmoplankton of the western Atlantic, it must be considered as belonging to the Styli-plankton. Occurs in the Mediterranean, Red Sea and Indian Ocean. — S.

CHÆTOCEROS OSTENFELDII Gr.¹

(K. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VIII fig. 19).

- 1898 *April*: 49°—48° N. 19°—29° W., abundantly; Färöe Channel; S. of Iceland; 59° N. 28°—22° W., everywhere rare.
May: The area between the Orkneys, S. Iceland and 57° N. 34° W., more or less abundant along 60° N. from 10° to 34° W.
June: 57° N. 46° W. rare.
July: 63°—64° N. 14°—23° W., rare.
August: 63°—65° N. 25°—33° W., more or less common.
September: 64° N. 32° W. to 62° N. 21° W., more or less rare.

Temperature: 8 to 13.s.**Salinity**: 35.50 (extremes 33 and 35.61).**Plankton-type**: S.

CHÆTOCEROS PERUVIANUS Brw.

(G. Fifteenth annual report of the Fishery Board for Scotland, for 1896, pag. 299 fig. 71).

- 1897 *December* and
 1898 *January*: 12°—20° N. 19°—18° W.; 36° N. 27° W. to 44° N. 17° W.; 42° N. 50° W. to 7° N. 53° W.; 35° N. 74° W.
February: 13°—16° N. 70°—71° W.
March: 33°—36° N. 32°—29° W.; 1° S. 28° W.; 3° N. 24° W.; 10° N. 53° W.
April: 48° N. 29° W.; 15° N. 49° W.
June: 31° N. 48° W.
August: Azores: 41° N. 57° W.
September: Azores.
October: 21° S. 36° W.
 1899 *February*: 34° N. 40° W.
April: 44°—46° N. 15°—13° W.; 32° N. 75° W.
June: 3°—4° S. 20°—19° W.

¹ Ostenfeld's data for *cc. bairdianus* aff. used.

Temperature: 21.6, mean of 28 obs., max. 28, min. 13.6.

Salinity: 36.20, mean of 12 obs., max. 37.51, min. 34.21.

Plankton-type. Noted from the Mediterranean, the Red Sea, the Indian Ocean and the Pacific.— S. (*D*).

CHÆTOCEROS RUDIS Gr.¹

(*C. borealis* var. *rudis* Gr. A Treatise of the Phyto-plankton, Pl. I fig. 5).

1897 *December* and

1898 *January:* 32° N. 33° W.; 7° N. 53° W. to 12° N. 56° W.; 15° N. 70° W.; 25°—35° N. 74° W.

February: 5° S. 9°—4° E.; 6° S. 12° W.; 13°—16° N. 70°—71° W.; 26° N. 74° W.

March: 6° S. 4° W.; 1° S. 27° W.; 10° N. 20° W.; 28°—30° N. 38°—35° W.; 9° N. 56° W.; 28° N. 74° W.

April: 14° N. 70° W.; 31° N. 75° W.

May: 28° N. 45°—47° W.; Azores.

June: Azores.

July: 15° N. 71° W.; 38° N. 74° W.; 41° N. 60°—58° W.

August: 17° N. 71° W.; 22° N. 73° W.; 40° N. 67° W. to 42° N. 48° W.

September: 12° N. 27° W.; 15° N. 71° W.; 20° N. 45° W.; 38° N. 74° W.; 42° N. 57° W.

October: 21° S. 36° W.; 38° N. 74° W.; 41°—42° N. 59°—50° W.

November: 40°—42° N. 67°—64° W.; 44° N. 55° W.; 47° N. 41° W.

1899 *April:* 9° N. 59° W.

May: 25° S. 7° E.

Temperature: 23.4, mean of 58 obs., max. 28.3, min. 10.

Salinity: 35.61, mean of 36 obs., max. 37.27, min. 32.54, exceptionally 20.29.

Plankton-type. Occurs in the eastern and western tropical Atlantic, not far from the coasts, which together with the low mean salinity indicates that this species is essentially a neritic form.— *Nt* and *D*.

¹ Since the above was written, I found this form to be the same as *C. concretus* Lauder. The above name must then be abolished.

CHÆTOCEROS SALTANS Cl.

(A. Tuxillæ on the Phyto-plankton Pl. I fig. 8.)

1898 *April*: 10° N. 53° W.**Temperature**: 22.**Plankton-type**. Noted from 38°—36° N. 48° and 65° W.— *D?*

CHÆTOCEROS SCHÜTTH Cl.

(GRAN. Den Norske Nordhav-Expédition Pl. II fig. 19, 20.)

1898 *March*: 45° N. 13° W.*April*: 39° N. 24° W.; 48° N. 23° W.*May*: 45° N. 43° W.; 49° N. 28° W.; 60° N. 1° W., common.*June*: Westmannaö. rare; 62° N. 2° 30' E., not rare.*November*: 53° N. 32° W., rare; 60° N. 1° W., rare; 63° N.

13° W., rare; 46° N. 50° W., not rare; 46° N. 52° W., very common.

December: 45° N. 51°—53° W., common.1899 *March*: 75° N. 16° W.; 46°—49° N. 11°—9° W.*April*: 45° N. 13° W., rare; 48° N. 9° W., very common.*May*: 51° N. 20° W., rare; 60°—61° N. 4°—6° W., common.*October*: 53° N. 31° W., not rare.*November*: 51° N. 28° W., rare.**Temperature**: 11.5, mean of 21 obs., max. 22, min. 5.**Salinity**: 34.55, mean of 21 obs., max. 38.55, min. 32.55.**Plankton-type**. I have found this species in collections from Jedo Bay (Japan) and Puget's Sound. The salinity of some of the richest Atlantic collections was only 32.55 and 32.55, which indicates that this species is neritic, occurring only occasionally drifting in the ocean. — *No.*

CHÆTOCEROS SCOLOPENDRA Cl.

(Bih. Kongl. Sv. Vetensk. Akad. Handl. Vol. XXII 3 n. 5 fig. 4, 5.)

1898 *March*: 21° N. 18° W.; 41° N. 60° W.; 40° N. 68° W.*April*: 66° N. 34° W.

July: 64° N. 23° W., not rare.

1899 *May*: 62° N. 2° E.; 61° N. 1° E., rare; 65° N. 4° W., rare.

Temperature: 9.6, mean of 6 obs., max. 15, min. 5.

Salinity: 34.66, mean of 5 obs., max. 35.54, min. 32.53.

Plankton-type. This species is not oceanic. The occurrence west of the tropical Africa is very remarkable, as it also occurs north and south of Iceland and in the winter plankton of the Skagerrak. LEHMANN mentions it from the northern Pacific. — Ns.

CHÆTOCEROS SKELETON SCHÜTT.¹

(Cl. A Treatise on the Phyto-plankton Pl. II fig. 3.)

1898 *January*: 44°—46° N. 17°—11° W.; 7° N. 53° W.

March: 1° S. 15° W.; area between the Azores, 45° N. 13° W. and 49° N. 18° W.

April: 48°—50° N. 29°—8° W.; 10° N. 53° W.

May: 48° N. 25° W.; 50° N. 14° W.; 57° N. 28° W. to 59° N. 15° W.

June: 63° N. 19° W.

July: 60° N. 23° W. to 61° N. 8° W.

August: Azores; 63° N. 25° W. to 65° N. 33° W.

September: Azores; Denmark's Sound.

October: 59° N. 16° W. and 60° N. 4° W.

Temperature: 15.4, mean of 24 obs., max. 26.2, min. 11.

Salinity: 35.51, mean of 19 obs., max. 36.28, min. 35.17.

Plankton-type. The salinity and temperature prove that this species is an oceanic form of the Styli-type. It occurs chiefly in the eastern Atlantic, having once only been seen in the west, north of South America. In March and April it occurred between the Azores and the Engl. Channel, had in May advanced north of Rockall, in June to the south coast of Iceland, whence it in August drifted towards Greenland and the Shetlands. It occurs in the Indian Ocean. — S.

¹ Ostenfeld's data used.

CHÆTOCEROS SOCIALIS LAUDER.

(Cl. Bih. K. Sv. Vet. Akad. Handl. Vol. XXII 3 n. 4 Pl. II fig. 9.)

- 1808 *April*: Färöes.
June: S. of Iceland, common.
July: W. of Iceland.
 1809 *July*: 74° N. 20° W., common.

Temperature: 0.1 to 9.**Salinity:** 31.53 to 35.24.

Plankton-type. This species is an arctic, neritic form, noted from Baffin's Bay. I have met with it in a collection from Puget's Sound. Noted also from Hongkong. It occurs, in the winter, abundantly in the Skagerak. — *Ny.*

CHÆTOCEROS (BOREALIS VAR.) SOLITARIA Gr.

(Fiftieth annual report of the Fishery Board for Scotland, for 1896 pag. 208.)

- 1898 *March*: 40°—41° N. 69°—70° W.
June: 65° N. 31° W.
July: 61°—62° N. 4° W.
August: 65° N. 12° W., 76° N. 11° E.

Temperature: 7.5, mean of 8 obs., max. 11, min. 5.5.**Salinity:** 34.25, mean of 8 obs., max. 35.24, min. 32.21.

Plankton-type. The observations are too few for deciding the plankton-type to which this form really belongs. It has been found both i Styli-, Tricho- and Chæto-plankton.

CHÆTOCEROS TERES Gr.¹

(Bih. Sv. Vet. Akad. Handl. Vol. XXII: 3 n. 5 fig. 7.)

- 1808 *March*: S. of Iceland; Färöes; W. of Norway, 58° N. 6° E.
April: S. of Iceland; 43° N. 50° W.
May: Färöes; 61° N. 1° W.
June: Färöes; 58° N. 2° W.; 74° N. 23° E.
July: 63° N. 14° W.; common, Färöes, not rare.

¹ Ostenfeld's data used.

August: Färöes; 78°—80° N., 11°—12° E.

September: W. Greenland, Disco, rare.

December: 42° N., 39° W. to 45° N., 50° W., rare.

1899 *March*: 66° N., 19° W.

April: 49° N., 7° W.

May: 61° N., 1° E., rare; Färöes, not rare; Westmannö, common.

June: 65° N., 1° W., rare.

July: 71° N., 21° W., rare; 79°—80° N., 10°—14° E.

September: 74° N., 18° E. to 81° N., 16° E., not rare.

November: 52° N., 55° W., very rare.

Temperature: 5.8, mean of 35 obs., max. 11.8, min. 0.

Salinity: 34.45, mean of 36 obs., max. 35.00, min. 32.15, exceptionally 26.51.

Plankton-type: *T.*, *Ns.*

CHÆTOCEROS TETRASTICHON Gr.

(A Treatise on the Phytoplankton, Pl. 1 fig. 7.)

1897 *December* and

1898 *January*: 32° N., 33° W.; 41° N., 21° W.; 44° N., 17° W.; 46° N., 11° W.

February: 18° N., 71° W.; 26° N., 71° W.

March: 12° N., 51° W.; 15° N., 49° W.; 22° N., 43° W.; 30° N., 35° W.; 32° N., 74° W.; 45° N., 13° W.

April: 10° N., 53° W.; 23° N., 72° W.

May: 23° N., 56° W.; 28° N., 47° W.

June: 10° N., 53° W.; 22° N., 60° W.; 25° N., 57° W.; 30° N., 52° W.

July: 15° N., 71° W.; 26° N., 48° W.; 31° N., 39° W.; 33° N., 74° W.

August: 22° N., 74° W.; 34° N., 73° W.; Azores; 41° N., 57° W.

September: 25° N., 74° W.; Azores.

December: 18° N., 67° W.; Azores.

Temperature: 23.1, mean of 33 obs., max. 28, min. 11.9.

Salinity: 36.16, mean of 19 obs., max. 37.01, min. 34.13.

Plankton-type. This species occurred thus from March to

July in the Sargasso Sea and the Florida Current, advanced in August beyond 40° N. and appeared round the Azores from August to the end of the year. SCHRÖDGER mentions it from Naples. — *D.*

CHETOCEROS VOLANS SCHÖTT.

(*C. coveens* Cl. Fifteenth annual report of the Fishery Board for Scotland, for 1896, pag. 298, fig. 8.)

1897 *December*

1898 *January*: 16° N. 18° W.; 41° N. 22° W. to 43° N. 18° W.; 46° N. 11° W.; 4° S. 29° W.; 25° N. 74° W.

February: 16° N. 71° W.

March: area between 36° N. 29° W., 48° N. 6° W., 49° N. 33° W. and 43° N. 50° W.; 64° N. 25° W.; 9° N. 39° W.

April: area between 39° N. 24° W., 41° N. 19° W., 50° N. 9° W. and 48° N. 29° W.

May: 45° N. 43° W.; 41° N. 51° W.

June: Azores; 44° N. 9° W.; 10° N. 53° W.

July: 62° N. 0° — 4° W.; 77° N. 7° E. (abundant); 40° — 41° N. 69° — 58° W.

August: Azores; 77° N. 8° — 12° E. (very common); 17° N. 71° W.; 40° — 41° N. 66° — 62° W.

September: 59° N. 2° W.; 66° N. 18° W. (rare).

October: Azores; 57° N. 18° W. (rare).

November: 48° N. 29° W.; 55° N. 31° W. (rare).

December: 41° N. 66° W.; 47° N. 45° W. (rare).

1899 *September*: 65° N. 5° W. (very common); 65° N. 2° W. (rare).

November: 51° N. 13° W., rare.

Temperature: 14.1 , mean of 52 obs., max. 27.2 , min. 5.31 .

Salinity: 35.00 , mean of 41 obs., max. 36.18 , min. 31.34 .

Plankton-type. This form, which perhaps is a variety of *C. peruvianus*, occurred in the spring, March and April, on the wide area between the Azores, the Engl. Channel, and the Newfoundland Banks and also south of Iceland, in July in the Färöe Channel, in July and August abundantly at Spitzbergen; later it was seen only rarely. — *S.*

CLIMACODIUM BICONCAVUM Gr.

(A Treatise on the Phyto-plankton Pl. II fig. 16, 17.)

- 1897 *December* and
 1898 *January*: 19° N. 45° W. to 12° N. 50° W.; 25°—35° N. 74° W.
February: 16° N. 71° W.
March: 32° N. 43° W. to 15° N. 49° W.; 16° N. 70° W.; 28°
 N. 74° W.
April: 10°—7° N. 53°—55° W.; 14° N. 70° W.
May: 16° N. 71° W.; 28° N. 45° W.
June: 10° N. 53° W.; 19° N. 63° W.; 22° N. 60° W.
July: 15° N. 71° W.; 25° N. 74° W.; 41° N. 58°—60° W.
August: 28°—25° N. 74° W.; 42° N. 62°—50° W.
September: 17° N. 48° W.; 20° N. 45° W.
November: 42° N. 64° W.
December: 26° S. 45° W.
 1899 *April*: 36° N. 74° W.
May: 35° N. 75° W.
June: 1° N. 23° W.

Temperature: 24._s, mean of 33 obs., max. 28, min. 16.**Salinity:** 35._n, mean of 21 obs., max. 37._n, min. 33.₂₆.**Plankton-type.** Occurs in the Mediterranean and the Red Sea. — *D.*

CLIMACODIUM FRAUENFELDIANUM Gr. S.

(C. Jacobi Cl. A Treatise on the Phyto-plankton Pl. II fig. 18.)

- 1897 *December* and
 1898 *January*: 11° N. 20° W.; 12° S. 34° W.; 7° N. 53° W. to
 12° N. 50° W.
February: Caribbean Sea.
March: 3° N. 24° W.; 11° N. 13° W.; 9°—10° N. 59°—53° W.
April: 14° N. 70° W.
May: 13° N. 51° W.
July: 15° N. 71° W.; 41° N. 58° W.
August: 40° N. 66° W. to 41° N. 57° W.
September: 38° N. 74° W.

November: 9° S. 34° W.; 4° N. 30° W.; 8° N. 28° W.; 40°
—42° N. 68°—64° W.

1899 *June*: 40° N. 38° W.; 12° N. 52° W.

Temperature: 25.4, mean of 27 obs., max. 28, min. 18.1.

Salinity: 35.31, mean of 16 obs., max. 38.51, min. 33.1.

Plankton-type: Occurs in the Red Sea, the Indian and Pacific Ocean. — *D.*

CORETHRON HYSTRIX HENSEN.¹

(C. Fifteenth annual report of the Fishery Board for Scotland, for 1896, pag. 209 fig. 15.)

1898 *March*: 21° N. 18° W.; 25° N. 16° W.; 41° N. 20° W. to
44° N. 17° W. and 48° N. 6° W.; 7° N. 55° W.

April: Azores; 48° N. 29° W.; 50° N. 9° W.

May: 57° N. 21° W. to 60° N. 10° W.; 61° N. 28° W.

June: area between 60° N. 9° W., 63° N. 12° W. and 62° N.
2° 30' E.; 57° N. 46° W.

July: 63° N. 13° W.; Färöe Channel; 62° N. 4° W.

August: S. W. of Iceland to E. Greenland (65° N. 36° W.); S.
of Iceland to the Färöes and the Shetlands; S. W. of Spitz-
bergen. 76°—78° N. 11° E.

September: Denmark's Sound; S. W. of Iceland; Färöe Channel;
70° N. 21° E. to 76° N. 13° E.

October: 63° N. 10° W. to 60° N. 4° W.; 41° N. 67° W.

November: 50° N. 10° W.; 41° N. 69° W. to 42° N. 64° W.

December: 50° N. 9° W.; 41° N. 66° W.

1899 *January*: 41° N. 69° W.; 40° N. 66° W.

June: 67° N. 3° W.

September: 72° N. 19° E. to 73° N. 18° E.; 55° N. 44° W.,
very rare.

Temperature: 10.1, mean of 58 obs., max. 18.1, min. 2, ex-
ceptionally 25.3.

Salinity: 35.32, mean of 50 obs., max. 35.58, min. 32.23.

¹ Ostenfeld's data used.

Plankton-type. This species belongs almost exclusively to the eastern Atlantic, having only once been seen north of South America. It was found in the spring west of Africa and in the area between the Azores and the E. Channel, had in May advanced to the north of Rockall, in June to the Färöe Channel, reached Iceland in July and drifted thence in August towards E. Greenland. In the winter it was seen in the region of the Newfoundland Banks. LAMMERMAN mentions this species from the northern Pacific. — S.

COSCINODISCUS ANGUSTE-LINEATUS A. SCUM.

(Atlas der Dint. Kunds Pl. LIX fig. 34.)

1890 *July*: 57° N., 23° W., common.

Temperature: 13.

Salinity: 35.42.

Plankton-type: S.

COSCINODISCUS BENGALENSIS GRAY.

(Vox HERRICK Synopsis Pl. CXXXII fig. 9.)

1898 *August, September, October*: Azores.

Temperature: 19.5, mean of 4 obs., max. 21.2, min. 18.7.

Salinity: 36.25, mean of 3 obs., max. 36.25, min. 36.18.

Plankton-type. Noted from Elephant Point, Bengale. I have seen this species in plankton from the Red Sea. Probably a neritic form. — N.

COSCINODISCUS BIOCULATUS GRAY.

(D. Dint. von Franz Josef Land 1884 Pl. III t. 30.)

1898 *May*: 72° N., 13° W.

Temperature: — 0.1.

Salinity: 34.26.

Plankton-type. Noted from the North Siberian Sea and the coasts of Greenland — N.

COSCINODISCUS CONCINNUS W. Sm.¹

(Roper Misc. Jour. Vol. VI, 1838 Pl. III fig. 125)

- 1898 *March*: 7° N. 55° W., common; 49° N. 2° W., not rare; 41° N. 60° W. to 40° N. 70° W., as a rule rare.
April: 60° N. 4° W., not rare; 50° N. 3° W., rare.
May: 7° N. 54° W., common; 60° N. 7°—10° W., rare.
June: Färöes, rare; 69° N. 54° W., rare.
July: 59° N. 2° E. and 2° W., rare.
August: 60° N. 4° W., very rare; 61° N. 8° W., very rare; 59° N. 2° W., not rare.
September: 60° N. 2°—6° W., more or less rare; 69° N. 53° W., not rare.
October: 63° N. 12° W., not rare; Färöes, not rare; 60° N. 4° W. and 62° N. 7° W., not rare.
November: 63° N. 13° W., not rare; Färöes, common; 60°—61° N. 4°—6° W., not rare; 41° N. 66° W., rare.
December: Färöes, very common; 41° N. 61° W., common; 41° N. 66° W.
- 1899 *January*: Färöes, common; 45° N. 49° W., rare; 41° N. 69° W., not rare.
February, March and April: Färöes, common.
May: Färöes, common; 57° N. 3° E., not rare; 47° N. 57° W., not rare.

Temperature: 7.4, mean of 35 obs., max. 11.3, min. 2; — [North of S. America 26.8—26.1].

Salinity: 34.76, mean of 35 obs., max. 35.25, min. 31.82. — [North of S. America: 31.82—32.62].

Plankton-type. This species occurs most abundantly in the region of the Färöes, round the British Islands and along the E. coast of N. America. Its occurrence N. of S. America is very interesting. — *Ns.*

¹ Oesterfeld's data used.

COSCINODISCUS EXCENTRICUS EMM.¹(A. Schmidt *Atlas Pl. LVIII* fig. 46—49.)

- 1898 *January*: 48° N. 6° W.; 32° N. 74° W.
March: 21° N. 18° W.
April: 60°—61° N. 4°—7° W.
May: 60° N. 2° W. to 58° N. 21° W.
June: 62° N. 14° W.
August: 60° N. 4° W.
September: 60° N. 4° W.; 60° N. 21° W.; 63° N. 25° W.
October: rare from the Shetlands to 65° N. 12° W. and to
 60° N. 27° W.
November: 60° N. 4° W. to 62° N. 8° W.
- 1899 *February*: 60° N. 1° W.
March: 62° N. 7° W.; 64° N. 11° W.
April: 49° N. 7° W.

Temperature: 9.9, varying from 5.00 to 19.**Salinity:** 35.38, varying from 34.81 to 35.60.

Plankton-type. This species is widely distributed along the coasts and occurs only exceptionally in the oceans. As dead shells scarcely can be distinguished from those of *C. sol.*, it is hardly possible to indicate its distribution. — N.S.?

COSCINODISCUS NOBILIS GRUN.

(B. *Micros. Soc. Journ.* 1879 Pl. I fig. 1. *Cosc. gigas* Janssch *Gazette Exp. Pl.* III fig. 4.)

- 1868 *February*: 5°—6° S. 9°—12° E.

Temperature: 26.2 to 27.2.**Salinity:** 20.20 to 33.03.**Plankton-type:** N.¹ Ostenfeld's data used.

COSCINODISCUS OCLUS IRIDIS Em.¹

C. asteronaphedus var. *hybrida* GÖRAN, B. Franz Josef Land. Pl. III (fig. 9).

1898 *January*: 6° N. 55° W., abundant.

February: 13° N. 69° W.; S.W. of Iceland; 50° N. 10° W.; 34° N. 74° W., abundant; 45° N. 50° W. to 49° N. 31° W.

March: 71° N. 1° 30' W.; S. and S.W. of Iceland; Färöe Channel; Denmark's Sound; Davis's Strait; 7° N. 54° W.; 63° N. 1° 36' E., common; 61° 33' N. 2° E.; 42° N. 42° W. to 40° N. 71° W.²

April: 73° N. 5° W.; W. and S. of Iceland; S.W. of the Färöes; 62° N. 2° E., rare; 44° N. 41° W. to 40° N. 70° W.

May: 7° N. 54° W.; 78° N. 2° 30' W. to 68° N. 17° W., abundant S.W. of Jan Mayen; S. of Iceland; N. of the Shetlands; 45° N. 41° W. to 40° N. 72° W., very common at 53°—50° W.

June: North of Iceland (68° N. 19° W.) and thence into Denmark's Sound, 65° N. 31° W., very abundant at 66° N. 27° W.; E. of Spitzbergen, common; 45° N. 41° W.

July: 64° N. 3° W. to 63° N. 1° W.; very rare at 49° N. 22° W., 30° N. 38° W. and 40° N. 67° W.

August: rare at the Shetlands and E. of Spitzbergen.

September: rare N. of Iceland, W. of the Shetlands, at 56° N. 36° W. and 53° N. 49° W.

October: very rare at 56° N. 31° W.; Färöes not rare.

November: Westmannaö, common; 56° N. 30° W. (common) to 53° N. 49° W. (rare).

December: 48° N. 50° W. to 41° N. 66° W. (abundant).

1899 *January*: 48° N. 39° W.; 43° N. 57° W., common; 41° N. 69° W.

February: Färöes, common.

March: 64° N. 11° W., 66° N. 20° W. and 65° N. 24° W., everywhere rare.

April: Westmannaö, rare; Färöes, not rare.

¹ Ostenfeld's data not used.

² There is a misprint in my paper in Öfvers. Kongl. Sv. Vet. Akad. Förh. 1899 pag. 792, where stated 31° W. in stead of 71° W.

May: Färöes, very common; 64° N. 12° W. to 61° N. 1° W.,
 \ more or less rare; 48° N. 45° W. to 46° N. 57° W.,
 common.

June: 71° N. 9°—10° W. and 69° N. 13° W., rare; Westman-
 nåö, rare; 62° N. 2° E., not rare; between 67° N. 11° E.,
 70° N. 20° E. and 71° N. 6° E., rare.

July: along the east coast of Greenland, between 71° and
 75° N., usually rare, but in some spots common; 80° N.
 14° E.; 75° N. 49° E. to 79° N. 53° E., not rare; 56° N.
 38° W. to 52° N. 44° W., in some spots very common.

August: along the east coast of Greenland, 71°—73° N., rare;
 78° N. 41° E., rare; 80° N. 51° E., very common.

September: 77° N. 14° E. to 75° N. 17° E., rare.

October: 56° N. 31° W., rare.

Temperature: for the northern Atlantic 6., mean of 34 obs.,
 max. 19., min. — 1.,¹ — North of South America 25. to 26.

Salinity: for the northern Atlantic 34.00, mean of 35 obs.,
 max. 36.35, min. 30.28, exceptionally 26.60. — North of South America 32.02.

Plankton-type. This species is a decided arctic species,
 occurring most abundantly along the coasts and entering the Tricho-
 plankton. Its occurrence north of S. America is therefore extremely
 interesting, especially as I could not find any difference between the
 tropical and arctic form. Occurs in Bering Sea. — *T. Ns, Ny.*

COSCINODISCUS POLYCHORDUS GRAY.

(Den Norske Nordhav-Expedition, 1876—1878, Protophyta pag. 30 Pl. II fig. 33,
 Pl. IV fig. 56.)

1898 *March*: 58° N. 6° E.

May: 72° N. 16° W.

July: S. of Iceland.

October: Färöes.

1899 *April and May*: Färöes.

¹ Only such samples considered as contained this species abundantly.

Temperature: 5.1, mean of 6 obs., max. 7.5, min. 0.

Salinity: 34.88, mean of 6 obs., max. 35.86, min. 34.10.

Plankton-type. The rare occurrence in the ocean indicates that this species is of neritic habitat. — *N_g*, *N_s*, exceptionally *T*.

COSGINODISCUS RADIATUS Est.

(A. Schmidt Atlas Pl. LX fig. 9.)

1898 *January:* 20° N. 18° W., common; 48° N. 6° W., 37° N. 73° W.

March: 21° N. 18° W.; 49° N. 22° W.

April: Färöes to 58° N. 1° W.

May: Färöes, common; 60°–61° N. 1° W.; 44° N. 56° W. rare.

June: 60° N. 1° W., rare.

July: Färöes not rare; 59° N. 2° W.

August: Färöes, rare.

September: 59° N. 1° W., rare.

October: Färöes, not rare; 59° N. 1° W.

November: Westmannaö., not rare; Färöes, not rare; 60° N. 1° W., rare; 51° N. 20° W., rare.

December: Färöes, common; 43° N. 61° W., common.

1899 *January:* Färöes, common; 47° N. 8° W., not rare; 45° N. 49° W. to 41° N. 69° W., more or less rare.

February: Färöes, common.

March: NE. of Iceland, from 66° N. 20° W. to 63° N. 9° W., varying from rare to common; Färöes, common.

May: 41° N. 50° W., rare.

June: 66° N. 10° W., rare.

June: 70° N. 13° W., not rare; 66°–67° N. 3°–10° W., rare; 62° N. 1° E., rare.

July: 74° N. 17° W., rare.

Temperature: 7.4, mean of 26 obs., max. 18, min. 0.

Salinity: 34.84, mean of 25 obs., max. 35.83, min. 31.86 (common).

Plankton-type. This form is evidently more neritic than pelagic and occurs in the Arctic Sea, abundantly at the Färöes, round Iceland and round Scotland. — *N_g* and *N_s*.

COSCINODISCUS (PLANKTONIELLA) SOL. WALLICH.

(A. Schm. Ab. Pl. LVIII fig. 45).

- 1898 *January*: 4° S. 29° W.; 16° N. 18° W.; 33° N. 31° W. to 46° N. 11° W.; 7°—11° N. 53°—52° W.; 35° N. 74° W.
March: 1° S. 15°—26° W.; area between the Azores, the E. Channel and 49° N. 33° W.; 32° N. 74° W.
April: area between the Azores, the Engl. Channel and 47° N. 40° W.; 31° N. 75° W.
May: area between Cape Finisterre, 41° N. 16° W., 43° N. 45° W., and 50° N. 14° W. (most common north of 45° N.); 41° N. 59° W.
June: 45°—50° N. 12° W., rare.
October: 57° N. 18° W., rare.
November: 0° S. 31° W.; area between 48° N. 29°—41° W. and 55°—56° N. 21°—23° W.
- 1899 *January*: 33° N. 15° W.; 48°—50° N. and 39°—29° W., rare.
March: 46° N. 11° W.
April: area between 41°—44° N. 15° W. and 42° N. 18° W.
May: 32° S. 13° E.
June: 20° S. 1° E. to 15° S. 5° E.
October: 52° N. 14° W.; 56° N. 23° W., rare.
November: 51° N. 13° W., rare.

Temperature: 15.3, mean of 72 obs., max. 27, min. 9.

Salinity: 35.56, mean of 56 obs., max. 36.61, min. 34.48; exceptionally 20.55 and 32.51.

Plankton-type. Noted from the Indian, Pacific, Mediterranean and Red Sea. It occurs in the Atlantic along the west coast of Africa, in March and April between the Azores and the E. Channel; advances in May beyond 45° N. From May rare or absent in that region. In September rare specimens had drifted towards Rockall. In November it reappeared between 48° N. and 56° N. It has been rarely seen in the western Atlantic, in the Florida current. — S.

DACTYLIOSOLEN ANTARCTICUS *Castr.*¹

(Challenge: Exp. Diat. Pl. IX fig. 7).

February: 60° N. 3° W., very rare.*March*: 51° N. 21°—23° W. to 49° N. 18° W.*April*: area between 39° N. 24° W., 49° N. 9° W. and 47° N. 32° W.*May*: 48°—49° N. 29°—15° W.; area between 58° N. 23° W.; the Färöe Channel and 61° N. 1° 30' W.*June*: 60° N. 8° W. to 62° N. 2° 30' E.*July*: from 60° N. 23° W. along 59°—62° N. to 46° 20' W.*August*: 56° N. 35° W.; N. and S. of Iceland to the N. and S. of the Färöes and to the Shetlands.*September*: 56° N. 28° W. to 57° N. 14° W.; N. and S. of Iceland to the Färöes, the Shetlands and the Orkneys.*October*: S. of Iceland to 59° N. 3° W. and thence to 58° N. 32° W. and 56° N. 29° W.*November*: S. of Iceland to the Färöes and the Shetlands; 66° N. 23°—36° W.1898 *March*: 35° N. 16° W., rare; 47° N. 8° W., rare.*April*: 46° N. 13° W. and 48° N. 9° W., rare.*November*: 51° N. 13° W., rare.**Temperature:** 11.5, mean of 30 obs., max. 15.6, min. 7.**Salinity:** 35.23, mean of 34 obs., max. 35.64, min. 33.78.**Plankton-type.** This species is very characteristic for the Styli-plankton of the eastern and northern Atlantic. It occurs abundantly the Antarctic Ocean (Castrac.). — S.DACTYLIOSOLEN HYALINUS *Gr.*

(K. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 33.)

1898 *January*: 34° N. 73° W.*February*: 34° N. 74° W.*March*: 41° N. 66° W. to 45° N. 36° W.¹ Ostenfeld's data used.

April: 42° N. 47° W. to 47° N. 50° W.

May: 41° N. 65° W. to 42° N. 48° W.

June: 42° N. 50° W. to 45° N. 41° W.

October: 40° N. 67° W.

November: 42°—43° N. 64°—61° W., not rare to common;
47°—48° N. 41° W., more or less rare; 51° N. 29° W.,
common.

December: 41°—42° N. 60°—63° W., more or less rare.

1899 *February*: 32° N. 47° W.

Temperature: 14.1, mean of 32 obs., max. 20, min. 8.

Salinity: 36, mean of 27 obs., max. 36.49, min. 32.62.

Plankton-type. This species occurred as a rule associated with Styli plankton. It appeared from February to June above the Newfoundland Banks, where it reappeared in November, as had the water, which contained this species, been covered by a sheet of another kind of water, that disappeared in November. — S.

DACTYLIOSOLEN MEDITERRANEUS H. PERAGALLO.

(Le Diatomiste Pl. XIII fig. 8—9, the variety *leavis* Cl. included).

1898 *April*: 49° N. 23° W., rare.

August: Azores; 60° N. 2° W. (very rare) to 61° N. 10° W.
(not rare); 63° N. 8° W.; 63°—64° N. 25°—27° W., rare.

September: 56° N. 28° W., rare; 59° N. 1° W.; 60° N. 4°
and 10° W., very rare; Färöes, rare.

October: 57° N. 27° W. to 58° N. 35° W., rare; 60° N. 4°—6°
W., rare.

November: Azores.

1899 *February*: 34° N. 40° W., rare.

March: 47° N. 8° W., rare.

Temperature: 13.1, mean of 10 obs., max. 21.4, min. 9.1.

Salinity: 35.33, mean of 10 obs., max. 36.33, min. 34.72.

Plankton-type. Noted from the Gulf of Bengal, Mediterranean and the Red Sea. — S.

DITYLUM BRIGHTWELLII WEST.(VAN HEURCK *Syn. Pl. CXIV* fig. 4-9).1898 *March*: 23° N. 17° W.; 48° N. 6° W.*April*: 44° N. 15° W.; 48° N. 5° W.*August*: 55° N. 5° W.*January*: 41° N. 69° W.1899 *May*: 60° N. 4° W.**Temperature**: 10.6, mean of 7 obs., max. 17, min. 6.**Salinity**: 34.35, mean of 4 obs., max. 35.32, min. 34.16.**Plankton-type.** This species is very common in the English Channel, the North Sea and the Skagerak. Its rare occurrence in the Atlantic and the low salinity prove that it is a neritic form. Occurs in Puget's Sound. — *Nat.***DITYLUM SOL.**(Tric. *Sol.* A. SCANDERS *Atlas d. Diat. K. Pl. CLII* fig. 4, 5, 7-9).1898 *June*: 10° N. 53° W.**Temperature**: 27.2**Salinity**: 36.07.**Plankton-type.** Noted from the Gulf of Bengal, Java, Hong-kong. — *N.***>ETHMODISCUS SP.>** CASTR.(Challenger *Exp. Diat. Pl. XIV* fig. 4).1897 *December*: 32° N. 33° W.1898 *February*: 13°-16° N. 70°-71° W.*March*: 33° N. 32° W.*May*: 30° N. 42° W.*October*: 21° S. 36° W.1899 *January*: 55° N. 49° W.*April*: 28° N. 75° W.**Temperature**: 21.5, mean of 7 obs., max. 27, min. 12.**Salinity**: 35.20, mean of 4 obs., max. 37.21, min. 35.21.**Plankton-type.** Fragments only have been found of this species, remarkable for its fine and characteristic structure. — *D.*

EUCAMPIA CORNUTA (L. VAR.)¹(Möllera *cornuta* Cl. Bih. K. Sv. Vet. Akad. Handl. 1 n. 11 Pl. 1 fig. 6.)1898 *March*: 21°—23° N. 18°—17° W.; 36° N. 39° W.; 41° N. 66° W.*August*: Azores.**Temperature**: 17.5, mean of 4 obs., max. 23.7, min. 15.**Salinity**: 35.54 (one obs.)**Plankton-type**: The type occurs in the Red Sea and at Java.

— S.

EUCAMPIA GRÖNLANDICA Cl.

(Bih. Kongl. Sv. Vet. Ak. Handl. XXII, 3 N:o 4 Pl. U fig. 10)

1898 *May*: 67° N. 22° W.1899 *July*: 78° N. 53° E.; 74° N. 20° W.**Temperature**: —0.5 to 0.1.**Salinity**: 29.55 to 31.51.**Plankton-type**. Occurs in Baflin's Bay and, very rarely, in the fjords of W. Scotland and Scandinavia. — *Ny*.**EUCAMPIA ZODIACUS** Ehm.

(VAN HEURCK Syn. Pl. XCV bis. fig. 1—4.)

1898 *March*: 49° N. 33° W. to 41° N. 60° W., in some spots common.*April*: 48° N. 29° W. to 40° N. 41° W.; 50° N. 3° W.*May*: 48° N. 33° W.; 41° N. 51° W.*June*: 43° N. 9° W., rare.*August*: 41° N. 65° W., very rare.*September*: 59°—60° N. 2° W., rare; 41° N. 65° W., very rare.

¹ Atlantic specimens are much smaller than specimens from Java, exceedingly delicate, so they can scarcely be seen if not mounted dry. The diaphragms are more close than in the type. Longitudinal axis 0.5 to 0.5 sagittal 0.5, transverse axis 0.5 to 0.5 m. m. Perhaps a new species.

- November*: 43° N. 61° W. to 41° N. 68° W., as a rule rare.
 1890 *February*: 34° N. 40° W., very rare.
May: 50° N. 39° W., very rare.

Temperature: 14.3, mean of 21 obs., max. 26, min. 10.8.

Salinity: 35.16, mean of 17 obs., max. 36.15, min. 32.88.

Plankton-type. This species is of neritic habitat and occurs in the ocean only occasionally, as a rule in Styli-plankton. I have seen it in plankton from Jedo Bay, Japan, and from Puget's Sound. — *Nm* (S).

FRAGILARIA OCEANICA CL.¹

(Bih. Kongl. Sv. Vetensk. Akad. Handl. 1 n. 13 Pl. XIV fig. 25).

- 1898 *May*: 70°—72° N. 13°—16° W.; 67°—68° N. 24°—17° W.; 63° N. 54° W.; 59° N. 49° W.
June: 69° N. 54° W., very rare; 65° N. 31° W. to 66° N. 27° W.
 1899 *May*: 75° N. 2° E.
June: 80° N. 14° E. to 74° N. 20° E.
July: 74°—75° N. 17°—20° W., very common; 70°—72° N. 21° W., not rare; 80° N. 12° (common) and 16° E. (rare).

Temperature: 0.8, mean of 26 obs., max. 6.4, min. —1.2.

Salinity: 33.94, mean of 18 obs., max. 34.98 min. 31.98, exceptionally 25.36.

Plankton-type. Typical arctic, neritic form. It occurs in the Hudson Bay. — *Ny*.

FRAGILARIA STRIATULA LYXGB.

(VAN HEURCK Syn. Pl. XLIV fig. 12).

- 1899 *May—June*: 66° N. 22° W.

Temperature: 3.15.

Salinity: 34.16.

Plankton-type: *Ns*.

¹ Ostenfeld's data used.

GOSSLERIELLA TROPICA SCHÜTT.

(VAN HEURCK *Traité de la Diatomologie* pag. 513.)

- 1897 *December*: and
 1898 *January*: 32°—34° N. 33°—30° W.; 35° N. 74° W., rare.
February: 34° N. 73° W., rare.
December: Azores, rare.
March: 37° N. 26° W., very rare.

Temperature: 18.s, mean of 6 obs., max. 20.s, min. 15.s.**Plankton-type**. My specimens were found in Styli and Desmo-plankton intermingled. — *S? D?*GUINARDIA FLACCIDA (Caster.)¹H. FRAGALDO *Le Diatomiste* Pl. XIII fig. 3—5

- 1898 *January*: 16°—21° N. 18°—20° W.
March: 21° N. 18° W.; 41° N. 60° W. to 42° N. 42° W.
April: 47°—48° N. 40°—33° W.
May: 42° N. 61° W., 48° N. 33° W.
August: 63° N. 8° W. (very rare) to 58° N. 2° W. (common at 60° N. 3° W.)
September: 59° N. 2° W. (rare); 60° N. 2° W. (common).
October: 41° N. 67° W., not rare.
November: 51° N. 20° W., common; 42° N. 64° W. to 47° N. 41° W., not rare.
December: 18° N. 68° W., rare; 41° N. 66° W. to 43° N. 58° W.
 1899 *January*: 41° N. 69° W., not rare; 45° N. 49° W.

Temperature: 12.s, mean of 25 obs., max. 26.s, min. 6.**Salinity**: 34.7s, mean of 22 obs., max. 36.1, min. 31.6 (very common, when salinity 32.6).**Plankton-type**. Occurs in the Mediterranean, the North Sea and the Skagerak. — *No.*¹ Ostensfeld's data used.

HEMIAULUS HAUCKII GRUN.

(VAN HORN'S Synopsis Pl. CIII fig. 10.)

- 1897 *December*: and
 1898 *January*: 17°—13° S. 38°—35° W.; 7° N. 53° W. to 29° N. 36° W.
February: Caribbean Sea.
March: 15° N. 49° W.; 22° N. 43° W.; 7° N. 55° W.; Caribbean Sea; 32°—37° N. 74° W.
April: 10° N. 53° W. 16° N. 49° W.; Caribbean Sea.
May: 17° N. 50° W.; 26° N. 52° W.
June: 10° N. 53° W.; 22° N. 60° W.; 30°—33° N. 52°—48° W.; 41° N. 60° W.
July: 26° N. 48° W. to 31° N. 39° W.; Azores.
August: Azores.
September: 35° N. 74° W.; Azores.
October: 21° S.; 36° W.
November: 18°—24° S. 31°—29° W.; 26° N. 48° W.; 42 N. 63° W.; 45 N. 7° W.
December: 14° S. 36° W.; 18 N. 67 W.
 1899 *January*: 33°—34° N. 15°—12° W.
March: 35° N. 16° W.
April: 32° N. 75° W.
June: 21° N. 45° W.
July: 23° N. 36° W.

Temperature: 23.4, mean of 48 obs., max. 28, min. 9.8.

Salinity: 36.15, mean of 28 obs., max. 37.11, min. 35.81.

Plankton-type. Occurs in the Mediterranean, Pacific and Indian Ocean. — *D.*

HEMIAULUS HEIBERGII GR.

(Bis. K. Sv. Vet. Akad. Handl. Vol. 1 n. 11 Pl. I fig. 7.)

- 1898 *January*: 6° N. 55° W.; 25° N. 74° W.
February: 26° N. 74° W.

March: 7° N. 55° W.

June: 10° N. 53° W.

Temperature: 24._s, mean of 6 obs., max. 27._s, min. 21._s.

Salinity: 36.₀₀ (one obs.).

Plankton-type. Noted from the Gulf of Guinea, the Mediterranean, the Red Sea, Gulf of Bengal, Java and Japan. — *N. D.*

HEMIDISCUS CUNEIFORMIS WALLICH.

(*Microsc. Journa.* Vol. VIII, 1860 Pl. II fig. 3-4. *Enalita cuneata* Schindler.)

1897 *December* and

1898 *January*: 46° N. 11° W. to the Azores; 12° N. 50° W.

February: Caribbean Sea; 34° N. 74° W.

March: 36° N. 29° W.; Caribbean Sea.

April: Caribbean Sea.

May: 48° N. 25° W.; 43° N. 11° W.; Azores; 23° N. 56° W.

June: 48° N. 33° W.; Azores; 31° N. 17° W.; 19° N. 63° W.

July: 49° N. 22° W.; Azores; Caribbean Sea.

August: Azores; 44°—42° N. 42°—50° W.; Caribbean Sea.

September: Azores; 65° N. 18° W., very rare; 9° N. 53° W.

October: 21° S. 36° W.; Azores: 56° N. 31° W.; 57° N. 18° W.; Caribbean Sea.

November: Azores; 56° N. 23° W.

December: 29° S. 49° W.; Azores: 18° N. 67° W.

1898 *January*: 45° N. 49° W.

February: 34° N. 40° W.

April: 46° N. 13° W.; 41° N. 17° W.

October: 56° N. 31° W.

Temperature: 20._s, mean of 53 obs., max. 28._s, min. 10._s, exceptionally 7.

Salinity: 36.₀₀, mean of 34 obs., max. 36.₀₀, min. 32.₀₀.

Plankton-type. Occurs in the Mediterranean and Indian Ocean. This species belongs the Styli-plankton of the western and eastern warmer Atlantic. It occurs beyond 50° N. as rare specimens only and was in September seen N. of Iceland. — S.

LAUDERIA ANNULATA Gr.

(A Treatise on the Phytoplankton Pl. II fig. 13-16.)

- 1898 *January*: 21° N. 17° W.
March: 23—25° N. 17—16° W.; Azores; 7° N. 55° W.; 41° N. 70—60° W.
April: 44° N. 15° W.; 48° N. 33° W.
May: 48° N. 33° W.; 49° N. 23° W.; 60° N. 3° E.
June: 42° N. 9° W.
August: 58° N. 2° W.; 62° N. 6° W.
September: 50° N. 3° W.; 59° N. 1° W.
December: 51° N. 20° W.
- 1899 *January*: 45° N. 49° W.; 41° N. 69° W.
May: 60° N. 1° E.

Temperature: 13.4, mean of 18 obs., max. 25.9, min. 6.

Salinity: 35.12, mean of 14 obs., max. 35.93, min. 32.41.

Plankton-type. Occurs in the Mediterranean, the Indian and Pacific Ocean. — S. (*Nou.*)

LAUDERIA FRAGILIS GRAX,¹

(Bibliotheca botanica Heft. 42. Pl. I fig. 12-14.)

- 1898 *May*: 72—70° N. 14° W.; 68—67° N. 17—22° W.; 66° N. 24° W.; 59° N. 49° W.
June: 66° N. 27° W.; 66—67° N. 29° W.; 69° N. 49° W.; 63° N. 56° W.
- 1899 *May*: 75° N. 2° 30' E.
July: 80° N. 12° E.; 74—75° N. 20—18° W.; always rare.

Temperature: 0.5, mean of 12 obs., max. 8.5, min. —1.5.

Salinity: 33.56, mean of 12 obs., max. 34.23, min. 29.95.

Plankton-type: *Ny*

¹ Giesfeld's data used.

LEPTOCYLINDRUS DANICUS Cl.

(Bih. K. Sv. Vet. Akad. Handl. Vol. XX 3 n. 2 Pl. II. fig. 4-5.)

1898 *May*: 45° N. 43° W.; Färöes, very common; 58° N. 4° E., common; 63° N. 5° E., common.

June: Färöes, common.

July: Färöes, rare.

August: 80°—81° N. 10°—23° E., rare.

1899 *May*: Färöes, rare; 62° N. 2° E., common; 58° N. 4° and 7° E., common; 50° N. 2° E., rare.

September: 75° N. 17° E. to 79° N. 11° E. and 80° N. 13° E., varying from rare to common.

Temperature: 7, mean of 20 obs., max. 11.7, min. 3.2.

Salinity: 34.62, mean of 20 obs., max. 36.01, min. 32.20.

Plankton-type. This species seems to have a station at the Färöes, whence it spreads across the North Sea to Norway and Skagerak. It is remarkable that it was found abundantly in October 1895 off Coruña and in July at Trouville. Schaubert mentions it from Naples. — *Ns.*

LITHODESMIUM UNDULATUM Ehb.

(VAN HEURCK Syn. Pl. CXVI l. 8-11.)

1898 *October*: 42° N. 59° W.

November: 43° N. 58° W. to 40° N. 67° W.

Temperature: 11 to 18.

Salinity: 33.41 to 33.42.

Plankton-type. Noted from the coasts of France, the Engl. Channel and the southern North Sea. I have seen some specimens from Cameroun. — *No.*

MELOSIRA (NUMMULOIDES VAR.) HYPERBOREA GRUX.

(VAN HEURCK Syn. Pl. LXXXV fig. 4.)

1899 *June*: 64° N. 7° W.

July: 74°—75° N. 17°—18° W.

Temperature: —0.5, mean of 3 obs., max. —0.1, min. —0.6.

Salinity: 33.10, max. 33.18, min. 32.07.

Plankton-type. Found at E. and W. Greenland, in Hudson Bay, Barent's Sea and the Baltic. — *Ny.*

NAVICULA MEMBRANACEA Gr.

(A Treatise on the Phyto-plankton Pl. II fig 25—28.)

1898 *March:* 21° N. 18° W.; 43° N. 48° W.; 42° N. 60° W.

April: 29° N. 24° W.

November: 42° N. 64° W.

Temperature: 15.2, mean of 5 obs., max. 17.4, min. 13.

Salinity: 35.17 and 35.14.

Plankton-type. I have seen this species in samples from the Red Sea. LEMMERMANN mentions it from New Zealand. — *S.*

NAVICULA SEPTENTRIONALIS OERSTED²

(Marine Diatomeer fra Ostgrönland Kohn. 1895 Pl. VIII t. 97.)

1898 *June:* 69° N. 54° W.

1899 *May:* 75° N. 2° 30' E.

July: 74° N. 20° W.

Temperature: —1 to 3.1.

Salinity: 29.95 to 34.95.

Plankton-type. Noted from E. and W. Greenland and the Baltic. — *Ny.*

NITZSCHIA DELICATISSIMA Gr.¹

(A Treatise on the Phyto-plankton. Pl. II fig. 23.)

1898 *April:* 59° N. 22°—28° W., common.

May: 59° N. 13°—15° W.; Färöes, common; 57°—60° N. 28°

W.; 60°—58° N. 31°—35° W., common.

¹ Ostenfeld's data used.

June: Färöes, rare to common; Denmark's Sound, common.

July: Färöe Channel; 60°–58° N. 23°–32° W.; common.

August: Westmannaö, common; 65° N. 33° W., not rare.

September: Färöes, very common; 64° N. 32° W., common;
64° N. 31° W., rare.

Temperature: 8.6, mean of 15 obs., max. 11, min. 5.6.

Salinity: 34.98, mean of 15 obs., max. 35.61, min. 34.67.

Plankton-type. The abundant occurrence of this species in the spring in the northern Atlantic makes it probable that it belongs to the Chæto-plankton. — *C.?*

NITZSCHIA FRIGIDA GRUX.

(GRUX Bibliotheca botanica Helv. 42 Pt. 1 fig. 11.)

1899 *July*: 74°–75° N. 20°–18° W., rare.

Temperature: —0.1 to —0.6.

Salinity: 29.83.

Plankton-type. Noted from E. and W. Greenland, Barent's Sea, Kara Sea and the Baltic (Bay of Finland, Åland). — *Ng.*

NITZSCHIA LINEOLA CL.

(Fifteenth annual report of the Fishery Board for Scotland, for 1896
pag. 309 fig. 11.)

1898 *March*: Azores; 41° N. 23° W.; 44° N. 17° W.

April: Azores; 50° N. 9° W.; 49° N. 22°–25° W.

August: Azores.

Temperature: 14.8, mean of 7 obs., max. 23.1, min. 11.2.

Salinity: 35.40, mean of 4 obs., max. 35.81, min. 35.17.

Plankton-type: S.

NITZSCHIA PUNGENS GRUN.

(GRUN A Treatise on the Phytoplankton Pl. II fig. 23.)

1898 *March*: 7° N. 55° W.

June: 10° N. 53° W.

Temperature: 25._s and 27._s

Salinity: 35.₀₁, one obs.

Plankton-type. Noted from Japan and the Gulf of Bengal.
— *N.*

NITZSCHIA PUNGENS VAR. ATLANTICA Cl.

(A Treatise on the Phyto-plankton Pl. II fig. 24.)

1890 *April:* 48° N. 9° W.

Temperature: 12._s.

Salinity: 35.₀₀.

Plankton-type: Noted from Coruña and the Red Sea. LEMMERMANN mentions it from the Pacific. — *S.*

NITZSCHIA SERIATA Cl.¹

(Vega expeditionens Vetenskapt. Inktlagelser Pl. XXXVIII fig. 7b — *N. fructificans* Cl. Fifteenth annual report of the Fishery Board for Scotland, for 1893, pag. 300 (fig. 11, included).)

1898 *March:* Azores, rare; 41° N. 21° W.; 45° N. 48° W.

April: Azores; 49° N. 19°—23° W.; Orkneys, rare; 59° N. 22°—28° W.

May: 40° N. 23° W.; 60° N. 3° W. to 57°—59° N. 28° W., not rare, in some spots common.

June: 57° N. 34° W., rare; from S. Iceland to the Färöes, where very common, and Scotland.

July: S. Iceland, rare; Färöes, rare; 58° N. 32° W., not rare.

August: Azores, more or less rare; Westmannaö, rare; 63° N. 25° W. to 65° N. 33° W., more or less rare.

September: 66° N. 18° 30' W., rare; Shetlands, rare; 64° N. 31°—32° W.; 68° 46' N. 53° W.

October: 61°—63° N. 5°—10° W., rare.

1899 *April:* Färöes, rare.

May: Westmannaö, rare; Färöes; rare.

September: 75° N. 17° E. to 81° N. 16° E., more or less common.

¹ Ostenfeld's data used.

Temperature: 8.8, mean of 26 obs., max. 21.4, min. 1.7.

Salinity: 35.11, mean of 26 obs., max. 36.28, min. 33.53.

Plankton-type. This principal area of distribution is between Scotland, Iceland and Greenland, which together with the mean salinity seems to prove that it belongs to the Chæto-plankton. The var. *N. fraudulenta* is noted from the Mediterranean. — *C.*

PERAGALLOA MERIDIANA SCOTT.

(VAX HEBRUCK: A Treatise on the Diatomaceæ, pag. 419. — *Peragalloa brucei* SCOTT Engl. & Pracht. D. nat. Pflanzfamilien 3, 1, 5; pag. 86.)

1808 *February:* 12° N. 71° W.

October: 21° S. 36° W.

Temperature: 27 to 22.

Salinity: 37.21 (one obs.)

Plankton-type: *D* or *N*.

Remark. SCOTT does not say anything about the habitat of this form, but VAX HEBRUCK indicates the Baltic, which must be erroneous. It seems to me questionable whether this form not be an anomalous *Chaetoceros peruvianus*.

RHIZOSOLENIA (TEMPEREI VAR.) ACUMINATA PERAGALLO.

(Le Diatomiste 1892 P. XV fig. 4.)

1898 *January:* 7° N. 53° W.

February: 5° S. 9° E.

October: Azores.

November: Rio Janeiro; Azores.

December: Azores.

1899 *June:* 14° S. 6° W.

Temperature: 23.8, mean of 7 obs., max. 29.1, min. 17.4.

Salinity: 35.13, mean of 4 obs., max. 36.08, min. 33.83.

Plankton-type. This form, which is noted also from the Mediterranean and the Pacific, occurs along the coasts of the tropical Atlantic, east and west. — *N*.

RHIZOSOLENIA ALATA Brw.¹

(Peragallo: Le Diatomiste Pl. XVII fig. 11.)

1897 *December* and1898 *January*: 20°—21° N. 18°—20° W.; 31° N. 33° W.; 42° N. 18°—21° W.; 46° N. 11° W.; 35° N. 74° W.*February*: 13°—15° N. 70°—71° W.*March*: 23°—25° N. 17°—16° W.; area between 36° N. 28° W., 45° N. 13° W. and 48° N. 18° W.; 0° 30' S. 26° W.; 28° N. 74° W.*April*: area between the Azores, the English Channel and 48° N. 33° W.; 60° N. 4° and 19° W.; Caribbean Sea.*May*: 38° N. 21° W.; 40° N. 16° W.; 48° N. 29° W.; 60° N. 31° W. and 57° N. 28° W. to the Orkneys; 45° N. 43° W. to 41° N. 56° W.*June*: 46° N. 24° W.; 47° N. 17° W.*July*: 50° N. 11° W.; 50° N. 23° W., common, thence rare to 62° N. 0° W.*August*: 56° N. 34°—28° W., common; area between 62° N. 18° W., 65° N. 36° W. and 59° N. 2° E., common; 65° N. 36° W.*September*: area between 56° N. 28°—19° W., the Shetlands and 60° N. 26° W., as a rule common; 66° N. 18° W., rare.*October*: 56° N. 29° W. and 63° N. 16° W., common, thence to the Shetlands.*November*: 56° N. 23°—17° W., not rare; 62° N. 13° W., not rare; Färöe Channel, rare; 40° N. 67° W., rare.*December*: 32° N. 33° W.; 43° N. 18° W.1899 *February*: 34° N. 40° W., rare.*March*: Azores; 46°—47° N. 11°—8° W.*April*: 30° S. 2° E.; 9° N. 59° W.*May*: 60° N. 1° E., rare.*June*: 4° S. 19° W., common.*July*: 62° N. 0° W., not rare.*August*: 55° N. 26° W., not rare.*September*: 56° N. 30°—33° W., rare.¹ Ostensfeld's data used.

October: 53° N. 31° W., rare.

November: 51° N. 13° W., rare.

Temperature: 11.5, mean of 31 obs., max. 26.7, min. 5.1

Salinity: 35.29, mean of 29 obs., max. 35.56, min. 34.92.¹

Plankton-type. Noted from the Mediterranean, the Indian and Pacific Ocean. It follows in the Atlantic the African coast to the Azores and spreads in the spring towards the English Channel. It reached in May 60° N. and Scotland, in August S. Iceland, in September N. Iceland. From S. Iceland it crossed Denmark's Sound for E. Greenland. It occurred also in the western Atlantic, but was there much rarer. — S.

RHIZOLENIA ARAFURENSIS CASTR.

(H. Peragallo: *Le Diatomiste* 1892 Pl. XV fig. 6.)

March: 45° N. 36° W., rare.

Temperature: 8.

Salinity: 35.43.

Plankton-type. Found in the Arafura Sea.— *D ? S ?*.

RHIZOLENIA ATLANTICA PERAGALLO.

(*Le Diatomiste* 1892 Pl. XVII fig. 4-5)

1898 *March*: 42° N. 42° W. to 41° N. 49° W.

November: 24° N. 29° W., common; 51° N. 20° W.; 43° N. 64° W.

December: 18° N. 67° W.

1899 *February*: 34° N. 40° W.

Temperature: 11 to 22.5, exceptionally 26.5.

Salinity: 35 to 36.2.

Plankton-type: S.

¹ Only such samples in which this species occurred in some abundance have been considered in calculating the means.

RHIZOSOLENIA BERGONII H. PER.

(Le Diatomiste 1892 Pl. XV fig. 5).

1898 *November*: 24° S. 29° W.1899 *March*: 47° N. 8° W.**Temperature:** 11.3 to 22.9.**Salinity:** 35.78 to 36.03.**Plankton-type.** Noted from the Mediterranean. — *D.* (S?)

RHIZOSOLENIA CALCAR AVIS SCHULZE.

(H. PERAGALLO: Le Diatomiste 1892 Pl. XVI fig. 9).

1898 *January*: 7° N. 58° W.; 35° N. 74° W.*February*: 5° S. 4° E.; 13° N. 70° W.*March*: 7° S. 55° W.; 28° N. 74° W.*April*: 7° N. 55° W.*June*: 10° N. 53° W.*November*: 48° N. 41° W.; 42° N. 64° W. to 40° N. 67° W.*December*: 48° N. 67° W.; 41° N. 66° W.; 18° N. 67° W.**Temperature:** 19.4, mean of 15 obs., max. 28, min. 10.**Salinity:** 34.11, mean of 7 obs., max. 36.01, min. 33.11.**Plankton-type.** This species is to be considered as a neritic form of the tropical and subtropical Atlantic, which however spreads along the European coast into the E. Channel, the southern part of the North Sea and the Skagerak. Occurs in the Mediterranean. — *Nm* (N?).

RHIZOSOLENIA CASTRACANEI PERAGALLO.

(Le Diatomiste 1892 Pl. XIV fig. 4).

1897 *December*: and.1898 *January*: 24° N. 40° W. 32° N. 33° W. 36° N. 27° W.; 35° N. 74° W.*February*: 48° N. 40° W.; 16° N. 71° W. to 34° N. 74° W.

March: 12° N. 51° W.; 15° N. 49° W.; 36° N. 30° W.; 43° N. 45° W., 41°—36° W.

May: 20°—23° N. 60°—56° W.

June: 24° N. 58° W.

August—September: Azores.

October: 21° S. 36° W.; Azores.

November: area between Rio Janeiro, 19° S. 31° W. and 21° S. 29° W.; Azores; 44° N. 55° W.

December: 29° S. 49° W.; Azores.

1899 *January*: 45° N. 49° W.

February: 34° N. 40° W.

Temperature: 20.₁, mean of 33 obs., max. 27.₁, min. 8.

Salinity: 35.₈₇, mean of 17 obs., max. 37.₂₆, min. 32.₈₁.

Plankton-type. This species occurs in the Mediterranean and belongs to the tropical Atlantic, east of South America, and follows the North Equatorial current into the Caribbean Sea, the Florida Current to Newfoundland Banks and the Azores. It occurs also in the Sargasso Sea. — *D.*

RHIZOSOLENIA (ALATA VAR.) CORPULENTA CL.¹

(A. Treatise on the Phytoplankton Pl. II fig. 11).

1898 *February*: 5° S. 8° E.

March: 7° N. 35° W.; 43° N. 48° W. to 45° N. 36° W.

April: 47° N. 39° W. to 49° N. 22° W.

May: 49° N. 23° W.; 43° N. 45° W. to 41° N. 63° W.

June: 10° N. 53° W.; 46° N. 41° W.

August: 63° N. 25° W., very rare

September: 64° N. 32° W.; 41° N. 65° W.

October: 63° N. 16° W., rare; 57° N. 27° W. to 59° N. 16° W., common at 16°—21° W.

November: 63° N. 13° W.; 56° N. 30° W.; 43° N. 61° W. to 47° N. 41° W.

December: 62° N. 10° W.

¹ Ostenfeld's data used.

Temperature: 15.7, mean of 26 obs., max. 27.3, min. 7.

Salinity: 35.36, mean of 24 obs., max. 36.33, min. 32.97.

Plankton-type. Occurs in plankton from Jedo Bay, Japan. — S.

RHIZOSOLENIA CYLINDRUS Cl.²

(A Treatise on the Phytoplankton Pl. II fig. 12).

1897 *December:* and

1898 *January:* 12° N. 50° W.; Caribbean Sea; 25° N. 74° W.

February: Caribbean Sea.

March: 3° N. 24° W.

April: 10° N. 53° W.

May: Caribbean Sea; 41° N. 50° W.

July: 24° N. 54° W.; 40° N. 67°—58° W.

August: 40° N. 66° W. to 42° N. 50° W.

September: 9° N. 53° W.; Caribbean Sea.

October: Caribbean Sea; 34° N. 74° W.

December: Caribbean Sea.

Temperature: 25.3, mean of 20 obs., max. 28.4, min. 19.3.

Salinity: 34.35, mean of 13 obs., max. 36.33, min. 33.36.

Plankton-type. This species has been seen once in the Guinea Current; else¹ it seems confined to the sea along the north coast of South America, the Caribbean Sea and Florida Current. In July, August it follows the Desmo-plankton between 67°—50° W. beyond 40° N. The low mean salinity indicates it as a more neritic than oceanic form. SCHROEDER mentions it from Naples. — N² (of the western Atlantic).

RHIZOSOLENIA DELICATULA Cl.

(Kongl. Sv. Vet. Akad. Handl. Vol. XXXII n. 8 pag. 28).

1898 *March:* 58° N. 6° E.

August: Azores.

Temperature: 6 to 23.3.

¹ Ostenfeld's data not used.

Salinity: 35.00.

Plankton-type. This species appeared in the Engl. Channel in April and November, in the southern North Sea in August and September, also in the Skagerak. — *Nova*.

RHIZOSOLANIA (ALAPA VAR.) GRACILLIMA Gr.¹

(PERGALLO: *Les Diatomiste* 1892 Pl. XVII fig. 12.)

- 1897 *December:* and
 1898 *January:* 7° N. 53° W.; 25° N. 74° W.; 36° N. 27° W. to 45° N. 13° W.
February: 5° S. 4° E.; Caribbean Sea, 34° N. 73° W.
March: 4°—6° S. 10°—4° W.; 7°—10° N. 55°—53° W.; 36° N. 74° to 41° N. 66° W.; area between 33° N. 32° W., 43° N. 41° W. and 49° N. 18° W.
April: 7° N. 55° W.; 47° N. 40° W. to 50° N. 3° W.
May: 42° N. 60° W. to 45° N. 42° W. (common); 34° N. 32° W.; 38° N. 21° W.; 50° N. 7° W.
June: 10° N. 53° W.; 33° N. 48° W.; Azores; 42° N. 9° W., rare; 48° N. 0° W. very abundant; 45° N. 42° W.
July: Azores; 48° N. 14° W.; 77° N. 7° E., common; 40° N. 67° W., rare
August: Azores; 59°—61° N. 3° W.—5° E.; 58° N. 5° E., very common; 76° N. 9° E. (common) to 80° N. 11° E. and 81° N. 24° E.
September: 50° N. 9°—11° W., common; 60° N. 11°—2° W.; 73° N. 19° E., rare.
October: 38° N. 73° W., common.
November: 47° N. 41° W. (rare).
December: 62° N. 10° W., common.
 1899 *February:* 34° N. 40° W., rare.
May: 50° N. 39° W., rare; 58° N. 3° E., not common.
June: 68° N. 12° W., rare; 71° N. 6° W., rare.
July: 62° N. 0° W., very common.
August: 60°—61° N. 3°—0° W., common.

¹ Ostentfeld's data used.

September: 62° N. 1° E., very common; 65° N. 1° W., very common (deep sea haul from 100—0 m., maximum at 50 m.) 66°—67° N. 2°—3° W., not common or rare.

Temperature: 14.1, mean of 16 obs., max. 21.4, min. 5.1 (only such observations considered as relate to samples containing this form abundantly).

Salinity: 35.13, mean of 14 obs., max. 36.25, min. 36.02.

Plankton-type. I have found this form in samples from the Red Sea. It occurs more or less sparingly in the Equatorial, Antilles and Florida Currents. Its principal area of distribution is the area between the Azores, the west coast of Europe and the Firth of Channel. I never found it abundantly in the North Sea, but in the Skagerrak and along the Scandinavian coast it occurs during the summer in great abundance. As it occurred in September 1899 very abundantly in the deeper water-layers at 62°—65° N. 1° E. — 1° W., there is reason to believe that it arrives into the Skagerrak through the «Norske Rende». It seems thus to follow the 200 metre plateau round the French and British coasts. In some years it proceeds so far as off Beeren Island, where it was found abundantly in September 1896. — *Niv. S.*

RHIZOLENIA GRACILIS H. L. SMITH¹

(PERAGALLO: Le Dinomiste 1892 Pl. XVI fig. 17.)

1898 *August and November*: Azores, abundant.

Temperature: 18.5.

RHIZOLENIA HEBETATA HALL.

(PERAGALLO: Le Dinomiste 1892 Pl. XVII fig. 10.)

1898 *March*: 61° N. 5° W.

April: 50° N. 10° W.

¹ Seems to be a dwarf-form of *R. setigera*.

- August: 77°—76° N. 12°—8° E., in some spots common.
 September: 70° N. 13° E. to 75° N. 17° E., not rare.
 November: 45° N. 52° W.; 52° N. 38° W.; 53° N. 50° W.
 December: 50° N. 9° W.; 48° N. 50° W.
 1899 March: 49° N. 9° W.

Temperature: 7.8, mean of 17 obs., max. 12, min. 5.33.

Salinity: 34.88, mean of 17 obs., max. 35.65, min. 32.05.

Plankton-type. The distribution is very remarkable, first for the by no means rare occurrence in the arctic and northern Atlantic in 1898 and its total absence there in 1899, secondly for its absence in the temperate Atlantic. It is found in the Tricho-plankton of the Bering Sea. There is thus reason to believe that it derives ultimately from the northern Pacific. — *T.*

RHIZOLENIA OBTUSA HENSEN.¹

(*R. obtusa var. truncata* GRAN. B. Norske Nordlavs-Expedition, 1876-78; Proto-phyta Pl. V fig. 41).

- 1898 March: 58° N. 6° E.; 41° N. 60° W.
 April: 63° N. 18° W.; 66° N. 24° W., not rare.
 May: 70°—72° N. 13°—14° W.; Färöes rare to very common; Sheilands, rare; 60°—62° N. 2°—3° E., not rare; 61° N. 11° W., very rare; 57° N. 25° W., rare; 58°—60° N. 35°—38° W., 59° N. 49° W. and 63° N. 54° W.
 June: 69° N. 15° W.; Denmark's Sound; 62° N. 14° W.; Färöes, very common; 62° N. 2° E.; SE. of Beeren Island.
 July: Färöes, rare; 78° N. 5° E.
 August: 77°—78° N. 11°—12° E., rare to common.
 September: Färöes, common; 59° N. 50° W. and 69° N. 53° W., rare; 76° N. 13° E.
 December: 41° N. 60° W.
 1899 March: 49° N. 9° W., rare.
 April: Westmannad, rare.
 May: 61°—62° N. 1°—2° E., rare.

¹ Ostenfeld's data used.

June: 65° N. 1° W. to 69° N. 13° W., at some spots common; 72° N. 9° W., rare; 73° N. 4° W., rare; 77° N. 14° E. and 62° N. 2° E., rare.

September: 80° N. 13° E., very rare.

Temperature: 6.2, mean of 43 obs., max. 13.5, min. —1.2.

Salinity: 34.50, mean of 42 obs., max. 35.00, min. 31.00, exceptionally 26.00.

Plankton-type. SCHROEDER mentions it from Naples. — T.

RHIZOSOLENIA ROBUSTA NOBLE.

(PERAGALLO: In *Diatomiscie* Pl. XIV fig. 1).

1898 *January*: 12° N. 19° W.; 21° N. 17° W.

February: 5° S. 9° E.; 13° N. 70° W.

March: 18° N. 16° W.; 21° N. 18° W.; 23° N. 17° W.; 10° N. 53° W.

April: 50° N. 3° W.

1899 *April*: 9° N. 59° W.

June: 4° S. 19° W.

Temperature: 21, mean of 11 obs., max. 27.0, min. 12.

Salinity: 34.00, mean of 3 obs., max. 35.00, min. 33.00.

Plankton-type. Noted from the Mediterranean, Java and the Pacific. It occurs in the tropical Atlantic, both west of Africa and north of South America and seems to be of neritic habitat. — Nt.

RHIZOSOLENIA SEMISPINA HUNSEN.¹

(Fülle's Ber. Komm. in Kiel 5r 1882—86 Pl. V fig 39).

1898 *January*: 33° N. 31° W., rare; 48° N. 6° W., rare.

March: 48° N. 18° W.; 53° N. 20° W.; 48° N. 6° W. to 41° N. 21° W.; 43° N. 45° W. to 40° N. 71° W.

April: 73° N. 5° W., not rare; Färöe Channel, not rare; 60° N. 19° W. to 59° N. 30° W.; rare at the south end of Greenland; 44° N. 40° W. to 40° N. 70° W.

¹ Ostenfeld's data used.

May: 78° N. 2° 30' W. to 68° N. 17°–21° W., more or less rare; from S. Iceland to Scotland, not common; Shetlands, abundant; 61° N. 23° W. to the S. of Greenland, common; 63° N. 54° W., not common; 38° N. 21° W.; 49° N. 23° W. to 41° N. 54° W.

June: 69° N. 15° W. to 65° N. 31° W.; not common; S. Iceland to Scotland; 62° N. 2° 30' E.; from Cape Farewell (common) to 66° N. 55° W. (rare); 45° N. 41° W.; 41° N. 58° W.

July: 61° N. 6° W., rare; 57° N. 47° W., common.

August: Azores, rare; Irish Channel, rare; Färöe Channel; Spitzbergen, 77° N. 12°–23° E., common; SW. of Iceland, rare; E. Greenland, 65° N. 35°–36° W.

September: very sparingly SW. of Cape Farewell and W. of Greenland, 65° N. 55° W.; 59° N. 1° W., not rare.

October: S. of Iceland.

November and December: Azores, rare.

1899 *March*: 65° N. 24° W., rare; 49° N. 9° W., common.

April: 49° N. 7° W., common; 48° N. 9° W., rare.

May: 72° N. 5° W., rare; Westmannö, not common; 61° N. 6° W., not rare; 61° N. 1° E. rare; 58° N. 4° E., rare; 51° N. 26° W., rare; 50° N. 39° W., rare; 48° N. 45° W. and 47° N. 50° W., very common; 47° N. 57° W., rare; 75° N. 2° E.

June: area between 76° N. 9° W., 69° N. 13° W., 67° N. 6° W. and 68° N. 3° W., varying from rare to common; 62° N. 1°–2° E., rare; 75° N. 17° E. to 77° N. 14° E., more or less rare.

July: 79° N. 10° E. to 80° N. 14° E., very rare; 73° N. 36° E.

August: 76° N. 41° E. common.

September: Beeren Island, rare to common.

Temperature: 7, mean of 38 obs., max. 16, min. -1.5 (only such samples considered as contained this species abundantly).

Salinity: 34.7, mean of 39 obs., max. 35.9, min. 31.7.

Plankton-type: I have found this species in samples from Hudson Bay. — *T.*

RHIZOSOLENIA SETIGERA Brew.

(C). Fifteenth annual report of the Fishery Board for Scotland, for 1896, pag. 301 (fig. 12).

1898 *March*: 7° N. 55° W., common; 41° N. 21° W.

June: 10° N. 53° W.

Temperature: 25.6. to 27.3 (tropical Atlantic); 14.3 (temperate Atlantic).

Salinity: 31.33 (tropical Atlantic).

Plankton-type. The almost complete absence of this species in the ocean proves that it is neritic form; its occurrence north of South America, as well as in the spring in the Skagerrak, proves that this species is a very eurythermous form. SCHÖNER mentions it from Naples. — *Ni, No, Ns.*

RHIZOSOLENIA SHRUBSOLEI Cl.¹

(FRANGALLO: Le Diatomiste 1892 Pl. XVII fig. 8, 9).

1898 *January*: 20° N. 18° W.

February: 34° N. 73° W.

March: 18°—21° N. 20°—18° W.; Azores; 41° N. 20° W.; 49° N. 20° W.; 44° N. 48° W.; 41° N. 60° W.

April: Azores; 49° N. 12° and 13° W.; 60° N. 4° W.

May: 57° N. 25° W. to 60° N. 9° W., more or less rare.

June: area between 64° N. 22° W. and 60° N. 4°—9° W., rare; 57° N. 34° W., rare.

July: area between 58° N. 32° W., 60° N. 23° W. (common), 60° N. 4° W. and 58° N. 23° W., on the whole rare.

August: Azores; area between 58° N. 7° W., 60° N. 2° W., and 60° N. 10° W., rare; 63° N. 25° W. to 64° N. 32° W., rare.

September: Färöes, common; 60° N. 2° W.

October: 63° N. 12°—13° W., rare; Färöes, rare.

November: 63° N. 13° W., rare; Färöes, rare.

¹ Ostenfeld's data used.

1899 *January*: Füzöes, rare.

May: 58° N. 3° E., rare.

November: 51° N. 13° W., rare.

Temperature: 12.6, mean of 24 obs., max. 20.4, min. 7.8.

Salinity: 35.61, mean of 17 obs., max. 35.51, min. 33.55.

Plankton-type. This form has been found in the Mediterranean, the Indian Ocean and at Jedo Bay (Japan). It occurs in the Atlantic rarely or in scattered specimens only, but during the spring and summer gregariously in the Engl. Channel and southern North Sea. It is thus a neritic form, which belongs to the eastern coasts, as it has been seen once only in the Florida Current. As many other species of the southern bank-water it was in the winter seen in the Cape Verde region and in the spring between the Azores and the Engl. Channel. — *Nm.*

RHIZOSOLENIA STOLTERFOTHII PERAGALLO.¹

(Le Diatomiste 1892 Pl. XII fig. 17-18).

1898 *January*: 12° N. 19° W.; 20° N. 18° W.

March: 21° N. 18° W.; 41° N. 66° W. to 45° N. 36° W.

April: Azores; 48° N. 8° W.; Engl. Channel; 47° N. 40° W.

May: 59°-60° N. 15°-13° W.; 45° N. 43° W.; 42° N. 61°-65° W., everywhere rare.

June: 10° N. 53° W., rare.

July: 59°-62° N. 6°-0° W., rare.

August: 60° N. 2°-3° W.; 64° N. 27° W.

September: Shetlands, common.

October: Orkneys and Shetlands, rare; 41° N. 59°-67° W., not common.

November: 47° N. 41° W.; 43° N. 61° W.; 42° N. 61° W., everywhere rare.

December: 18° N. 67° W., rare.

1899 *March*: 47° N. 8° W., rare.

May: 59° N. 2° E., very rare.

¹ Ostenfeld's data used.

Temperature: 14.₈, mean of 27 obs., max. 27.₂, min. 8.

Salinity: 35.₀₆, mean of 21 obs., max. 36.₁₁, min. 32.₅₆.

Plankton type. This species occurs along the continental coasts from Cape Verde to the English Channel and west of the British Islands to the Shetlands. Rare specimens drift to the south of Iceland. It occurs also along the North American coast from the Newfoundland Banks at least to 67° W. It has only once been observed north of South America. It is very common in the summer in the English Channel and in the southern North Sea. According to LEMMERMANN it occurs in the Mediterranean, the Pacific and the China Sea. I have seen it in plankton from Jedo Bay. — *Nov.*

RHIZOSOLENIA STYLIFORMIS BRUV.¹

(VAN HEURCK Syn. Pl. LXXXVIII fig. 1-5.)

1898 *January:* 0° N. 26° W. to 21° N. 17° W.; Azores to 49° N. 11° W.; 63° N. 20° W.; 7° N. 53° W. to 14° N. 49° W.; Caribbean Sea; 25°—32° N. 74° W.

February: 50° N. 10° W.; 63° N. 15° W.; Caribbean Sea; Bahamas; 26° N. 74° W.

March: 4°—1° S. 10°—15° W.; 18° N. 18° W.; 25° N. 16° W.; 33° N. 32° W. to the Engl. Channel; from 40° N. 68°—72° W. to 51° N. 27° W. and the Engl. Channel; 15° N. 49° W. and 25° N. 41° W., rare; Caribbean Sea; 28°—32° N. 74° W.

April: area between 34° N. 75° W., 40° N. 70° W., the Engl. Channel and 41° N. 19° W.; 58° N. 38° W. to 59° N. 23° W. and at 60° N. 4° W., rare.

May: Azores to Cape Finisterre; from New York to the mouth of the Engl. Channel; area between 57° N. 38° W., 61° N. 28° W., 60° N. 9° W. and 57° N. 25° W.; Davis's Strait, 63° N. 54° W., very rare; area between 11° N. 52° W., 16° N. 71° W. and 23° N. 50° W.

June: area between 45° N. 26° W., 42° N. 9° W. and 48° N. 17° W.; area between S. Iceland, the Färöes and 60° N. 9° W.; 19° N. 63° W. to 31° N. 50° W.; 41° N. 59° W.; 45° N. 41° W.

¹ Ostenfeld's data used.

- July*: Azores; 48°—50° N. 14°—11° W. (common at 50° N. 11° W.); area between 58° N. 36° W., 62° N. 0° W., and Iceland (common at the Färöes and 62° N. 0° W.); 40° N. 69° W. to 42° N. 48° W.; 25° N. 48° W.; Caribbean Sea; 21° N. 58° W.; 25° N. 74° W.
- August*: Azores; 49° N. 14° W.; 65° N. 35° W. to 60° N. 3° E., maximum S. of Iceland; S.W. of Spitzbergen, 77°—78° N. 9°—12° E.; 47° N. 39° W. to 41° N. 65° W.; 14° N. 70° W. to 38° N. 74° W.
- September*: 30° N. 35° W. to the Azores, rare; 56° N. 28° W., common; 60°—63° N. 27°—26° W. to 59° N. 1° W., maximum W. of the Färöe Channel and S. of the Shetlands, N. of Iceland; rare at 58° N. 39° W., 59° N. 50° W., and 65° N. 36° W.; Beeren Island, 76° N. 16° E.; 9° N. 63° W.; Caribbean Sea; Bahamas; 33° N. 74° W.; 46° N. 48° W.
- October*: Azores, rare; area between 57° N. 42° W., S. Iceland and the Shetlands (maximum N.W. of Rockall); Davis's Strait, 66°—69° N. 54°—55° W., very rare; N. of Newfoundland, 53° N. 52° W. and at 41° N. 58° W., rare; Caribbean Sea; 34° N. 74° W., rare.
- November*: 50° N. 36° W. to 56° N. 17° W., more or less rare; between Iceland and the Färöes, common, thence rarer to the S.W. of Iceland and to the Shetlands; common at 45° N. 50° W., but rare at 53° N. 49° W. and 40° N. 67° W.
- December*: S. of Iceland and at the Färöes, rare; 46° N. 50° W. to 41° N. 65° W., not rare; Brazil Current, 18°—26° S. 38°—45° W., more or less rare; Porto Rico.
- 1899 *January*: Färöes, rare; 45° N. 49° W. and 41° N. 69° W.,
February: Färöes, rare.
- March*: Azores; 41° N. 21° W. to 49° N. 9° W.
- April*: Azores to 48° N. 9° W., more or less rare; Färöes, rare; 32° N. 75° W., rare.
- May*: 47° N. 50° W. to 51° N. 14° W., common at 51° N. 26° W. and 47°—48° N. 50°—45° W.; Färöes, rare; 57° N. 3° E. to 61° N. 1° E., rare.
- June*: 4° S.—1° N. 19°—23° W., more or less rare; 45° N. 31° W., very rare; 62° N. 1°—2° E. to 66° N. 3° W.
- July*: 62° N. 0° W., common; 56° N. 38° W., common; 57° N. 31° W., rare.

August: 72° N. 26° E., rare; 55° N. 26° W. to 56° N. 38° W., very common.

September: 68°—69° N. 8°—10° W., rare; 74° N. 18° E. to 80° N. 15° E., rare to common; 56° N. 23° W. to 53° N. 51° W., common at 33°—40° W.

October: 56° N. 23° W., rare; 53° N. 31° W., not rare.

November: 52°—48° N. 48°—46° W., rare.

Temperature: 12. mean of 38 obs.; max. 26, min. 3.3 (only such samples considered as contained this species abundantly).

Salinity: 34.75, mean of 38 obs., max. 35.31, min. 32.52.

Plankton-type: This species is found in the Pacific and in the Mediterranean. It appeared in January 1808 in the S. Equatorial Current and followed it to the N. of S. America and into the Caribbean Sea. It was seen in December in the Brazil Current. In the east Atlantic it follows the African coast to the Canaries and the Azores, whence it continues towards the Engl. Channel. In April and May its area of distribution extended across the whole Atlantic between 40° and 50° N. It had, already in May, advanced beyond 60° and reached Iceland in June. From S. Iceland it went towards E. Greenland and was in October seen in Davis's Strait. On the other hand it went from S. Iceland towards the Shetlands. It was seen in September N. of Iceland and, already in August, at Spitzbergen — S.

SKELETONEMA COSTATUM (GREV.)¹

(VAN HEURCK Syn. Pl. XCI fig. 4—6.)

1898 *March*: 37° N. 74° W.

August: rare in the Irish Channel, at the Shetlands and at Westmannab.

Temperature: 10.5—13.5.

Salinity: 34.65 to 34.14.

Plankton-type. Found in Jedo Bay, Japan, and in the Gulf of Bengal. It is apparent from the above data, that this species, so abundant near the coasts, is a neritic form. As it occurs in the North Sea and Skagerrak together with northern species it is to be considered as belonging to Ns.

¹ Ostensfeld's data used.

SKELETONEMA TROPICUM Gr.

(K. Sv. Vet. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 30, 31.)

- 1898 *January*: 6° N. 55° W.
March: 7° N. 55° W.
June: 10° N. 53° W., very common.
December: 29° S. 48° W.

Temperature: 25.5 mean of 5 obs., max. 27.2, min. 23.5.**Salinity**: 34.52 and 36.01.**Plankton type**: N.

STEPHANOPYXIS TURGIDA Græv.

Crossedicutia t. Græv. *Micr. Janca*, Vol. VII, 1859, Pl. VIII fig. 14.)

- 1898 *January*: 21° N. 17° W.
February: 6°—5° S. 12°—9° E.
March: 9° N. 17° W.; 21° N. 18° W.; 40° N. 70° W. to 47° N. 27° W., common at 41° and 45° W.
April: 40° N. 70° W., rare; area between 40° N. 41° W., 47° N. 40° W. (common) and 48° N. 33° W.; 50° N. 3° W.
May: 48° N. 30° W., rare and dead.
June: 44° N. 9° W., very rare.
October: 41° N. 67° W., not rare.
November: 41° N. 66°—69° W., more or less rare; 51° N. 20° W., not rare.
December: 41° N. 66° W., very rare.
- 1899 *January*: Canaries, rare; 41° N. 69° W., rare.
February: 34° N. 40° W., common.

Temperature: 13.5, mean of 35 obs., max. 27.5, min. 6.**Salinity**: 34.55, mean of 30 obs., max. 36.52, min. 32.25 exceptionally 20.25.

Plankton-type. This species is, as is seen from the low salinity, a neritic form, occurring along the coast of Africa. In March and April it appeared suddenly between 40°—50° N., from New York to the north of the Azores and simultaneously in the English Channel. After May it had almost completely disappeared from the Atlantic, but in November it appeared again south of Nova Scotia — *Nva.*

STREPTOTHECA THAMESIS SERUBE.

(Cl. A Treatise on the Phyto-plankton Pl. II (fig. 19))

- 1898 *January*: 48° N. 6° W.
March: 45° N. 36° W.
April: 58° N. 2° W.
 1899 *March*: 48° N. 6° W.
April: 50° N. 6° W.

Temperature: 10.2, mean of 5 obs., max. 13 min. 8.**Salinity**: 35.52

Plankton-type. This species occurs in the southern North Sea, in the mouth of the river Thames, at the coasts of Scotland, but in the Atlantic only occasionally. The above mean salinity it therefore to be considered as anomalous. — *Nm.*

THALASSIOSIRA GELATINOSA (HENSEN).

(A. Schm. Nord Sea Diat. Pl. XXXVIII (fig. 3))

- 1898 *April*: 63° N. 18° W., common.
 1899 *June*: 69° N. 13° W.; 65° N. 1° W. (deep sea haul from 200 to 0 m.).

Temperature: 7.**Salinity**: 26.51.

Plankton-type. Found in the Arctic Sea, the North Sea and the Skagerak. It occurs also in the northern Pacific (between Vancouver Island and British Columbia, LEMMERMAN). — *Np.*

THALASSIOSIRA GRAVIDA CL.¹

(Bih. Kongl. Sv. Vetensk. Akad. Handl. Vol. XXII 3 n. 4 Pl. II (fig. 14—16. — GRAS.
 D. Norske Nordhavs Exped. 1876—78 Protophyta Pl. IV (fig. 57—58).)

- 1898 *March*: 74° N. 5° W., rare; 58° N. 6° E.; Färöes, rare; 40° N. 68°—69° W.
April: 66° N. 24° W., common; S. of Iceland, not rare; Färöes, rare; W. of the Shetlands, rare; 42° N. 47° W. and 40° N. 68° W., rare.

¹ Ostenfeld's data used.

May: 73° N. 10° W., rare; 72° N. 13° W. to 70° N. 14° W., very common; 68° N. 17° W., rare; Färöes, rare; 68° N. 21° W. to 67° N. 25° W., common; SW. of Greenland, rare; from Cape Farewell to 63° N. 54° W., common.

June: 73° N. 5° W., very common; 66° N. 28° W. to 67° N. 29° W., very common; Westmannaö, rare; Färöes, rare; 63° N. 56° W. to 69° N. 54° W.; 59° N. 51° W., common.

July: Färöes, common.

August: 66° N. 55° W.; 65° 66° N. 36°—37° W.; Färöes; N. and W. of Spitzbergen, rare.

September: Färöes, rare; 69° N. 53° W., common; 65° N. 55° W., rare.

October: Färöes, rare.

1899 *March*: 66° N. 20°—24° W., rare; 65° N. 24° W., not rare.

April: Färöes, common.

May: N., S. and E. of Iceland, more or less rare; Färöes, rare; 61° N. 1° W., common; 75° N. 2° 30' E.

June: 73° N. 6° W., rare; 68° N. 7° W., not rare; 76° N. 20° E., rare.

July: 71°—74° N. 17°—22° W., more or less rare; 80° N. 12°—15° E., very common to rare; 78° N. 53° E., rare.

September: 75° N. 18° E., not rare; 80° N. 13° E., rare.

Temperature: 2.1, mean of 22 obs., max. 7.8, min. — 1.3.

Only such samples considered as contained this species abundantly.

Salinity: 34.98, mean of 21 obs., 35.18, min. 31.98.

Plankton-type. Arctic form. I have seen it in samples from Hudson Bay. — *T.* (Ng, Ns).

THALASSIOSIRA HYALINA GRUN.¹

(*T. GLEBIA* GRUN. Naeske Nordhavs Expedition 1876-78, *Protophyta* Pl. IV fig. 46-42.)

1898 *April*: 66° N. 24° W., not rare.

May: 72° N. 13° W., common; 67° N. 22° W., not rare; 63° N. 54° W., not rare.

June: 66° N. 55° W., very rare; 63° N. 56° W., rare.

¹ Ostenfeld's data used.

August: 65° N. 36° W., rare.

1899 *May*: 66° N. 22° W., not rare; 75° N. 2° 30' E., rare.

Temperature: 1.8, mean of 4 obs., max. 5 min. — 1.

Salinity: 34.36, mean of 4 obs., max. 34.33, min. 34.23.

Plankton-type. Noted from the E. and W. Greenland. —

Ny (1).

THALASSIOSIRA NORDENSKIÖLDII Cl.¹

(Vax Hedrick Syn. Pl. LXXXIII fig. 9)

1898 *March*: 40° N. 69° W., rare; 40° N. 68° W., common; 42° N. 51° W. to 42° N. 42° W., common; 58° N. 8° E., rare.

April: S. and W. of Iceland, not rare; Färões, rare.

May: 52° N. 14° W. to 70° N. 15° W., not rare; N. of Iceland, common; Westmannaö, not rare; Färões, common; 59° N. 49° W. (common) to 63° N. 54° W., not rare.

June: 67° N. 25° W. to 65° N. 29°—31° W., common; Westmannaö; Cape Farewell to 69° N. 54° W.; Färões, rare.

August: Färões, rare; 65° N. 36° W., rare.

September: 69° N. 53° W., rare.

1899 *April*. Färões, rare to common.

May: Westmannaö, rare; Färões, not rare; 61° N. 1° W., common; 60° N. 2° 30' E., rare; 75° N. 2° 30' E., rare.

June: 75°—78° N. 20°—12° E., rare.

July: 80° N. 14° E., rare.

September: 80° N. 13° E., rare.

Temperature: 7.4 max. 16, min. 1.5. Only such samples considered as contained this species abundantly.

Salinity: 34.33, mean of 11 obs. max. 36.11 min. 31.48.

Plankton-type. Typical arctic species. Its occurrence on the driftice at Cape Vankaremá seems to prove that it occurs in the Polar Basin whence in drifts along the coasts in the Arctic regions. I have seen it in samples from Hudson Bay and from the northern

¹ Ostenfeld's data used.

Pacific, at Puget's Sound. LEMMERMANN mentions it from Bara Island, between Vancouver Island and the British Columbia. In the years 1871-75 it was exceedingly abundant in the arctic regions not only along the coasts, but in the open sea. In the years 1896-99 it had not that important part in the arctic plankton. — *Ny.*

THALASSIOTHRIX FAUENFELDII GRUN.¹

VAN HEDDEN Sp. Pl. XXXVII fig. 11-12.

- 1898 *March*: 21° N. 18° W., rare; 61° N. 11° W., common; 58° N. 6° E.
April: 39° N. 24° W.; S. of Iceland; 59°-60° N. 4°-29° W.
May: 60° N. 9° W. to 57° N. 28° W., common N. and W. of Rockall.
June: 63° N. 19° W. to 60° N. 7° W., rare.
July: S. and W. of Iceland; 60° N. 17° W.
September: 60° N. 11° W.
October: 61° N. 5° W. to 57° N. 27° W., more or less rare.
November: S. Iceland to the Shetlands, more or less rare.
December: 61° N. 6° W., rare; 62° N. 10° W. not rare.
- 1899 *April*: 48° N. 9° W., rare.
May: 58° N. 4°-7° E.; common.

Temperature: 10.1, mean of 11 obs., max. 15, min. 6.

Salinity: 34.4, mean of 8 obs., max. 36.56, min. 28.31.

Plankton-type. Noted from Japan. — *Ns.*

Remark. Most of the above data are from *Ostenfeld*. I have found this form only very rarely in the ocean, but very abundantly during the winter and spring in the plankton of the Skagerak. It may be possible that at least some of *Ostenfeld*'s data relate to the variety *Javanica*.

¹ (*Ostenfeld*'s data used).

THALASSIOTHRIX (FAUENFELDII VAR.) JAVANICA GRUN.

(Van Haeck: Synopsis Pl. XXXVII fig. 13.)

- 1898 *April*: 59° N. 12° and 23° W.
May: 49° N. 17° and 23° W.
November: 56° N. 26° and 36° W.
- 1899 *May*: 51° N. 26° W.
October: 53° N. 31° W., not rare.

Temperature: 13.5, mean of 5 obs., max. 23, min. 7.5.

Salinity: 35.20, mean of 7 obs., max. 35.02, min. 35.06.

Plankton-type: S.

THALASSIOTHRIX LONGISSIMA CL. & GRUN.¹

(Synopsis Thalassiothrix Cl. Bib. Kongl. Sv. Vetensk. Akad. Handl. 1 n. 13 [pag. 22].)

- 1897 *December*: and
- 1898 *January*: 21° N. 18° W., rare; 32° N. 33° W., rare; 41° N. 21° W. to 48° N. 6° W.; 37° N. 73° W.
- February*: 38° N. 74° W., rare.
- March*: 71° N. 1° 30' W., rare; 68° N. 26° W., rare; Azores to the English Channel (more or less abundant), thence along 58°—40° N. to 33° W.; 23° N. 17° W., rare; 33° N. 45° W. to 40° N. 71° W.
- April*: 74°—75° N. 5°—9° W., more or less rare; 58°—60° N. 4°—28° W., common at 22° W., else rare; 40°—50° N. 7°—70° W., varying from rare to common; Azores to the Engl. Channel; 69° N. 47° W., rare.
- May*: 77° N. 2° 30' W. to 70° N. 15° W.; from the Färöes to Greenland, along 57°—59°, not common; 65° N. 54° W., rare; 49°—47° N. 22°—32° W.
- June*: 63° N. 13° W. to 60° N. 9° W.; Färöes, rare; Denmark's Sound, 65°—66° N. 29°—31° W., more or less rare; 57° N. 34° W. (very common) to 57° N. 46° W., rare; 41° N. 58° W.
- July*: 65° N. 5° W., common; 65° N. 3° W., rare; 62° N. 4°—6° W., rare; 60° N. 17° W. to 57° N. 47° W., on the whole not rare.

¹ Ostenfeld's data used.

August: S. of Iceland, rare; Davis's Strait, 62° N. 53°—56° W., very rare; Färões, rare; 58° N. 2° W., rare; Azores, very rare.

September: 66° N. 18° W., common; Färões, not rare; 56° N. 1° W., to 60° N. 10° W., more or less rare; 63° N. 25° W. to 65° N. 36° W., rare; 59° N. 40° W. and 69° N. 53° W., rare.

October: Färões to 57° N. 27° W. and 58° N. 32° W., rare; 48° N. 38° W., rare; 41° N. 59° W., rare.

November: Iceland to the Färões, rare; 50° N. 10° W. to 47° N. 42° W., on the whole rare, but common at 51° N. 20° W.; 43° N. 61° W. to 42° N. 64° W., rare.

December: 50° N. 9° W., rare; 43° N. 10° W., rare; 49° N. 30° W. to 41° N. 66° W., rare to common.

1839 *January*: 43° N. 57° W., rare.

February: 34° N. 40° W., very rare.

March: Färões, rare; 49° N. 9° W., not rare; 47° N. 7° W., rare; Azores, rare.

April: 49° N. 7° W., rare; 44° N. 15° W., not rare.

May: Färões, rare; 58° N. 4° E., rare; 51° N. 20° W., rare; 50° N. 39° W., rare; 47°—48° N. 50°—45° W., common.

June: 66° N. 3° W. to 70° N. 13° W., rare.

July: 56° N. 38° W. to 53° N. 51° W., as a rule rare, but very common at 45° W.

September: 73° N. 19° E., not rare.

October: 56° N. 31° W., rare.

November: 51° N. 13° W., rare.

Temperature: 9.5, mean of 19 obs., max. 14, min. 4. (Only such samples considered as contained this species abundantly)

Salinity: 34.65, mean of 21 obs., max. 35.47, min. 32.52.

Plankton-type. This species was found by the Vega Expedition abundantly in the Bering Sea. It is represented in the Antarctic seas by a much coarser form, which was found there by the Challenger Expedition in great abundance. It is a typical arctic form, that has about the same geographical distribution as *Calanus flammeus*. T.

Murrayæ, Cystæ.

HEXASTERIAS PROBLEMATICA Cl.

(Kongl. Sc. Vetensk. Akad. Handl. Vol. XXXII n. 8 pag. 22.)

1898 *July*: Färöes.

October: Westmannaö.

November: 56° N. 23° W.; 51° N. 2° W.

1899 *May*: 66° N. 22° W.; 62° N. 7° W.

Temperature: 7.4, mean of 5 obs.; max. 10.4, min. 3.1.

Salinity: 34.81, mean of 5 obs.; max. 35.12, min. 34.51.

Plankton-type. This species belongs evidently to the arctic and boreal regions. — *T.*

HYALOPHYSA DELICATULA Cl.

(Kongl. Vet. Akad. Handl. Vol. XXXIV n. 1, Pl. VIII fig. 1, 2.)

1898 *August to December*: Azores, common.

1899 *January*: 33° N. 15° W.

Temperature: 17.8 to 21.8.

Salinity: 36.33 to 36.34.

Plankton-type: S ?

PYROCYSTIS FUSIFORMIS J. MURRAY¹

(Proceed. Roy. Soc. London Vol. XXIV, 1876, pag. 21.)

1898 *January*: 15° S. 36° W.; 9°–10° N. 26°–25° W.; Azores to 32° N. 34° W.

¹ Murray's & Whiting's data used.

February: 31° N. 35° W. to 19° N. 52° W.; Caribbean Sea.

March: 4° S. 10° W. to 17° N. 47° W.; Caribbean Sea; 28°
—32° N. 74° W.; 40°—41° N. 64°—51° W.

April: 22° N. 47° W. to 20° N. 38° W.; Caribbean Sea.

May: 13° N. 51° W.; 21° N. 51° W.

August: 40°—41° N. 66°—57° W.

September: 41°—42° N. 65°—57° W.

November: 9° S. 34° W.; 40°—44° N. 67°—55° W.

December: 29° S. 49° W.

1899 *April*: 36° N. 74° W.

Temperature: 21.5, mean of 27 obs., max. 28, min. 12.

Salinity: 35.19, mean of 12 obs., max. 38.24, min. 32.87.

Plankton-type: *D*.

PYROCYSTIS HAMULUS Cl.

(K. Vetensk. Akad. Handl. Vol. XXXIV n. 1 Pl. VII fig. 39.)

1897 *December* and

1898 *January*: 12° N. 50° W.; 20° N. 74° W.

February: 16° N. 71° W.

March: 14—15° N. 50°—49° W.

June: 27° N. 55° W.

July: 26° N. 48° W.

October: 30° N. 74° W.

1899 *February*: 32° N. 47° W.

Temperature: 21.25, mean of 9 obs., max. 27, min. 19.8.

Salinity: 36.55, mean of 7 obs., max. 37.01, min. 36.21.

Plankton-type. Occurs in the Indian Ocean. It belongs to the western tropical Atlantic (12°—32° N.). — *D*.

PYROCYSTIS LANCEOLATA SCHROEDER.

(Mith. zool. stat. Neapel Vol. XIV, 1860 pag. 13 fig. 11.)

1899 *March*: 37° N. 26° W.

Temperature: 15.5.

Salinity: 36.10.

Plankton-type: *S* ?.

PYROCYSTIS PSEUDONOCILUCA J. MURRAY¹

(Proceed. Roy Soc. London Vol. XXIV, 1876, pag. 532 Pl. XXI.)

- 1897 *December* and
 1898 *January*: 15°—13° S. 37°—35° W.; 0°—2° N. 31°—32° W.;
 7°—11° N. 53°—52° W.; Caribbean Sea to 35° N. 74° W.;
 area between 9°—10° N. 26°—25° W., 23°—25° N. 51°—
 50° W. and 33° N. 32° W.
February: 5° S. 9°—4° E.; 20° N. 51° W. to 30° N. 37° W.,
 Caribbean Sea to 26° N. 74° W.
March: area between 1° S. 15° W., 36° N. 29° W. and 3° N.
 53°—59° W.; Caribbean Sea to 32° N. 74° W.
April: area between 25° N. 43° W., 16° N. 58° W. and 10° N.
 53° W.; Caribbean Sea to 31° N. 75° W.
May: area between 36° N. 27° W., 17° N. 50° W. and 39° N.
 60° W.; 41° N. 51°—63° W.
June: 31° N. 17° W.; area between 29° N. 36° W., 19° N.
 53° W., 22° N. 60° W. and 27° N. 55° W.; 60° N. 4° W.
 (not rare, Ostenfeld).
July: 26° N. 48° W. to 21° N. 58° W.; Caribbean Sea; 29°
 —38° N. 74° W.; 41° N. 60° W. to 42° N. 48° W.; 58° N.
 22° W.
August: Azores; Caribbean Sea to 34° N. 74° W.; 40° N.
 66° W. to 47° N. 39° W.
September: 12° N. 27° W.; 23° N. 42° W.; Madeira; Azores;
 20°—33° N. 74° W.; 41° N. 66° W. to 42° N. 57° W.;
 60° N. 6° W. (rare).
October: 21° S. 30° W.; Caribbean Sea; 34° N. 74° W.; 42° N.
 50° W.; Azores; 60°—51° N. 4°—5° W.
November: 24° S. 30° W.; 0° S. 34° W.; 4° N. 30° W.; 19° N.
 58° W. to 29° N. 43° W.; Azores; 24° N. 21° W.; 42° N.
 64° W.; 47° N. 41° W.
December: 14° S. 26° W.; Caribbean Sea; 22° N. 56° W.;
 25° N. 52° W.; Azores; Canaries.
 1899 *March*: 21° N. 43° W.; 36° N. 74° W.

¹ Ostenfeld's, Murray's & Whitting's data used.

April: 32° N. 75° W.

May: 35° N. 74° W.

June: 11° S. 10° W.; 15° N. 50° W. to 21° N. 45° W.

July: 28° N. 40° W.

Temperature: 23.68, mean of 130 obs., max. 28.67, min. 14.6.

Salinity: 35.95, mean of 97 obs., max. 38.54, min. 32.51.

Plankton-type. Noted from Red Sea and the Indian, Pacific Oceans. It occurs in the whole tropical Atlantic, from 25° S. to somewhat north of 40° N., exceptionally to the Fårøe Channel. Not found between the Azores and the European coast. — *D.*

XANTHIDIUM HYSTRIX Cl.

(Kongl. Sv. Vetensk. Akad. Handl. Vol. XXXII n. 8 pag. 21.)

1898 *March*: 21° N. 18° W.

October: 57° N. 18° W.

November: 56° N. 17° W.

December: 44° N. 57° W.

November: 51° N. 13 and 28° W.

Temperature: 12, mean of 4 obs., max. 15, min. 11.

Salinity: 34.18, mean of 3 obs., max. 35.1, min. 32.25.

Plankton-type. This form occurs sparingly, but frequently, in the Tripos-plankton of the North Sea. — *S.*

XANTHIDIUM MULTISPINOSUM MORG.

(Fünfte Ber. d. Kommiss. zu Kiel pag. 124 Pl. VIII fig. 62—65.)

1898 *July*: 62° N. 0° W.

August: 60° N. 3° E.

September: 61° N. 2° W.

November: 56° N. 23° W.

1899 *September*: 56° N. 23° W.

October: 56° N. 23° W.

Temperature: 10.5 to 11.5.

Salinity: 35 to 35.52.

Plankton-type: *S.*

XANTHIDIUM PAUCISPINOSUM CL.

(K. Sv. Vetensk. Akad. Handl. Vol. XXXIV c. 1 Pl. VII fig. 26).

1898 *October and November: Azores.*

1899 *April: 9° N. 59° W.*

Temperature: 18.5 to 25.4.

Salinity: 35.06 to 36.54.

Plankton-type: S ?.

Silicoflagellatæ.

DISTEPHANUS SPECULUM Ehrh.¹

(*Dictyocha spec.* Ehrh. Microgeol. Pl. XVIII Fig. 57 etc.)

- 1898 *March*: 44° N. 17° W.; 45° N. 13° W.
April: 39° N. 24° W.; 40° N. 22°—23° W.
May: 58°—59° N. 21°—15° W.; 68° N. 54° W. and 17°—10° W.
June: 40°—52° N. 10°—9° W.
July: 60° N. 23° W.; 61° N. 8° W.
August: 65° N. 26° W.; 69° N. 53° W.; 76° N. 11° E.
September: 57° N. 14° W.; 60° N. 11° W.; 76° N. 13° E.
October: 58°—59° N. 25°—16° W.; 60° N. 4° W.; 62° N. 7° W.
November: 56° N. 23°—36° W.; 45° N. 50°—52° W.; 41° N.
 60° W.
December: 45° N. 50° W. to 42° N. 63° W.
- 1899 *January*: 48° N. 30° W.; 41° N. 69° W.
April: 48° N. 9° W.

Temperature: 10.4, mean of 23 obs., max. 15.3, min. 5.

Salinity: 34.36, mean of 19 obs., max. 35.03, min. 31.00.

Plankton-type. Common in the southern Atlantic. Occurs in Puget's Sound. — *T.* ?

¹ (Götsfeld's data used. — *Dictyocha phida*, see Radio/aria.

Flagellatae.

DINOERYUM PELLUCIDUM LEVANDER.¹

(Acta Soc. p. Fauna 3, Flora Fennica Vol. XII 2, 1894, pag. 31 Pl. II fig. 1.)

1898 *May*: 72° N. 14° W., rare.

June: 68° N. 23° W.

August: N. and N.E. of Spitzbergen; Disco.

September: Disco.

1899 *June*: 72° N. 18° E. to 78° N. 12° E.

July: N.W. and N. of Spitzbergen; 73° N. 36° E.; 78°—79° N.

53° E.; 71° N. 21°—22° W.

August: 76°—78° N. 41°—47° E.; 71°—72° N. 20° W.

September: Beeren Island.

Temperature: 1.s. mean of 24 obs., max. 7.s. min. —1.s.

Salinity: 32.94, mean of 20 obs., max. 35.03, min. 28.01.

Plankton-type: *Ng.*

PHÆOCYSTIS POUCHETII (HARBOT).²

(LAGERHEIM: Öfvers. Kungl. Sv. Vet. Akad. Förh. 1896 n. 4 pag. 377.)

1898 *March*: 40° N. 60° W.

April: 57°—59° N. 43°—49° W., very common.

May: Färöes, very common; W. of the Shetlands.

June: 66° N. 56° W. (rare) to 57° N. 42° W. (common); 73° N. 23° E. to 77° N. 20° E., more or less common.

¹ Ostenfeld's data used.

July: S. of Greenland; along the S. coast of Iceland; 68° N. 8° W., common; 78° N. 3° W., common.

August: N. of Spitzbergen, not rare.

September: Westmannað, very common.

1899 *May*: area between 62° N. 2° E., 60° N. 1° E. and 58° N. 3° E., very common.

June: 71° N. 8°—10° W. to 69° N. 13° W., as a rule very common; 66° N. 2° E., very common; 71°—75° N. 6°—20° E., not common.

July: 74° N. 20° W., rare.

August: 80° N. 51° E., common.

September: 76°—74° N. 16°—18° E., rare.

Temperature: 6.8, mean of 25 obs., max. 9.8, min. —1. (Only such samples considered as contained this species in abundance).

Salinity: 34.34, mean of 24 obs., max. 35.33, min. 33.26.

Plankton-type. According to the above statements this species is to be considered as arctic with its southern limit at about 57° N., but other years this limit goes so far down as to about 50° N. — T. C.

Phycochromaceæ.

TRICHODESMIUM ERYTHRÆUM EUB.

(GOMONT: Ann. Sc. nat. 7 ser. Bot. Vol. XVI pag. 106 Pl. V. fig. 27-33.)

1898 *December*: 28° S. 42° W.; exceedingly abundant.

TRICHODESMIUM THIEBAULTII GOMONT.

(Ann. Sc. nat. 7 ser. Bot. Vol. XVI pag. 197 Pl. VI fig. 2-4. *Heliostrichum rotians*
Villé: *Ergebn. d. Plankt. Exp.* 1 pag. 278 fig. 87, 88.)

1897 *December*: and

1898 *January*: 7° N. 22° W. to 0° N. 26° W.; 13°-15° S. 35°-37°
W.; 31° N. 31° W. to 11° N. 52° W.; Caribbean Sea; 25°-
35° N. 74° W.

February: 5° S. 4°-6° E.; 4° S. 10° W.; Caribbean Sea; 21°
-34° N. 74°-73° W.

March: 0° 30' S. 15°-26° W. to 31° N. 29° W. and thence
to 9° N. 53°-59° W.; 41° N. 23° W.; Caribbean Sea; 28°
-32° N. 74° W.;

April: 15° N. 49° W. to 16° N. 53° W.; Caribbean Sea;
23° N. 72° W. to 27° N. 75° W.

May: area between 26° N. 42° W., 28° N. 47° W., 16° N.
71° W. and 11° N. 52° W.; 41° N. 51° W.°

June: area between 19° N. 63° W., 31° N. 59° W. and 19°
N. 63° W.

July: 26° N. 58° W. to 15° N. 72° W.; 29° N. 74° W. to 38°
N. 74° W. and thence to 42° N. 48° W.

August: 17° N. 71° W. to 38° N. 74° W. and thence to 47°
N. 39° W.

September: Cape Verde Islands; Madeira; 26° N. 39° W. to 9° N. 53° W.; 20° N. 73° W. to 38° N. 74° W. and thence to 42° N. 57° W.

October: 16° N. 70° W. to 34° N. 74° W.; 57°—59° N. 27°—21° W., rare.

November: 9° S. 34° W. to the Canaries; Azores to 19° N. 58° W.

December: 26° S. 45° W. to 14° S. 39° W.; Canaries; 25° N. 52° W. to 19° N. 58° W.; Caribbean Sea.

1899 *January*: 33°—34° N. 15°—12° W.

February: 32° N. 47° W.

March: 18°—24° N. 45°—40° W.

April: 28°—32° N. 75° W.

June: 5°—7° N. 24°—25° W.; 15° N. 50° W. to 24° N. 42° W.

July: 23°—28° N. 36°—40° W.

Temperature: 24.5, mean of 154 obs., max. 28.1, min. 13.

Salinity: 35.56, mean of 120 obs., max. 38.31, min. 33.26.

Plankton-type. Occurs in the Mediterranean (Scudöberg). The area of distribution is the whole tropical and subtropical Atlantic, on the Northern hemisphere to the left of a line drawn from the Canaries to Newfoundland. It occurs the whole year in the warm current north of S. America and in the Sargasso Sea, appears, although sparingly, in May north of 40° N., but reaches in August a maximum between 40°—45° N., where it remains sparingly in October. In the last named month some rare specimens had drifted nearly to 60° N. — *D.*

CORRIGENDA.

- p. 17 l. 1 for *T* read *S*.
- l. 13 from foot for 72° N. read 59° N.
p. 23 l. 3 from foot for *thed* read *the*.
p. 67 l. 1 from foot for *arkremable* read *remarkable*.
p. 128 l. 4 from foot for *become* read *became*.
p. 221 l. 8 from foot for *arcoss* read *across*.
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