

# THE PLANKTON

OF

## THE NORTH SEA, THE ENGLISH CHANNEL AND THE SKAGERAK

IN 1899

BY

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STOCKHOLM  
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1900



For the hydrographical researches of PETERSSON and EKMAN the North Sea was explored four times during the year 1899, viz: in February, April—May, July—August and November. At the same time samples of water were taken for chemical analysis and of plankton for microscopical examination. Some other samples have been taken in March at 59°—60° N. 4°—5° W. by a steamer Thyra, in May by the Swedish expedition to Greenland under Prof. A. G. NATHORST, in June by the steamer Rurik on the way to Spitzbergen, in July by the Swedish corvette Freya and in September by the returning Greenland expedition. At the biological stations at Plymouth, S:t Vaast la Hogue and Helder samples were collected almost every week, during the whole year at Plymouth, from January to March at S:t Vaast and from January to September at Helder. For this valuable assistance I beg to tender the directors of the said stations, Mr. E. J. ALLEN, Dr. P. P. C. HOEK and Mr. EUGÈNE MALARD my best thanks. Again, at the expenses of the Fishery Association of Gothenburg, samples of plankton were collected almost every week at Måseskär and Väderöboda, off the west coast of Sweden, and, though with less regularity, in the open Skagerak.

### I. The North Sea in February 1899.

The hydrographical map of the North Sea, February 1899, has already been published by PETERSSON and EKMAN (Bih. till K. Sv. Vetensk. Akad. Handl. Vol. XXV. Part. II. N:o 1.) It is seen from that map, that water with the salinity 35 p. m. extends north of a line from Newcastle towards the Skagerak, S. W. of Norway, where it encounters water of lower salinity. South of the said line water of 34 p. m. salinity prevails to the continental coast region.

The microscopical examination proved that the water of 34 p. m. salinity was practically *sterile*. The water of 35 p. m. salinity was poor in plankton, which contained as most characteristic forms *Halosphæra* and *Coscinodiscus concinnus*. On the space, where the two kinds of water meet, the plankton was not so scarce and increased steadily in quantity towards the Skagerak. This plankton contained, besides the above species, chiefly *tripos-plankton*, that was the prevailing kind N. W. of the Danish Peninsula. There entered also in the composition of the plankton a certain amount of *Ceratium longipes*. The intermixture of tripos- and concinnus-plankton ruled in the bank water, west of the

Danish Peninsula, but towards Norway the tripos-plankton was intermingled with *Halosphæra*.

The *Coscinodiscus concinnus* occurred round Scotland and from Firth of Tay across the North Sea towards the Danish Peninsula, where the route became forked. One branch went to Skagen, another followed the Danish coast towards Heligoland.

Of *Chæto-plankton* mere traces were found midway between Scotland and Norway.

The changes, that arrived since December 1898, consisted thus therein, that the *concinnus-plankton*, which then prevailed in the southern North Sea, had been forced towards the Danish Peninsula and to the boundary between the 34 and 35 p. m. water, and that the *tripos-plankton*, that in December prevailed between Scotland and Scandinavia, had decreased and been partly replaced by *Halosphæra-plankton*. The latter kind appeared already in December.

## II. The North Sea in April—May 1899.

The state had since February been changed completely. If a line be traced on a map between Newcastle and Skagen, there were found north thereof, to about 58°—59° N. a number of arctic or boreal, partly neritic forms. The *chæto-plankton*, that usually prevails at this season between Scotland and Scandinavia, appeared first at 58° N. midway between Scotland and Norway. South of the said line there occurred *southern neritic plankton*, frequently intermingled with *styli-plankton*. This area was interrupted from about 56° N. 4°—5° E. towards the mouth of Elbe by a band, that contained northern neritic species which seem to have spread from the depression of the bottom between the Fisher and Dogger Banks.

## III. The North Sea in July—August 1899.

The plankton, that prevailed in the greatest part of the North Sea, at least between 54° and 61° N., was the *tripos-plankton*. East and west of Scotland there occurred *northern neritic plankton*, probably a remnant from the spring, but intermingled with some *styli-plankton*. The plankton in the water, that occurred from the mouth of the Schelde to the middle of the Danish Peninsula, belonged to the *southern neritic* type, but contained some traces of northern neritic plankton. From Skagen to the entrance of the Limfjord *Rhizosolenia gracillima* was met with.

## IV. The North Sea in November 1899.

Above the 100-metre plateau of the bottom there prevailed *tripos-plankton*, which was more richly represented in the eastern parts than along the English coasts. In the southern North Sea, above the 50 metre plateau, there occurred from Schelde to Skagen *southern neritic plankton*.

## V. The Skagerak in 1899.

The seasonal changes in the plankton will be examined for certain periods with reference to the prevailing plankton types.

**Period I. January.** The prevailing types are the *tripos*- and *concinus*-plankton. *Halosphæra* occurred in the north at Väderö, where also *Clione limacina* and *Thalassiothrix longissima* were seen once, the last named abundantly. Some southern forms, which are to be considered as remnants from the last period of 1898, for instance *Proto pedata*, *Paracalanus parvus*, *Sagitta*, *Ceratium bucephalum*, *Ditylum Brightwellii* a. o. disappeared, and arctic or boreal forms increased in frequency towards the next period.

**Period II. February—March.** This period is characterized by the abundance of arctic and northern species. The *Coscinodiscus concinnus* continued to be common during February. Animals were on the whole rare, but diatoms exceedingly abundant, during March in the whole Skagerak and Cattegat to Öresund. The most important forms were the following:

<i>Biddulphia aurita.</i>	<i>Coscinodiscus oculus iridis.</i>
<i>Chætoceros constrictus.</i>	<i>C. polychordus.</i>
<i>C. contortus.</i>	<i>Nitzschia seriata.</i>
<i>C. debilis.</i>	<i>Rhizosolenia semispina.</i>
<i>C. diadema.</i>	<i>Skeletonema costatum.</i>
<i>C. socialis.</i>	<i>Thalassiosira gravida.</i>
<i>C. scolopendra.</i>	<i>T. Nordenskiöldii.</i>
<i>C. teres.</i>	

Most of these forms disappeared before the end of March, *Chæt. debilis* and *C. diadema* before the middle of April; *C. constrictus* remained to the end of May and *C. contortus* was more or less common to the end of the year. *C. decipiens* occurred among these boreal forms more or less sparingly, but it increased in abundance during the next period.

The area of distribution of these species is from Iceland to the Färöes and the Shetlands, and, as they were not seen in the North Sea between Scotland and Scandinavia, it may be assumed, that they arrived into the Skagerak from the deep »Norske Rende».

**Period III. April.** This period is remarkable for the abundance of *chæto*-plankton. Connected with this kind seemed to be *Dinobryum pellucidum* and *Rhizosolenia semispina*. *Chætoceros constrictus* continued to be common, but other northern forms became scarce. At the end of the month *Rhizosolenia styliformis* appeared suddenly at Måseskär in great abundance and in its company a number of southern forms.

**Period IV. May—June.** This period commenced, as stated above, with the appearance of *Rhizosolenia styliformis*. In its company a number of southern forms arrived as:

<i>Oithona similis.</i>	<i>Chætoceros danicus.</i>
<i>Chætoceros curvisetus.</i>	<i>C. Schüttii.</i>

*Eucampia zodiacus.*  
*Guinardia flaccida.*  
*Ditylum Brightwellii.*

*Lauderia annulata.*  
*Rhizolenia Shrubsolei.*  
*Stephanopyxis turgida.*

At this season the euryhaline *Centropages hamatus*, *Acartia longiremis* and *A. biflora* reach their maximum.

On the other hand, also *tripos-plankton* sets in having in its company *Calanus finmarchicus*, *Pseudocalanus elongatus*, *Evadne Nordmannii*, *Podon Leuckarti* and *Chaetoceros hiemalis*.

**Period V.** *July—August.* The *tripos-plankton* became now the prevailing kind, but was intermingled with a certain amount of southern neritic plankton, for some time also with *Coscinodiscus concinnus*. *Rhizosolenia gracillima* also appeared, but this species was remarkably scarce in the year 1899.

Characteristic species are *Oikopleura dioica*, *Acartia Clausii*, *Paracalanus parvus*, *Evadne spinifera* and *Sagitta*.

**Period VI.** *From the end of August to the end of October.* The *tripos-plankton* continues to predominate. *Oikopleura*, *Sagitta*, *Oithona similis* and *Paracalanus parvus* from the last period are still abundant. New are *Centropages typicus*, *Podon intermedius* and *Rhizosolenia Stolterfothii*. Also *Anomalocera Patersonii* and *Labidocera Wollastonii* were seen, but rarely. *Limacina balea* was for a short time visible, and then abundantly. *Amphorella Steenstrupii* occurred sparingly. The period VI is chiefly characterized by the development of *didymus-plankton*, containing *Chaetoceros didymus*, *C. curvisetus* and *C. Schüttii*. The last named species appeared already at the end of June and in the beginning of July, but for a short time only. It reappeared now abundantly.

**Period VII.** *November—December.* The *tripos-plankton* (now containing *Ceratium bucephalum*) and the *didymus-plankton* continue as before, but the last named kind became scarce or disappeared in December. *Halosphaera* appeared, but rarely, also *Plectophora arachnoides*. The southern *Ditylum Brightwellii*, *Eucampia zodiacus* and *Guinardia flaccida*, which were seen in the spring, reappear.

The period VII. is characterized chiefly by a number of arctic or boreal forms most of which occurred sparingly. Such forms were the following:

*Biddulphia aurita.*  
*Chaetoceros borealis.*  
*C. constrictus.*  
*C. debilis.*  
*C. diadema.*  
*C. lacinosus.*  
*C. scolopendra.*  
*C. teres.*

*Coscinodiscus oculus iridis,*  
*C. polychordus.*  
*C. stellaris.*  
*Rhizosolenia setigera.*  
*Skeletonema costatum.*  
*Thalassiosira gelatinosa.*  
*T. Nordenskiöldii.*  
*Thalassiothrix Frauenfeldii.*

## VI. Plymouth in 1899.

The seasonal changes in the plankton will be examined for certain periods with reference to the prevailing plankton types.

**Period I.** *January 17<sup>th</sup> to March 14<sup>th</sup> (30<sup>th</sup>).* Characteristic species are *Biddulphia mobilensis*, *Halosphaera viridis*, *Coscinodiscus concinnus* and *C. excentricus*. Besides these forms, which probably derive from the northern coasts of the British islands and from Scotland, there occurred a number of both boreal and southern forms.

Among the northern forms we note:

*Fritillaria borealis.*

*Chætoceros teres.*

*Oncæa minuta.*

*Thalassiosira gelatinosa.*

*Chætoceros decipiens.*

These forms do not continue during the next period or occurred then sparingly only. The following northern species continue for the next period: *Pseudocalanus elongatus*, *Peridinium ovatum* and *Thalassiosira gravida*.

Among southern forms, besides such as remained for the whole year, we note:

*Centropages typicus.*

*Parapontella brevicornis.*

*Corycæus anglicus.*

*Chætoceros Schüttii.*

*Euterpe acutifrons*

*Corethron hystrix.*

*Oncæa subtilis.*

*Ditylum Brightwellii.*

*Paracalanus parvus.*

*Rhizosolenia robusta (rr).*

Most of these species appeared towards the end of February, or later, and continued during the following period.

**Period II.** *April 4<sup>th</sup> to May 12<sup>th</sup>.* This period is remarkable for the abundance of the arctic *Phæocystis Pouchetii*. In its company a number of other arctic or boreal species appeared, most of which did not survive during the next period. Among these boreal forms we note:

*Pseudocalanus elongatus.*

*Chætoceros furcellatus.*

*Temora longicornis.*

*Leptocylindrus danicus.*

*Peridinium ovatum.*

*Skeletonema costatum.*

*P. pellucidum.*

*Thalassiosira gravida.*

*Asterionella japonica.*

*T. Nordenskiöldii.*

*Chætoceros debilis.*

*Calanus finmarchicus* is the only boreal species that survived this period.

The flows of boreal water, that commenced during the period I., continued to the middle of March, and took during this period a more decided arctic character.

During the period II. also a certain number of southern forms occurred, but among them several seemed to die out or to be driven away by the water containing *Phæocystis*. Such forms were:

*Corycæus anglicus.*

*Chætoceros curvisetus.*

*Euterpe acutifrons.*

*C. didymus.*

*Evadne Nordmannii.*

*C. Schüttii.*

*Paracalanus parvus.*

*Ditylum Brightwellii.*

*Parapontella brevicornis.*

These southern forms cannot thus be assumed to have come in the company of such forms as characterize the period III., and it seems probable that they were swept down from the British coast by the northern flows.

**Period III.** *May 24<sup>th</sup> to July 19<sup>th</sup>.* The arctic species had disappeared, almost completely, but became replaced by southern forms, e. g. *Guinardia flaccida*, which appeared already before this period, but decreased during the period II. Among such forms we note:

*Acartia Clausii.*

*Chætoceros densus.*

*Centropages typicus.*

*Guinardia flaccida.*

*Oithona similis.*

*Rhizosolenia Shrubsolei.*

*Paracalanus parvus.*

And, besides, the following new ones: *Isias clavipes*, *Ceratium fusus* and *Rhizosolenia Stolterfothii*.

It seems most probable that these forms came with water from the coast banks of the temperate Atlantic.

**Period IV.** *July 24<sup>th</sup> to August 18<sup>th</sup>.* Characteristic species is *Rhizosolenia gracillima*. In its company arrived a number of southern neritic species, among which some continued during the next period. Such forms were:

*Corycæus anglicus.*

*C. didymus.*

*Euterpe acutifrons.*

*C. Schüttii.*

*Cyttarocylis serratus.*

*Ditylum Brightwellii.*

*Tintinnopsis campanula.*

*Rhizosolenia corpulenta.*

*Chætoceros curvisetus.*

Several of these species are the same as appeared in the spring together with boreal forms. I presume therefore that the specimens in the period IV represent a fresh set, that arrived from the south, probably from the Bay of Biscay or the French coasts. The rare occurrence of *Peridinium exiguum* and of *Dinophysis homunculus* corroborates such an opinion.

**Period V.** *August 24<sup>th</sup>—31<sup>st</sup>.* This short period is remarkable for the sudden reappearance of boreal forms as *Asterionella japonica*, *Chætoceros debilis* and *Skeletonema costatum*. Together with them also *Streptothecha thamesis* appeared, but sparingly. They seem to be the first signs of the presence of the boreal flows, that characterize the next period.

**Period VI.** *September 10<sup>th</sup> to December 28<sup>th</sup>.* The most characteristic species is *Coscinodiscus concinnus*. In its company a number of boreal forms appeared viz.:

*Fritillaria borealis.*

*Chætoceros decipiens.*

*Oncæa minuta.*

*Coscinodiscus oculus iridis.*

*Peridinium depressum.*

*Thalassiosira gravida.*

*P. ovatum.*



During this period also the following, non-arctic, species appeared:

<i>Halosphæra viridis.</i>	<i>Guinardia flaccida.</i>
<i>Biddulphia mobilensis.</i>	<i>Lauderia annulata.</i>
<i>Eucampia zodiacus.</i>	<i>Stephanopyxis turgida.</i>

All these species had probably been swept down from the northern British coasts.

The following southern forms increased in abundance or reached their maximum during the period VI.:

<i>Corycæus anglicus.</i>	<i>Rhizosolenia corpulenta.</i>
<i>Eutерpe acutifrons.</i>	<i>R. robusta.</i>
<i>Noctiluca miliaris.</i>	

On the other hand the following decreased:

<i>Acartia Clausii.</i>	<i>Chaetoceros curvisetus.</i>
<i>Centropages typicus.</i>	<i>C. densus.</i>
<i>Paracalanus parvus.</i>	<i>Ditylum Brightwellii.</i>
<i>Ceratium tripos.</i>	

## VII. St Vaast la Hogue in 1898—1899.

The collecting of samples at this station commenced in June 1898, but became interrupted in March 1899, so there is no complete series; still, the collection is of no little interest. Also at this place the influence of arctic water is apparent at certain times of the year, and if the plankton from St Vaast be compared with that from Plymouth we note striking differences. As in the preceding cases we may consider the changes in the nature of the plankton by periods.

**Period I.** *June 4<sup>th</sup> 1898.* The prevailing plankton was the *chæto-plankton*, represented by a great abundance of *Chaetoceros decipiens*. *Phæocystis Pouchetii* was also common. As other boreal forms we note *Centropages hamatus*, *Pseudocalanus elongatus*, *Temora longicornis* and *Chaetoceros teres*. All these boreal forms had disappeared already by the 12th in the same month. Other species are of comparatively little importance and of southern origin, as *Chaetoceros didymus*, *C. densus* and *Acartia Clausii*.

**Period II.** *June 12<sup>th</sup> to August 12<sup>th</sup> 1898.* The plankton consists chiefly of the southern neritic species *Rhizosolenia Shrubsolei* and *Guinardia flaccida*. Other southern forms also occurred, but more or less sparingly, as:

<i>Cerataulina Bergonii.</i>	<i>Chaetoceros Schüttii.</i>
<i>Chaetoceros danicus.</i>	<i>Eucampia zodiacus.</i>
<i>C. didymus.</i>	<i>Rhizosolenia Stolterfothii.</i>

The only boreal form is *Leptocylindrus danicus*. Whether *Chaetoceros contortus* be of northern or southern origin is at present doubtful.

**Period III.** *Between September 6<sup>th</sup> and October 6<sup>th</sup> 1898.* This period is remarkable for the *sterility* of the water, *Tintinnopsis ventricosa* being the only species of any importance.

**Period IV.** From October 20<sup>th</sup> to December 24<sup>th</sup> 1898. Some species from the period I I. reappeared, as *Chaetoceros densus*, *C. didymus*, *Eucampia zodiacus*, but as a new and important constituent of the plankton *Rhizosolenia Stolterfothii* occurred, and, in its company, a number of southern forms, such as *Euterpe acutifrons*, *Bacteriastrum varians*, *Bellerochea malleus* and, in very great abundance, *Chaetoceros curvisetus*.

Some boreal forms occurred rarely, as *Biddulphia aurita*, *Chaetoceros decipiens*, *Coscinodiscus oculus iridis* and *Thalassiosira gravida*, showing a slight influence of water from arctic regions.

**Period V.** From January 1<sup>st</sup> to March 15<sup>th</sup> 1899. *Chaetoceros curvisetus* and *C. didymus* continued to be common, and some other southern forms also remained, although more or less scarce, as *Chaetoceros densus*, *Eucampia zodiacus*, *Rhizosolenia Shrubsolei* and *R. Stolterfothii*. On the contrary *Bacteriastrum varians* and *Bellerochea* had disappeared. The following new, non-arctic, species appeared:

*Biddulphia mobilensis.*

*Ditylum Brightwellii.*

*Chaetoceros danicus.*

*Streptothecca thamesis.*

Besides, there occurred also *Coscinodiscus centralis* (probably a variety of *C. concinnus*).

This period is particularly characterized by a number of arctic or boreal forms, some of which appeared already in the preceding period, but very rarely. Such northern forms are:

*Centropages hamatus.*

*Chaetoceros teres.*

*Temora longicornis.*

*Coscinodiscus oculus iridis.*

*Pseudocalanus elongatus.*

*C. radiatus.*

*Phaeocystis Pouchetii.*

*Rhizosolenia setigera.*

*Asterionella japonica.*

*Skeletonema costatum.*

*Biddulphia aurita.*

*Thalassiosira gelatinosa.*

*Chaetoceros borealis.*

*T. gravida.*

*C. decipiens.*

*Thalassiothrix Frauenfeldii.*

## VIII. Helder 1899.

According to the variation in the composition of the plankton I distinguish the following periods.

**Period I.** From January 5<sup>th</sup> to March 3<sup>rd</sup>. The most important species is the boreal *Biddulphia aurita*. In its company there occurred, although sparingly, some other northern forms, as *Chaetoceros debilis*, *C. diadema* and *C. teres*. The following derive probably from Scotland: *Biddulphia mobilensis*, *Coscinodiscus concinnus* and *Streptothecca thamesis*.

This period at Helder corresponds to the period I. at Plymouth, but the arctic character of the plankton was more decided at Plymouth than at Helder. It also corresponds to period V. of St Vaast, where the boreal species were more numerous.

**Period II.** *From March 17<sup>th</sup> to April 13<sup>th</sup>.* This period is a transitional one, as both northern and southern forms appeared intermingled. I consider the following species to have been conveyed by northern currents:

*Asterionella japonica.*

*Chaetoceros teres.*

*Chaetoceros debilis.*

*Skeletonema costatum.*

*C. diadema.*

*Thalassiosira gelatinosa.*

The following species are of southern origin:

*Cerataulina Bergonii.*

*Guinardia flaccida.*

*Ditylum Brightwellii.*

*Rhizosolenia Stolterfothii.*

*Eucampia zodiacus.*

These southern species appeared at Plymouth much later, i. e. between the 24<sup>th</sup> of May and 19<sup>th</sup> of July.

**Period III.** *From April 20<sup>th</sup> to June 2<sup>nd</sup>.* During this period *Phæocystis Pouchetii* appeared in enormous abundance. Beside this species all others diminish, just as at Plymouth, where the same flagellate was predominant from the 4<sup>th</sup> of April to the 12<sup>th</sup> of May, thus somewhat earlier than at Helder, so that there is reason for believing it arrived through the Engl. Channel.

**Period IV.** *From June 9<sup>th</sup> to August 25<sup>th</sup>.* The most characteristic feature in the plankton are the considerable development of *Noctiluca miliaris* and the return of *Guinardia flaccida* and *Rhizosolenia Stolterfothii*, driven away last period by the water containing *Phæocystis*. Other southern forms, that appeared during this period are: *Oithona similis*, *Tintinnopsis campanula*, *Cyttarocylis serrata*, *Chaetoceros densus*, *C. didymus*, *C. Schüttii* and *Rhizosolenia Shrubsolei*.

This period corresponds to the period IV at Plymouth (24 VII to 18 VIII), although the latter is characterized by the abundance of *Rhizosolenia gracillima*, not seen at Helder. On the other hand *Noctiluca* occurred only sparingly at Plymouth.

**Period V.** *September 1<sup>th</sup> to 28<sup>th</sup>.* During this period *Biddulphia mobilensis* and *Coscinodiscus concinnus* appear, and in their company boreal forms, such as *Ceratium longipes*, *Chaetoceros debilis* and *Phæocystis*. Also new southern species arrive, as *Pyrophacus horologium*, *Bacteriastrum varians* and *Lithodesmium undulatum*.

This period evidently corresponds to the periods V and VI at Plymouth.

## Seasonal distribution of the Plankton-organisms.

### Appendicularia.

**Fritillaria borealis** LOHM. — *February*: off S. Norway and W. of Jutland *r.* *March*: Plym.\*) *r.*; Väderö *c.* *April*: 55° N. 6° E. *r.*; Måseskär *r.* It reappeared at Plym. in October and November.

This arctic species was found in March to May from the Färöes to 61° N. 1° E. and 59° N. 2° E.

**Oikopleura dioica** FOL. — *February*: W. of Jutland *r.* *May*: 60° N. 1. E. and 58° N. 4° E. *c.*; 58° N. 9° E. *r.* *July, August*: Helder *r.*; E. of Newcastle *r.*; central North Sea *r.*; the W. coast of Denmark to Skagen and into the Skagerack *r* to *c.* It remained in the Skagerak to the end of the year, but decreased in frequency in *November* and *December*.

### Pteropoda.

**Clione limacina** PHIPPS. Arctic species.

*January*: Väderö *rr.*

**Limacina balea** MÖLLER. Arctic species, which was seen in December 1898 from 64° N. 21° W. to 61° N. 6° W.

*January*: Väderö *rr.*; Måseskär *cc.* *July*: 57° N. 1° E. +. *August*: Skagerak *r.* *September*: Skagerak *r.* *October*: Väderö +. *November*: 56° 24'—57° 10' N. 4° 25'—7° 40' E. *c.*; Skagerak *r.*

### Amphipoda.

**Bathyporeia pelagica** BATE. — *February*: W. of Denmark *rr.*

**Parathemisto oblivia** KRÖYER. — *January*: Måseskär *rr.* *July*: 57° N. 1°—2° E. *r.* This species occurred in October 1898 at the Färöes.

**Proto pedata** LEACH. — *January, February*: W. of Denmark *r.*; Måseskär *r.*; Väderö +. *November*: from the Engl. Channel to the W. of Jutland *r.*; Skagerak *r.* *December*: Måseskär *r.*; Väderö +.

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\*) Abbreviation for Plymouth.

### Cladocera.

**Evadne Nordmannii** LOVÉN. — This species belongs in the Atlantic to styli-plankton and advances in the spring, somewhat later than *Chætoceros decipiens*, towards Iceland and the Färöe Channel.

*February*: off the Dutch coast *r*. *April*: Plym. *r*; Väderö *c*, *r*. *May*: Plym. *c*; sparingly in the eastern North Sea, but as a rule common from 60° N. 3° W. and 61° N. 1° E. towards the Skagerak, where *cc*, *r*. *June*: 62°—59° N. 5° E. more or less common; Skagerak *c*. *July-August*: E. of the Shetlands and of Scotland +; Firth of Tay to Jutland *c* +; Plym. *r*; off the Dutch coast to Skagen +; Skagerak *c r*. *September to November*: Väderö *c*, +; as a rule very rare in the Skagerak.

**Evadne spinifera** P. E. MÜLL. — Occurs in the southern or tropical Atlantic, was in 1898, September, seen abundantly at the Azores, where it occurred also in June 1899.

*June*: Måseskär *rr*. *July-August*: from the Dutch coast to Skagen, more or less common; Skagerak *rr* +. *September*: Skagerak *rr*.

**Podon intermedius** LILLJEB. — Neritic species of the eastern temperate Atlantic.

*July-August*: between Firth of Tay, Newcastle and the Skagerak, not common; Skagerak *rr*. *September*: Skagerak *r*. *November*: central North Sea *r*.

**P. Leuckartii** G. O. SARS. — *May*: rare at 60° N. 1° E., 59° N. 2° E., SW. of Norway; Måseskär +. *June*: Skagerak + *r*.

**P. polyphemoides** LEACH. — Neritic species of the eastern temperate Atlantic.

*June*: Helder *r*. *July-August*: Skagerak + *r*.

### Copepoda.

**Acartia biflosa** GIESBR. — *April*: Måseskär *r*. *June*: Skagerak *r*. *August*: 53°—54° N. 4°—5° E.

**A. Clausii** GIESBR. — *January*: Plym., Helder and Väderö *r*. *February*: the whole North Sea, increasing in abundance towards the mouth of the Skagerak. *March* and *April*: more or less abundant at Plym., but very rare in the Skagerak. *May*: Irish Sea *c*; more or less rare round Scotland and on several points in the North Sea, as at 58° N. 3°—4° E., common in the western, but rare in the eastern Skagerak. *June*: Plym. *c*, Helder and the Skagerak + *r*. *July-August*: Hebrides *c*; round Scotland *r*; E. of Firth of Tay and Newcastle *cc*; thence rarer towards the Skagerak; Plym. *c*; Helder *r*; off Heligoland *c*, thence more or less *r* to Skagen and into the Skagerak, where in August it was sometimes found abundantly. *September*: Plym. +; Skagerak *r*. *October*: Plym. +;

Väderö and Måseskär *c.* *November*: round the British Islands and from Firth of Tay across the North Sea to S. Norway and the Skagerak; Plym. *rr*; Helder +; Skagerak *r.* *December*: Plym., Väderö and Måseskär *rr.*

**A. longiremis** LILLJEB. — This species is stationary the whole year at the Färöes.

*January* to *March*: Skagerak *rr.* *April*: Väderö and Måseskär *c r.* *May*: some points in the North Sea *r*; Skagerak *r* to +. *June*: Skagerak + to *c.* *July-August*: central North Sea +; W. Skagerak + *c.* *November*: E. of Firth of Tay and Newcastle *r* to *c*; Skagerak *rr.* *December*: Måseskär *r* to +.

**Anomalocera Patersonii** TEMPL. — *April*: once at Måseskär *r.* *May*: 54° N. 5° W. *r*; from 57°—58° N. 3° E. to 58° N. 5° E. *July-August*: from 62° N. 0° E. to 58° N. 6° E. +; 56°—57° N. 1° E. *r*; along the W. coast of Jutland *r*; Skagerak + to *r.* *September*: Skagerak *rr.* *October*: Väderö +.

**Calanus finmarchicus** GUNN. — *January*: Skagerak *rr.* *February*: above the 100 metre plateau +. *March*: N. of Scotland *r*; Skagerak *rr.* *April*: Plym. *c*; Skagerak *rr.* *May*: Plym. +; from the Irish Channel round Scotland, thence and from 60° N. 1° E. across the North Sea to the SW. of Norway, where it occurred abundantly. *June*: Plym. +; 59° N. 5° E. *r*; Skagerak + to *r*; Väderö *c.* *July-August*: Plym. + *c*; from the Irish Sea to the Orkneys *c*; from Firth of Tay to Skagen + *c*; Skagerak *c, r*; from the Dutch coast to Skagen *r.* *September*: Skagerak +. *October*: Plym. + *r*; Skagerak + *r.* *November*: round Scotland +; from Scotland to Skagen *r*; Skagerak *rr.*

This species occurred in January—April from the N. of Iceland to the Färöes and was met with in March and April as far south as 37° N. 9° and 26° W., where it was more or less rare. It was enormously abundant in May above the eastern slope of the submarine ridge from Iceland to E. Scotland, but rare on the western slope. In June it occurred in great abundance in the deeper layers from 74° N. 14° W. to 62° N. 1° E.

**Centropages hamatus** LILLJEB. — *January*: Färöes; Helder *r*; Skagerak + *c.* *February*: off the Dutch coast *r*; Väderö +. *March*: St Vaast +; Väderö *rr.* *April*: Skagerak *c, rr.* *May*: 58° N. 2° W.—4° E. + *r*; SE. North Sea *r*; Skagerak *c, r.* *June*: Helder *r*; Skagerak + *c.* *July-August*: 58° N. 0° W. *c*; E. of Newcastle +; Helder + *r*; W. coast of Denmark *r c*; Skagerak *c, r.* *September*: Väderö *r* +. *November*: Dogger Bank *r*; Skagerak *rr.* *December*: Skagerak + *c.*

This species occurred as a rule more abundantly at Väderö than at Måseskär.

**Centropages typicus** KRÖYER. — *January-February*: Plym. *r*, W. of Denmark to Skagerak *r*, Väderö *rr.* *March*: Plym. +, Väderö *rr.* *April*: Plym. +. *May*: Plym. *r*; 58° N. 4° E. +. *June*: Plym. + *r.* *July-August*: Plym. *r*; Hebrides +; area between 61° N. 2° E., 55° 34' N. 0° 59' E., 56° N. 7° E. and Skagen more or less common; Skagerak *r* to *c.* *September*: Plym. *rr*; 59° N. 5° E. +; Skagerak *r* to *c.* *October, November*: Måseskär and Väderö *c.*

**Corycaeus anglicus** LUBB. — *January-February*: Plym. *r* +, W. of Denmark *r*, Väderö *rr*. *March-April*: Plym. *r cc*. *July*: Plym. *c*, some points in the central North Sea *r*; W. of Denmark + *r*. *October*: Plym. *c r*; Väderö *c, r*; Måseskär + *r*. *November*: Plym. *c* +; area between 58° N. 2° E., Skagen and 55° N. 6° E.; Skagerak *r*. *December*: Plym. *c r*; Skagerak *r*.

**C. venustus** DANA. — *November*: Plym. *rr* (drifted from the tropical Atlantic).

**Enterpe acutifrons** DANA. — *January-February*: rare at Plym., St Vaast, Helder, W. of Denmark to Skagen; Måseskär *rr*. *March to May*: Plym. *r* +. *July*: Plym. + *August*: Plym. and Helder *r*. *September*: Plym. + *c*; Helder *cc*. *October*: Plym. *r*. *November*: Plym. + *r*; from the Dutch coast to Hanstholm, above the 50 m. plateau, *c*. *December*: Plym. *r*; Måseskär *rr*.

**Isias clavipes** BOECK. — *June*: Plym. *r*; *July*: W. of Denmark (55°—56° N. 7° E.) +; Skagerak + *r*; Gullmarfjord *r*.

**Labidocera Wollastonii** LUBB. — *September*: Måseskär *r*. *November*: above the Fisher Bank *r*; Skagerak *r*.

**Metridia hibernica** BRADY & ROBTS. — *January*: Måseskär *r*. *February*: E. of Firth of Tay; 57° N. 5° 35'—8° 7' E. + *r*. *March*: 60° N. 5° W. *r*. *November*: W. Skagerak *r*. *December*: Väderö *rr*.

This species occurred in December 1898 at 50° N. 20°—9° W.

**Microsetella atlantica** BRADY & ROBTS. — *January, February*: *r* at Plym., E. of Firth of Tay and at 57° N. 7° E. *June*: at 62°—59° N. 5° E. *c* +; Skagerak *r*. *July*: W. Skagerak +; Gullmarfjord *r*. *August*: Gullmarfjord *r*. *November*: E. of Scotland *r*; Måseskär *r*.

This species occurred in January at the Canaries and Madeira (also the Färöes), in March at 44°—46° N. 16°—11° W., in June at 62°—65° N. 1° E.—1° W. (rare in depths below 200 m.), in August at 56° N. 38°—23° W. *r* to *c*.

**Oithona plumifera** BAIRD. — *January, February*: rare midway between Scotland and Jutland, at Väderö and Måseskär. *May, June*: in deeper layers, very sparingly from 61° N. 1° E. to 67° N. 3° W. *July, August*: rare at 58° N. 0° W. and 56° N. 2° E.; Skagerak *rr*. *November*: central North Sea *rr*.

**O. similis** CLAUS. — *January, February*: Plym. *r* +; E. of Firth of Tay *r*; at 56° N. 2° E. +; W. of Denmark to Skagerak and Norway, as a rule *r*; W. coast of Sweden *c* to *r*. *March*: Plym. *r, cc*; N. of Scotland *r*; Skagerak *rr*. *April*: Plym. *c, r*; Skagerak *r*. *May*: Plym. *c* +; from Scotland to the Skagerak, as a rule *r*, 60° N. 1° E. *c*; SE. North Sea *r*, S. of Norway *c*. *June*: Plym. *c* +; 58° N. 7° E. +; Skagerak + *c*. *July, August*: Plym. and Helder +; Hebrides *cc*; 56°—57° N. 0° 30' W.—1° 30' E. *ccc*; also in the whole

North Sea from Scotland and England to Jutland and Skagen; Skagerak *r, cc*. *September*: Plym. and Helder *c*; 59° N. 5° E. +; Skagerak *c, r*. *October*: Plym. *c r*; Måseskär and Väderö *c* +. *November*: Plym. *c r*; above the whole 100-metre plateau *r c*; Skagerak + *r*. *December*: Plym. + *r*; Måseskär *c*; Väderö +.

**Oncaea media** GIESBR. — *December*: Plym. *rr* (drifted from the tropical Atlantic).

**O. minuta** GIESBR. — *January* to *March*: Plym. *rr*. *December*: Plym. *r*.

**O. subtilis** GIESBR. — *March*: Plym. *rr*. (This species occurred the same month abundantly at 46° N. 11° W.)

**Paracalanus parvus** CLAUS. — *January*: Helder *r*; Skagerak *c r*. *February*: from the Dutch coast to Skagen, as a rule *r*, but *c* at 53° N. 8° E.; Plym. +; Helder *r*; Väderö +. *March, April*: Plym. +. *June*: Plym. *cc*; Helder *r*; Skagerak *rr*. *July, August*: Plym. + *r*; Hebrides *c*; 56°—57° N. 0° 30' W.—4° E. +. Area between the mouth of Scheldt, Newcastle, Skagen and Heligoland, very abundant. Skagerak *cc*. *September*: Plym. + *cc*; 59° N. 5° E. +; Skagerak *c r*. *October*: Plym. *cc, r*; Väderö *c*. *November*: Plym. *r*; from N. Scotland to S. Norway and W. Jutland more or less abundant; off the Dutch coast and Heligoland *c*; Skagerak *c r*. *December*: Plym. + *r*; Måseskär and Väderö *c* +.

This species was seen in March at 33°—37° N. 32°—26° W., in April at 37° N. 9° W. and 48°—50° N. 9°—5° W.

**Parapontella brevicornis** BRADY. — *March, April*: Plym. *r*.

**Pseudocalanus elongatus** BOECK. — This species occurs along the coasts of the Arctic Sea, at Iceland, the whole year at the Färöes, whence it spreads to the Shetlands and Scotland.

*January*: St Vaast and Helder *r*; Skagerak + *c*. *February*: Plym. +; Helder *r*; off the Dutch coast +; round Scotland *r*; area Newcastle, Skagen and 55° N. 8° E. *c*; Väderö *rr*. *March*: Plym. *r*; St Vaast +; Skagerak *rr*. *April*: Plym. *r* +; Måseskär and Väderö + *r*. *May*: Irish Sea +; at 60° N. 1° E. +; between Scotland and Skagerak, more or less abundant; W. of Denmark *r*; W. Skagerak *c*; S. of Norway +. *June*: 59° N. 5° E. *c*; Skagerak + *c*. *July-August*: Irish Channel *cc*; between the Shetlands and Norway +; E. of Firth of Tay and Newcastle *c*, but scarce in the central North Sea; W. of Denmark *r c*; Skagerak *c r*. *September, October*: Skagerak *c* +. *November*: more or less common round Scotland and thence above the 100 m. plateau to Skagerak, where + *r*; Väderö + *c*. *December*: Måseskär and Väderö *c, +*.

This species occurred more abundantly at Väderö than at Måseskär.

**Temora longicornis** O. F. MÜLL. — Arctic species, which occurs from Iceland to the Färöes, the Shetlands and Scotland.

*January*: St Vaast *r*; Helder *r*; Skagerak + *c*. *February*: more or less common from Firth of Tay and Newcastle to Skagen and the Danish Peninsula, most abundant



along the British and Danish coasts; Helder *r*; Skagerak + *r*. *March*: Plym. + *r*; Skagerak *r*. *April*: Plym. *cc*; Helder *r*; Måseskär + *r*. *May*: 60° N. 1° E. *r*; W. of Scotland +; between Newcastle and the Skagerak *r*; SW. of Norway +; Väderö *c, r*. *June*: 62°—59° N. 5° E. *c*; Plym. *r*; Helder *r*; Skagerak *cr*. *July-August*: between the Shetlands and Norway *c*; area between the Orkneys, Newcastle and Skagen *c*; Plym. *r*; Irish Sea *r*; Helder *r*; more or less common from Scheldt to Skagen; Skagerak *cr*. *September*: Plym. *r*; 59° N. 5° E.; Skagerak *r, c*. *October*: Plym. *r*; Väderö and Måseskär *cc* +. *November*: area between the Orkneys, Newcastle and Skagerak, more or less common; Skagerak *cr*; off the Dutch coast *c*. *December*: Väderö and Måseskär *c, r*.

This species was more abundant at Väderö than at Måseskär.

**Temorella affinis** POPPE. — Baltic species.

*March*: Skagerak *rr*. *May*: Väderö *r*. *June*: 57° N. 9° E. *r*. *July*: Måseskär *r*.

### Annelida.

**Tomopteris helgolandica** GREFF. — *March*: Skagerak (58° 29' N. 9° 44' W.) *rr*. *July-August*: 58° N. 0° W. *rr*. *December*: Väderö *rr*.

### Chaetognata.

**Sagitta arctica** AURIV. — E. of the Scotch coast between Firth of Tay and Newcastle *rr*. — Arctic species.

**Sagitta bipunctata** QUOI & GAIM. — This species was seen in March at the Azores and at 44° N. 16° W., in August at 55°—56° N. 23°—26° W.

*January*: Skagerak *c r*. *February*: Plym. *r*; more or less common from Newcastle to Skagerak and W. of Denmark; Väderö *rr*. *March*: Skagerak *r*. *April*: Plym. *r*; Skagerak *r*. *May*: 58° N. 4° E. +; SW. of Norway *r*; W. Skagerak *r*. *June*: Plym. *r*; 59° N. 5° E. *r*; Skagerak *rr*. *July-August*: Plym. *c*; mouth of Scheldt *c*; W. coast of Jutland *c*, thence less common to Newcastle; 57° N. 1° 30' E. *cc*; Skagerak *cr*. *September*: Plym. *r*; Skagerak *c, r*. *October*: Plym. *c*; Måseskär + *c*. *November*: Plym. *r*; common from Scotland to Skagerak, where + *r*. *December*: Plym. *r*; Väderö +.

### Ctenophora.

**Pleurobrachia pileus** FABR. — Arctic species.

*January*: Väderö and Måseskär *r*. *April*: Måseskär *r*. *July*: 58° N. 0° W. *r*. *August*: Irish Channel and Måseskär *r*. *October* and *December*: Väderö *rr*.

### Ciliata.

**Amphorella Steenstrupii** CLAP. & LACHM. — This species was seen in January at 35° N. 9° W., in March at 37° N. 26° W. and 44° N. 16° W., in May at 50° N. 33° W.

*February*: centre of the North Sea and S. of Norway *r*. *July-August*: between the Shetlands and Norway *r*; at 5° N. 4° E. *r*; along the W. coast of Jutland *r*; Gullmarfjord *r*. *September*: 59° N. 5° E. *r*; Skagerak *r*. *Oktober-November*: Skagerak *rr*.

**Amphorella subulata** EHB. — Neritic species, which occurs from the Mediterranean and the Spanish coast to the White Sea and in the Baltic.

*June*: 62° N. 5° E. *r*. *July-August*: Plym. *r*; off Heligoland +; Gullmarfjord *r*. *September* and *November*: Skagerak *rr*.

**Cyttarocylis Claparedii** v. DAD. — *August*: Plym. *r*.

**C. denticulata** EHB. Arctic species.

*May*: 58° N. 5° E. *r*. *June*: 62°—58° N. 5°—7° E. + *r*; Skagerak *r* +. *July-August*: rare at some points between Scotland and Skagen; W. Skagerak *r*; Gullmarfjord *c, rr*. *November*: E. of Scotland *r*; Måseskär *r*. *December*: Väderö *rr*.

**C. serrata** MÖB. (*Ptychocylis Ehrenbergii* CL., Kongl. Sv. Vet.-Akad. Handl., XXXII, n:o 8, pag. 16, fig. 2). — *July-August*: Plym. *c, r*; Irish Channel *r*; near the Orkneys *r*; Helder *r*; off Heligoland and W. of Schleswig *r*; Gullmarfjord *r*. *September*: Helder *r*.

**Fungella arctica** CL. (Kongl. Sv. Vet.-Akad. Handl., XXXII, n:o 3, Pl. I, fig. 1). — *February*: 57° N. 5° E. *r*; off the Dutch coast *r*; NW. of Skagen *r*. *April*: E. of Firth of Tay and the centre of the North Sea *rr*.

**Ptychocylis acuta** BRANDT. — *January, February*: S. of Norway, Väderö, Måseskär *r*. *March*: Skagerak *r*. *July*: Gullmarfjord *c* +.

**Tintinnopsis beroidea** STEIN. — *January, February*: Plym. *r*; St Vaast +; Helder + *r*; W. of Denmark, W. Skagerak and Måseskär *r*. *March*: Plym. +; Helder *r*. *April, May*: Irish Sea *r*; Hebrides *r*; Helder *r*; Måseskär *r*. *November*: W. of Scotland *r*; Skagerak *rr*.

**T. campanula** EHB. — *January*: St Vaast *rr*; Helder *rr*. *July, August*: Plym. *r c*; Helder +; off Heligoland +; Skagerak *r*; Gullmarfjord + *r*. *September*: Plym. +; Helder *r*; Skagerak *c*; Måseskär *r*. *October*: Skagerak *r* +. *November*: Irish Sea *r*; Skagerak *rr*.

**T. Davidoffii** v. DAD. — *September*: Skagerak +.

**T. fistularis** MÖB. — *July, August*: Gullmarfjord *r*. *September*: Skagerak *r*.

**T. Lobiancoi** v. DAD. — *September*: Skagerak *rr*.

**T. ventricosa** CLAP. & LACHM. — *February*: S. of Norway and above the Fisher Bank *r.* *March*: Plym. +. *April-May*: Plym. +; central North Sea *r*; Måseskär *r.* *August*: Plym. *r*; Helder *c.* *September*: Helder *r.* *November*: more or less common W. of England to the N. of Scotland; 56° N. 5° E. +; Skagerak *r.* *December*: Måseskär *r.*

**Tintinnns acuminatus** CLAP. & LACHM. (*T. secatus* BRANDT). — *July*: Gullmarfjord *r.* *November*: SW. of Norway *rr.* *December*: Måseskär and Väderö *rr.*

### Radiolaria.

**Acanthochiasma fusiforme** HKL. — *February*: 58° N. 2° E. +. *November*: common E. of Newcastle, whence it became rarer towards the Firth of Tay and to about 57° N. 2° E.

**Acanthometron quadrifolium** HKL. — *February*: 58° N. 4° E. *rr.* *July, August*: midway between the Shetlands and Norway *r* and between Scotland and Norway +; W. of Jutland to Skagen *r*; Skagerak *r.* *September* and *November*: Skagerak *r.*

**Acanthonia Mülleri** HKL. — *July-August*: 55° N. 6° W. *rr.* Gullmarfjord *r.*

**Plectophora arachnoides** CLAP. & LACHM. — *January*: Måseskär *r.* *February*: W. of Jutland and in the W. Skagerak *rr.* *July*: Gullmarfjord *r.* *September*: Väderö *r.* *October*: Måseskär and Väderö *r.* *November*: SW. and S. of Norway, Skagerak, Väderö and Måseskär *r.* *December*: Väderö *r.*

### Rhizopoda.

**Globigerina bulloides** D'ORB. — *May*: 60° N. 1° E. *r.*

### Cystoflagellata.

**Noctiluca miliaris** SURIR. — *April*: 56° N. 6° E. *r.* *June*: Helder *r.* *July, August*: Plym. *r*; off the Dutch coast *ccc*; W. of Jutland (56° N. 8° E.) *c.* *September*: Helder + *r.* *October*: Plym. *c.* *November*: Plym. *r*; N. of Jutland *r.* *December*: Plym. *r.*

### Silicoflagellata.

**Dietyocha fibula** EHB. — *February*: 57° N. 5° E. *r.* *April, May*: 57° N. 1° E. *r*; Måseskär *r.* *July*: Gullmarfjord *rr.* *November*: *r* at some spots above the 50-metre plateau of the North Sea, in the Skagerak and SW. of Norway. *December*: Måseskär *r.*

**Distephanus speculum** EHB. — *February*: *r* at some spots between Newcastle and S. Norway. *April*: Måseskär +. *September* to *November*: Skagerak *r.*

### Chlorophyllaceæ.

**Halosphæra viridis** SCHMITZ. — *January*: Väderö and Måseskär *c r.* *February*: Plym. *r c*; between Scotland, SW. Norway and Skagen more or less common; Skagerak + *r.* *March*: Plym. + *r*; N. of Scotland *r*; Skagerak *cc r.* *April, May*: between Scotland, SW. Norway and Skagen, as a rule rare; Måseskär + *r*; Väderö *c.* *July, August*: Hebrides +. E. of Scotland *r.* *September*: Plym. *r.* *October*: Plym. *r +*; Skagerak *r.* *November*: Plym. *r*; Hebrides *r*; round Scotland and across the North Sea to SW. Norway and Skagen; Skagerak *r.* *December*: Plym. *r*; Måseskär *r*; Väderö +.

### Dinoflagellatæ.

**Ceratium (tripos var.) bucephalum** CL. — *January*: Väderö and Måseskär + *r.* *February*: area between S. Norway, Skagen, 56° N. 3° E. and 58° N. 2° E. as a rule not rare; Väderö *r.* *April, May*: 56°—57° N. 4° E. *rr*; 58° N. 4° E. and 59° N. 2° E. *r.* *July, August*: 57° N. 4°—6° E. and 56° N. 2° E. *r*; Skagerak + *r.* *September*: Skagerak *r.* *November*: more or less common on the area between S. Norway, Skagen, 56° N. 1° E. and 58° N. 2° E. Skagerak *r.* *December*: Väderö + *r.*

**C. furca** DUJ. — *January*: Måseskär + *r.* *February*: area between Newcastle, S. Norway and Skagen *cc*; N. of the Dutch coast *r*; W. of Jutland +. *March*: Plym. *r*; N. of Scotland *r*; Skagerak *r.* *April, May*: from 61° N. 1° E. to the Skagerak *r*, at 58°—59° N. 3°—2° E. *c*; area between 58° N. 5° E., 57° N. 2° E. and 56° N. 7° E., rare or dead. *June*: S. and W. of Norway *c*; Skagerak *c r.* *July, August*: Plym. + *r*; off Heligoland *c*; between the Shetlands, Scotland and Norway *cc*; Skagerak + *r.* *September*: 58°—59° N. 7°—5° E. + *r*; Skagerak *r.* *October*: Plym. *r*; Väderö *r.* *November*: Irish Sea *c*; area between Newcastle, 58° N. 2° E., Skagen and 55° N. 6° E.; Skagerak +. *December*: Skagerak + *r.*

**C. fusus** DUJ. — *January*: Helder *r*; Väderö and Måseskär + *r.* *February*: Plym. *r*; Helder +; between Firth of Tay, S. Norway and Skagen, as a rule *r*; along the W. coast of Denmark *c +.* *March*: Plym. *r*; Väderö *r.* *April, May*: Plym. *c r*; area between 60° N. 2° E., 57° N. 1° E. and Jutland, as a rule rare, but common at 59° N. 2° E.; Måseskär + *rr.* *June*: Plym. *r c*; Helder *r*; 59° N. 5° E. +; Måseskär + *r.* *July, August*: Plym. *r*; N. of Scotland *r*; 58° N. 0° W. to 61° N. 2° E. *c +*; W. Skagerak to 56° N. 3° E., as a rule rare; Skagerak *r c.* *September*: 59° N. 5° E. *c*; 58° N. 7° E. *r*; Skagerak *c r.* *October*: Väderö *c r.* *November*: Irish Sea; from E. Scotland and N. England to Skagerak and the W. of Jutland; Skagerak *c r.* *December*: Väderö *r.*

**C. lineatum** EHB. — *February*: off S. Norway and on a spot in the centre of the North Sea. *May*: 58° N. 5° E. *r.* *July*: 58° N. 6° E. *r.* *September to December*: Skagerak *r.*

**C. (tripos var.) longipes** BAIL. — *January*: Helder *rr*; Skagerak *r c*. *February*: area between Skagen, 58° N. 2° E., 56° N. 5° E., as a rule scarce; W. of Schleswig *c*; Skagerak + *r*. *March*: Skagerak *r*. *April, May*: from 61° N. 1° E. to S. Norway *c*; area between 58° N. 5° E., 57° N. 2° E. and 56° N. 3° E., on the whole rare; 55° N. 6° E. *cc*; Skagerak +. *June*: S. and W. of Norway to 62° N. *c*; Skagerak *c r*. *July, August*: Plym. +; Irish Channel *r*; E. of Scotland *r*; 56° N. 0° W. *cc*; 57° N. 4° E. *r*; 58° N. 6° E. +; Helder *r*; off Heligoland *r*; N. of Skagen *r*; Skagerak *r*. *September*: Helder +; Skagerak + *r*. *October*: Skagerak +. *November*: rare on some points W. and E. of Scotland and off the Dutch coast; Skagerak + *r*. *December*: Plym. *r*; Måseskär *c*; Väderö + *r*.

**C. (tripos var.) macroceros** EHB. — *January*: Väderö *r*. *February*: area between 58° N. 0° W., Newcastle, West Jutland and S. Norway, as a rule abundant; Väderö and Skagerak *r*. *April, May*: rare or dead on some spots in the western North Sea (at 58° N. 5° E. common in May). *June*: Plym. *r*; 58°—59° N. 7°—5° E. *cc*; Skagerak *cc*. *July-August*: Plym. *r*; W. of Skagerak and Jutland to about 3° E. *ccc*; Skagerak *ccc*. *September*: Plym. +; 58°—59° N. 7°—5° E. *ccc*; Skagerak *cc*. *October*: Plym. *r*; Skagerak + *c*. *November*: very common over the whole 100 metre plateau, especially in the central and eastern parts; Skagerak *cc r*. *December*: Skagerak *cc* +.

**C. tripos** NITZSCH. — *January*: Väderö and Måseskär *cc*. *February*: Plym. +; between Newcastle, S. Norway and Skagerak, sparingly in the west, abundant in the east as well as W. of Jutland; Väderö *c*; Måseskär + *r*. *March*: Väderö *c r*. *April, May*: area between 58° N. 5° E., 57° N. 2° E., 56° N. 3°—7° E., more or less common, but frequently dead; from 60° N. 1° E. to S. Norway (May) as a rule very common; Måseskär *c*; Väderö +. *June*: S. and W. of Norway to 62° N.; Skagerak very common. *July, August*: Plym. *r* +; between 54° and 61° N. from Scandinavia towards Scotland and England, where it becomes rare; whole Skagerak *ccc*. *September*: Plym. *cc*; 58°—59° N. 7°—5° E. *ccc*; Skagerak *ccc*. *October*: Väderö *cc*. *November*: Plym. *r*; above the whole 100 metre plateau very abundant; Skagerak *ccc*. *December*: Plym. *r* +; Skagerak *cc*.

**Dinophysis acuta** EHB. — *February*: between Newcastle, Skagen and 58° N. 2° E., as a rule *r*. *March*: Skagerak *r*. *April, May*: above the 100 metre plateau *r*. *June*: S. and W. of Norway *r*; Skagerak *r*. *July, August*: Plym. *rr*; on some spots in the northern North Sea and in Skagerak *r*. *September*: 59° N. 5° E. +; 58° N. 7° E. *r*; Skagerak *c r* (maximum). *November*: Irish Sea *r*; between Scotland, N. England and Skagerak *r*; Skagerak *r*. *December*: Skagerak *r*.

**Dinophysis homunculus** STEIN. — *February*: 57° N. 8° E. *rr*. *August*: Plym. *rr*.

**D. Michaëlis** (EHB.?) AURIV. — *April, May*: 57° N. 7° E. *r*. *June*: 59° N. 5° E. *r*; Skagerak *r*. *July*: Skagerak *r*. *September*: 58°—59° N. 7°—5° E. *r*; Skagerak *r* + (max.). *November*: at some points W. of Jutland *r*.

**D. Vanhöffenii** OSTENF. — *July, August*: E. of Scotland *r*; Skagerak *r*. *September*: Skagerak *r*.

**Diplopsalis lenticula** BERGH. — *February*: 58° N. 4° E. *r*; some spots between Newcastle and Skagen *r*. *July, August*: Plym. *r*; E. and W. of Scotland *r*; W. Skagerak *r*. *September*: Skagerak *rr*. *October*: Måseskär *rr*. *November*: Plym. *r*; off the Dutch coast *r*; Skagerak *rr*. *December*: Plym. *r*.

**Gonyaulax polyedra** STEIN. — *September*: Skagerak *rr*.

**G. spinifera** CLAP. & LACHM. *February*: W. of Schleswig *r*; between Skagen and S. Norway *r*. *March*: Väderö *rr*. *April, May*: between Scotland, Newcastle and the Skagerak *r*; 55° N. 6° E. *r*. *July, August*: W. of Schleswig *r*; Skagerak *rr*. *November*: Måseskär *rr*.

**Peridinium depressum** BAIL. — *January*: Väderö and Måseskär *r*. *February*: E. of Scotland *r*; W. of Jutland *r*. *March*: Skagerak *ccr*. *April, May*: W. of Scotland; from 60° N. 1° E. to 58° N. 4° E. *c*; between Newcastle, S. Norway and Jutland *+*; 55° N. 6° E. *c*; Väderö and Måseskär *ccr*. *June*: 62° N. 5° E. *r*; Väderö *+*. *July, August*: 56° N. 0° 30' W. *c*; between Firth of Tay and Skagerak *r*; W. Skagerak *+* *r*. *September*: Väderö *r*. *October*: Plym. *+* *r*. *November*: Plym. *+* *r*; Irish Sea *r*; between Scotland and Skagerak *r*; Måseskär and Väderö *r*. *December*: Plym. *r*; Måseskär *r*.

**P. divergens** EHB. — *January*: Skagerak *rr*. *February*: between Newcastle and Skagerak, as a rule *r*. *April, May*: 58° N. 5° E. and 59° N. 2° E. *rr*. *June*: 60° N. 5° E. *r*; 58° N. 7° E. *r*; Skagerak *r*. *July, August*: Plym. *+* *r*; Irish Channel *r*; E. of the Shetlands and at 57° N. 1°—6° E. *r*; Skagerak *r*. *September*: Skagerak *cr* (maxim.). *November*: Irish Sea *r*; between Scotland and the Skagerak *r*; Skagerak *r*.

**P. exiguum** CL. (K. Sv. Vet. Akad. Handl., XXXIV, N:o 1, p. 17, Pl. VIII, f. 5). — *August*: Plym. *rr*.

**P. Michaëlis** EHB. — *April, May*: 57° N. 8° E. *r*. *August*: Plym. *rr*. *September*: 58° N. 7° E. *r*; Skagerak *rr*.

**P. oceanicum** VANHÖFFEN. — *July*: off Heligoland *c*; E. of Scotland *r*; N. of Jutland *r*.

**P. ovatum** POUCHET. — *February*: S. of Norway *r*; W. of Schleswig *r*. *March*: Plym. *r*; N. of Scotland *r*. *April, May*: Plym. *r*; Helder *r*; W. of Scotland *r*; between Firth of Tay, Newcastle and Skagerak *c*. *September*: S. of Norway *r*. *October*: Plym. *r*. *November*: Plym. *r*.

**P. pallidum** OSTF. — *July*: 58° N. 0° E. *r*. *September*: Skagerak *rr*. *November*: Irish Sea *r*; E. of Jutland *r*.

**P. pellucidum** BERGH. — *April, May*: follows *P. ovatum* in the North Sea, but rarer; Plym. *rr*; Måseskär *r*. *July*: Gullmarfjord *r*. *August*: Orkneys *r*.

**P. vexans** MURRAY & WHITTING. — *June, August*: Plym. *rr*.

**Pyrophacus horologium** STEIN. — *February*: North Sea, rare among tripos-plankton. *July, August*: Shetlands *r*; E. of Scotland *r*; Skagerak *r*. *September*: Helder *r*; Skagerak *r*. *November*: at some spots between Scotland and the Skagerak.

### Cystæ.

**Hexasterias problematica** CL. — *March*: Helder *r*.

**Xanthidium brachiolatum** MÖB. — *July to September*: Skagerak *rr*.

**X. hystrix** CL. — *January*: Måseskär *rr*. *May*: Plym. *r*; S. of Norway *rr*. *June*: Plym. *rr*; Skagerak *rr*. *July, August*: Plym. *rr*; W. Skagerak *r*.

**X. multispinosum** MÖB. — *May*: 55° N. 6° E. *r*; Måseskär *r*. *August*: W. and E. Skagerak *r*. *November*: off the Dutch coast and in the centre of the North Sea *r*.

### Flagellatæ.

**Phæocystis Pouchetii** LAGH. — *January and February*: St Vaast *r +*. *April, May*: 61° N. 1° E. to 58° N. 3° E. *ccc*; 58° N. 2° E. *r*; 56° N. 4° E. *r*; 56° N. 6° E. *c*; Helder *ccc*; Plym. *ccc +*. *June*: Helder *ccc*. *September*: Helder *+ c*.

**Dinobryum pellucidum** LEVANDER. — *April*: Väderö *cc*; Måseskär *+*. *May*: Måseskär *r*.

### Diatomaceæ.

**Achnanthes tæniata** GRUN. — *February*: Väderö *rr*.

**Actinocyclus Ehrenbergii** RALF. — *March*: N. of Scotland *r*. *June*: Skagerak *r*.

**Asterionella japonica** CL. — *February*: St Vaast *r*. *March*: Helder *rr*; St Vaast *c +*; Plym. *rr*. *April, May*: NE. of Scotland *r*; Plym. *cc*; W. of Denmark, common between 55°—56° N., thence rarer to Skagen and into the Skagerak. *August*: Plym. *cc*. *October*: Skagerak *rr*.

**Bacteriastrum varians** LAUDER. — *July*: off Heligoland *cc*. *September*: Helder *r*. *November*: W. of Jutland *r*.

**Biddulphia aurita** LYNGB. — *January*: St Vaast *r*; Helder *r*; Väderö and Måseskär *r*. *February*: St Vaast *r*; Helder +; W. of Schleswig *c*; at Skagen *r*; Måseskär and Väderö *c*. *March*: St Vaast *r*; Helder *cc r*; Skagerak + *r*. *April*: Skagerak *rr*. *December*: Måseskär *r*.

**B. mobilensis** BAIL. — *January*: Plym. *r*; St Vaast +; Helder *r*; Väderö and Måseskär *r*. *February*: Plym. *c*; St Vaast *c* +; off the Dutch coast and W. of Denmark *c r*; round Scotland *r*. *March*: Plym. *cc*; St Vaast *r*; Helder *r*; N. of Scotland *r*. *April, May*: Plym. *c*; Helder *r*; W. of Denmark *r*; Måseskär *r*; E. and W. of Scotland. *September*: Helder *r cc*; Skagerak *r*. *October*: Skagerak *r*. *November*: Irish Sea +; W. of Denmark *r* +; Skagerak *r*. *December*: Plym. *r*; Väderö *rr*.

**Cerataulina Bergonii** H. PER. — *March*: Helder *ccc r*. *April, May*: Irish Sea *r*; some points between Firth of Tay, S. Norway and the Skagerak *r*; Måseskär *r*; Helder *c*. *June*: Plym. *r*; Helder *rr*; Skagerak *r*. *July*: Plym. +; Måseskär *r*; Väderö *rr*. *August*: Plym. +; Skagerak *r*. *September*: S. of Norway and Skagerak *r*. *October*: Skagerak + *r*. *November*: off the Dutch coast *r*; SW. of Norway, Skagerak and Måseskär + *r*.

**Chaetoceros atlanticus** CL. — *February*: area between 58° N. 2° E., 56° N. 3° E. and Skagen *r*. *March*: N. of Scotland *r*; Skagerak *rr*. *April, May*: S. of Norway *r*; some points in the central North Sea *r*.

**C. borealis** BTW. — *January*: St Vaast *rr*; Väderö and Måseskär *rr*. *February*: S. of Norway and Måseskär *r*. *March*: Måseskär *r*. *April, May*: 60°—61° N. 1°—2° E. *r*; the North Sea between 58° and 54° N., not rare, most common in the central part; Måseskär *r*; Väderö *r*. *June*: Skagerak *r*. *July*: Gullmarfjord *r*. *October*: Väderö and Måseskär *r*. *November*: SW. of Norway *r*; Skagerak *rr*; Måseskär +. *December*: Väderö and Måseskär + *r*.

**Var. Brightwellii** CL. — *February*: 57° N. 5° E. *r*; at Skagen and in the Skagerak *r*. *March*: Måseskär *r*. *April, May*: 61° N. 1° E. *r*; 56° N. 1° E. *r*; 55° N. 6° E. *r*; Måseskär *rr*. *June*: Skagerak, Väderö and Måseskär *r*. *July*: Gullmarfjord *r*. *October*: Måseskär *r*. *November, December*: Skagerak + *r*.

**Chaetoceros constrictus** GRAN. — This arctic species occurred in September 1898 at Vestmanna ö, in October the same year at the Färöes. It was seen in 1899, April and May, at the Färöes, in May at 61° N. 6° W.

*January*: Måseskär *r*; *February*: S. of Norway *r*; Väderö and Måseskär + *c*. *March*: whole Skagerak *cc*. *April, May*: 58° N. 4° E. +; 58° N. 7° E. *cc*; 57°—58° N. 9°—11° E. *c*; 55° N. 6° E. *r*; Skagerak *cc*. *June*: Skagerak *r*. *October, November*: Skagerak +; Väderö *c r*. *December*: Väderö +.

**C. contortus** SCHÜTT. — *January, February*: Väderö and Måseskär *r*. *March*: Skagerak *c* +; Väderö *c* +; Måseskär *r*. *April, May*: 58° N. 4°—7° E.; 55°—56° N. 6°—7° E. *r*;



Skagerak *c*; Måseskär *c r*. *June*: Skagerak +. *July*: Gullmarfjord. *August—October*: Skagerak and Måseskär *c r*. *November*: SW. of Norway *r*; Skagerak *cc*. *December*: Väderö *r*.

This species appeared in August 1898 at the Färöes and in September at the Azores, in April 1899 abundantly at 48° N. 9° W., in May at Vestmanna ö and the Färöes.

**C. criophilus** CASTR. — *March* and *April*: Skagerak *r*. *November*: Måseskär *r*.

**C. curvisetus** CL. — *January*: St Vaast *cc*; Måseskär *r*; *February*: St Vaast *c*; Väderö and Måseskär *r*; S. of Norway *r*. *March*: St Vaast *ccc*; Väderö *r*. *April, May*: Plym. + *r*; Irish Sea *r*; W. of Scotland *r*; E. of Scotland +; 55°—56° N. 6° E. *r*; Väderö +. *June*: Skagerak *c* +. *July*: at Skagen *r*; Gullmarfjord *r*; Väderö *c r*. *August*: Plym. *cc* +; Skagerak *c r*. *September*: Skagerak *c r*. *October*: Plym. +; Skagerak *c*. *November*: SW. of Norway +; Skagerak *cc*. *December*: Plym. *r*; Väderö *c*.

**C. danicus** CL. — *March*: St Vaast *r*; Helder *r*. *April, May*: 58° N. 4° E. *cc*; Skagerak, Väderö and Måseskär *cc*; N. of Jutland *c*. *June*: Skagerak and Måseskär *c*. *July*: Måseskär +. *September, November*: Skagerak and Måseskär *r*.

This species was seen in March 1898 at 21° N. 18° W. and 41° N. 21° W. It is common in the Baltic to Åland.

**C. debilis** CL. — Arctic species. It was seen in November 1898 from the S. of Iceland to the Färöes, where common, in 1899, April and May, abundantly at the Färöes.

*February*: Väderö and Måseskär *c r*; Helder *r*. *March*: Skagerak and Måseskär *c*; Helder *cc r*. *April, May*: 61° N. 1° E. *r*; round Scotland *c*; W. of Denmark *r*; Helder *rr*; Plym. + *r*; Måseskär *c* +. *September*: Helder *c*. *October* to *December*: Skagerak *cc* +; S. of Norway + (Nov.).

**C. decipiens** CL. — Arctic species of wide distribution. It occurred in December 1898 from S. Iceland to Scotland, in March 1899 from 65° N. 24° W. to 62° N. 8° W. (rare), in April at 48° N. 9° W. *r* and 44° N. 15° W. *r*, but abundantly S. of Iceland and at the Färöes.

*January*: Plym. *r*; St Vaast *r*; Skagerak *r*. *February*: St Vaast *r*; E. of Scotland *r*; S. of Norway *r*; Skagerak + *r*. *March*: Plym. *c r*; St Vaast *c*; N. of Scotland *rr*; Skagerak *cc r*. *April, May*: 61° N. 1° E. *r*; 58°—59° N. 1°—2° E. *ccc*; 58° N. 4°—7° E. + *r*; 56° N. 6° E. *r*; 55°—56° N. 7° W. *c*; Skagerak *cc r*; Plym. *c r*. *June*: Helder *rr*; Skagerak *rr*. *August*: Irish Channel *r*. *September*: Måseskär *r*. *October*: Plym. *r cc*; Måseskär *rr*; Väderö *r*. *November*: Plym. *r*; W. of England, round Scotland; Skagerak *r*. *December*: Plym. +; Måseskär *rr*; Väderö + *r*.

**C. densus** CL. — *January* to *March*: St Vaast + *r*; Plym. (March) *r*. *April, May*: Plym. *r*; 55° N. 6° E. *c*, thence rarer along the Danish coast into the Skagerak, where at Måseskär and Väderö +; between 56°—57° N. 1° E. and 57° N. 4° E., more or less rare; 58°—59° N. 1°—2° E. *r*. *July, August*: Plym. + *r*; Helder *r*; off Heligoland *r*;

E. of Scotland *r.* *September:* Helder *r.* *October:* Plym. +; Måseskär *rr*; Väderö +. *November:* 56° N. 4° E. to Skagerak; SW. of Norway *rr*; Måseskär *r*; Väderö +. *December:* Måseskär and Väderö *r.*

This species was seen in December 1898 at the Azores and in March 1899 at 47° N. 8° W..

**Chaetoceros diadema** EHB. — *January:* Måseskär *r.* *February:* Helder *r*; W. of Schleswig *r*; Måseskär and Väderö *c* +; S. of Norway *r.* *March:* Helder *cc*; Skagerak *ccc.* *April, May:* N. of Scotland *r*; Måseskär +; 55° N. 7° E. *r.* *June:* Måseskär *rr.* *October:* Måseskär *r.* *November:* Skagerak *c r.*

Arctic species, which was seen in November 1898 sparingly at 51° N. 20° W., in April 1899 at 48° N. 9° W. and not rare at the Färöes.

**C. didymus** EHB. — *January:* Plym. *r*; St Vaast *c.* *February:* St Vaast +; some points E. of Scotland *r.* *March:* St Vaast + *c.* *April:* Plym. + *r*; 56° N. 6° E. *r.* *June:* Måseskär *r.* *July:* Helder *r*; Gullmarfjord *rr.* *August:* Plym. *r* +; Skagerak *r.* *September:* Skagerak *c*; Måseskär *cc*; Väderö *r.* *October:* Skagerak, Väderö and Måseskär + *c.* *November:* Irish Sea *r*; Skagerak *cc r*; SW. of Norway *rr.* *December:* Måseskär +; Väderö *r.*

**C. furcellatus** BAIL. — *April:* Plym. *r.*

This is a characteristic arctic, neritic species.

**C. hiemalis** CL. — *February:* S. of Norway and at Måseskär *r.* *March:* Skagerak + *c.* *April, May:* W. of Scotland *r.* Skagerak *cc r*; SW. of Norway *c*; 55° N. 6° E. *r.* *June:* Skagerak *rr*; Måseskär +. *September:* Måseskär +. *October to December:* Skagerak + *c.*

**C. laciniosus** SCHÜTT. — *April, May:* NW. of Scotland *r.* *November, December:* Skagerak, Väderö and Måseskär *c r.*

**C. Lorenzianus** GRUN. — *August:* Plymouth *r.*

**C. Schöttii** CL. — *February:* central North Sea *r*; Skagerak *r.* *March:* Plym. *r.* *April:* Plym. + *r*; 56° N. 6° E. *r.* *June:* Måseskär *r c.* *July:* Helder +; Gullmarfjord *r*; Väderö +. *August:* Plym. + *c*; Skagerak and Måseskär *cc.* *September:* Skagerak and Måseskär *cc*; Väderö *r.* *October:* Måseskär *cc*; Väderö *r* +. *November:* W. of Denmark *r*; 57° N. 1° E. *r*; Väderö *c.*

**C. scolopendra** CL. — *January:* Måseskär *r.* *February:* Väderö, Måseskär and S. of Norway + *rr.* *March:* Skagerak *c r.* *April, May:* Hebrides +; Shetlands *r*; N. of Scotland *r*; central North Sea *r*; N. of Jutland *r*; Måseskär *r.* *July:* Gullmarfjord. *September—November:* Skagerak, Väderö, Måseskär and S. of Norway *c r.*

**C. seiracanthus** GRAN. — *March:* Väderö *rr.* *November:* Skagerak *rr.* *December:* Väderö *rr.*

**C. similis** CL. — *March*: Skagerak *rr*. *November*: *r*.

**C. socialis** LAUDER. — Arctic species, which was found in June 1898 abundantly S. of Iceland.

*February*: Väderö and Måseskär *c r*. *March*: very common in the whole Skagerak. *August*: Måseskär *r*. *September*: once very common at Måseskär. *October*: Plym. +. *November*: Skagerak *c r*.

**C. subtilis** CL. — *August*: Måseskär *r*.

**C. teres** CL. — Arctic species, found in August 1898 at the Färöes, in March 1899 N. of Iceland, in April at 49° N. 7° W., in May at Vestmannaö (*c*), the Färöes (*r*) and at 61° N. 1° E. (*r*).

*February*: St Vaast +; Helder *rr*; Väderö and Måseskär *rr*. *March*: Plym. + *c*; St Vaast *r*; Helder *r*; Skagerak *c r*. *April, May*: 58° N. 2° E. *r*; 56° N. 1° E. *r*; Plym. +. *November*: Skagerak, Väderö and Måseskär *r*.

**Corethron hystrix** HENSEN. — *March*: Plym. *r*. *April, May*: N. of Scotland *r*.

**Coscinodiscus concinnus** W. SM. — This species occurred abundantly at the Färöes from September 1898 to May 1899.

*January*: Plym. *r*; St Vaast + *r*; Helder *r*; Väderö and Måseskär + *c*. *February*: round Scotland *r*, thence more or less common to the Skagerak; St Vaast +; along the W. coast of Denmark; Väderö and Måseskär *cc*. *March*: N. of Scotland *r*; Plym. *c*; Skagerak *rr*; Måseskär *c*. *April, May*: rare at some points in the North Sea; Måseskär +. *July*: off Heligoland *r*; Väderö, Måseskär and Gullmarfjord *r c*. *September*: Plym. *c*; Helder *c r*; Skagerak *r*. *October*: Plym. *c*; Väderö +. *November*: Plym. *c*; Irish Sea *r*; some points on the central North Sea *r*; round Jutland *r*; Skagerak *r* +. *December*: Plym. *c*; Väderö +.

**C. excentricus** EHB. — This species occurred in November 1898 from 62° N. 8° W. to 60° N. 4° W.

*January*: St Vaast *c*. *February*: Plym. *r c*; St Vaast *c*; in the North Sea together with *C. concinnus*. *March*: N. of Scotland *r*; Plym. *cc* +; Helder *r*. *April*: Helder *r*. *September*: Skagerak *r*. *November*: Irish Sea *c*; W. of Schleswig *c*; Skagerak *r*. *December*: Måseskär *r*.

**C. oculus iridis** EHB. — Arctic species, which was seen abundantly in November 1898 at Vestmanna ö and in February 1899 at the Färöes.

*January*: Måseskär +. *February*: E. of Firth of Tay +; St Vaast *rr*; W. of Jutland *c*; S. of Norway *r*; Måseskär *c*. *March*: N. of Scotland *r*; Skagerak and Måseskär + *r*. *April, May*: central North Sea *r*; Skagerak *r*. *November*: Plym. +; Skagerak *r*. *December*: Plym. +.

**C. polychordus** GRAN. — Arctic species, which was found in July 1898 S. of Iceland and in October at the Färöes.

*February*: W. of Schleswig *r*; Skagerak and Måseskär *r*; S. of Norway *r*. *March*: Skagerak and Måseskär + *r*. *April, May*: NE. of Scotland *c*; 56° N. 6° E. *r*. *November, December*: Skagerak, Väderö and Måseskär *r*.

**C. radiatus** EHB. — *January*: Väderö and Måseskär *r*. *February*: round Scotland, thence to S. Norway, Skagen and the Danish W. coast; Väderö *rr*; St Vaast *r*. *March*: N. of Scotland *r*; Plym. +. *April, May*: British E. and W. coasts; Danish coast; Måseskär *r*. *June*: Skagerak *rr*. *August*: Irish Sea *r*. *September*: Skagerak *rr*. *November*: Irish Sea + *c*; round Scotland; off the Dutch coast; W. of Jutland; Skagerak *r*.

**C. stellaris** ROPER. — *February*: W. of Jutland *r*. *March*: Skagerak *r*. *June*: 59° N. 5° E. *r*. *November*: rare above the Fisher Bank; Måseskär *r*. *December*: Måseskär *r*.

**Ditylum Brightwellii** WEST. — *January*: St Vaast + *c*; Helder *r*; Måseskär +. *February*: St Vaast + *r*; Helder *rr*; along the W. coast of Denmark to Skagen *r*; S. Norway *r*. *March*: Plym. *r* +; St Vaast *r*; Helder +. *April, May*: N. and E. of Scotland *r*; Plym. + *r*; Helder *r*; along the W. coast of Jutland to Skagen *cc*. *July*: Plym. *r*; Skagen *r*. *August*: Plym. *r*. *September*: Skagerak *r*. *October*: Skagerak, Väderö and Måseskär *r*. *November*: Plym. *r*; Irish Sea *r*; banks W. of Denmark *c*; Skagerak + *c r*; SW. of Norway *r*. *December*: Väderö and Måseskär *r*.

**Eucampia zodiacus** EHB. — *January, February*: St Vaast *r*. *March*: St Vaast *r*; Helder *r* +. *April*: Helder *c*; 56° N. 6° E. *cc*; Måseskär +. *September*: Helder *r*. *October*: Plym. *r c*. *November*: W. of Jutland *rr*; Skagerak + *r*.

**Guinardia flaccida** CASTR. — *February*: off the Dutch coast *rr*. *March*: Plym. +; Helder *c*. *April, May*: Plym. *cc r*; Helder *c*; W. of Denmark *r*; from 56° N. 1° and 6° E. to Skagen *cc*. *June*: Plym. *r*; Helder +; Skagerak + *r*. *July*: Helder *c*. *August*: E. of Scotland *r*. *September*: Plym. +; Skagerak + *r*. *October*: Plym. *c r*; Skagerak +. *November*: Irish Sea +; E. of Newcastle and in the central North Sea *r*; rather common above the whole 50-metre plateau of the North Sea; Skagerak + *r*; Måseskär *r*. *December*: Väderö and Måseskär *r*.

**Lauderia annulata** CL. — *March*: Skagerak *rr*. *April, May*: Plym. +; more or less common round Scotland and thence to the Danish Peninsula; Måseskär *c*; Väderö *r*. *October*: Plym. *r*. *November*: Irish Sea *r*; Skagerak *r*. *December*: Måseskär *r*.

**Leptocylindrus danicus** CL. — *February*: Måseskär *r*. *March*: Skagerak and Måseskär *r*. *April, May*: Plym. *r*; sparingly N. of Scotland; common S. of Norway (58° N. 4°—7° E.), but rare at 59° N. 2° E.; common at 55° N. 6° E.; rare above the Fisher Bank; Måseskär *r*. *June*: Väderö *r*.

This species was found in May and June 1898 abundantly at the Färöes, less common there in July.

**Lithodesmium undulatum** EHB. — *July*: Helder *r.* *August*: Plym. *r.* *September*: Helder *c.*

**Navicula membranacea** CL. — *February*: St Vaast *rr.* *April, May*: E. of Scotland *rr.*

**Nitzschia delicatissima** CL. — *April, May*: 56° N. 7° E. +.

**N. seriata** CL. — *February*: Måseskär +. *March*: Skagerak and Väderö *r.* *April, May*: N. and E. of Scotland; S. of Norway *r*; W. Skagerak *r*; 55° N. 6° E. *r.*

This species was seen in 1898 October at 61°—63° N. 5°—10° W. (*r.*)

**Rhizosolenia alata** BTW. — *April, May*: 57°—60° N. 1° E. *r.* *August*: Skagerak *rr.* *October*: Plym. *r.*

**R. atlantica** H. PER. — *November*: W. of Jutland and in the Skagerak *rr.*

**R. calcar avis** SCHULZE. — *April, May*: Skagerak and Måseskär *r.* *July*: off Heligoland and W. of Denmark *r.* *August to December*: Skagerak, Väderö and Måseskär *r.*

**R. (alata var.) corpulenta** CL. — *July to October*: Plym. + *c.*

**R. delicatula** CL. — *February*: St Vaast *rr.*

**R. (alata var.) gracillima** CL. — *May*: 58° N. 3° E. +. *June*: Skagerak *rr*; Måseskär + *c.* *July, August*: Plym. *ccc r*; Irish Channel *c*; N. of Jutland *c*; Skagerak *rr*; Väderö + *r*; Måseskär + *cc.* *September to December*: Skagerak, Väderö and Måseskär + *r.*

**R. robusta** NORM. — *January*: Plym. *r.* *March*: Plym. *r.* *August*: Plym. *r.* *September*: Plym. *c.* *November*: 55° N. 6° E. *r.*

**R. obtusa** HENSEN. — *March*: Måseskär *rr.* *May*: 61° N. 1° E. *r.*

**R. semispina** HENSEN. — *January, February*: Väderö and Måseskär *r.* *March*: Skagerak, Väderö, Måseskär *c r.* *April, May*: 61° N. 1° E. *r*; round Scotland *r*; 58° N. 4° E. *c*; N. of Jutland *c*; Väderö and Måseskär *c +.* *June*: Måseskär *r.* *July*: W. of Denmark +.

This arctic species was seen in October 1898 S. of Iceland, in March 1899 abundantly at 49° N. 9° W. and in April at 49° N. 7° W.

**R. setigera** BTW. — *February*: St Vaast *rr.* *March*: Helder *r*; Skagerak *r.* *April, May*: E. of Scotland *r*; Skagerak *r*; Helder *r.* *September to December*: Skagerak + *r.*

**R. Shrubsolei** CL. — *January to March*: St Vaast *r* +. *April, May*: Plym. + *c*; Helder *r*; 56° N. 6° E. *r*; central North Sea, at some points *r*; Skagerak and Måseskär + *r*; some points E. of Scotland *r*. *June*: Plym. + *r*; Måseskär + *r*. *July*: Helder *c*; W. of Schleswig *c*. *October to December*: Plym. + *r*; Väderö *r*.

**R. Stolterfothii** H. PER. — *January*: St Vaast +. *February*: St Vaast +; Helder *rr*. *March*: Helder +. *April, May*: Plym. *rr*; Helder *r*; 56° N. 6° E. *r*; sparingly from Firth of Tay to the Skagerak. *June*: Plym. *r*; Helder *r cc*. *July*: Plym. *r c*; Helder *cc*. *September*: Skagerak *rr*. *October*: Plym. *r c*; Skagerak *r*; Måseskär and Väderö +. *November*: Irish Sea +; off the Dutch coast *c*; Skagerak *rr*; SW. of Norway *r*.

This species was seen in January to March 1898 W. of Africa, 12°—21° N. 19°—18° W., in April the same year at the Azores and the Engl. Channel, in September at the Shetlands (abundantly). Thus a southern neritic species, which goes both W. of England to the Shetlands and through the Engl. Channel along the continental coast of the North Sea to the Skagerak.

**R. styliformis** Brw. — *February*: along the W. coast of Denmark *r*. *April, May*: from 61° N. 1° E. to 58° N. 4° E. *r*; area between Firth of Tay, Skagen and 55° N. 6° E., rare in the NW., abundantly in the S. and E.; Väderö +; Måseskär *cc r*. *June*: Måseskär *r*. *July*: W. of Denmark +. *August*: Plym. *r*. *September*: Skagerak *c*. *October*: Plym. *r*; Väderö *r*. *November*: above the 50-metre plateau of the North Sea, as a rule *r*; Skagerak + *r*; SW. Norway *r*.

This species occurred in March at the Azores and from 41° N. 21° W. to 49° N. 9° W.

**Skeletonema costatum** GREV. — *January*: Måseskär *r*. *February*: St Vaast *r* +; Väderö +; Måseskär *r*. *March*: Plym. *r*; Helder + *r*; Skagerak + *r*; Måseskär *r*. *April, May*: Plym. *cc*; N. of Scotland *r*; 56° N. 7° E. *r*. *July*: Måseskär *r*. *August*: Plym. *cc*; Måseskär *r*. *September to December*: Skagerak, Väderö and Måseskär *c r*.

This species was seen in August 1898 at Vestmanna ö and the Shetlands.

**Stephanopyxis turgida** GREV. — *April, May*: 56° N. 6° E. +; W. of Denmark *c*; N. of Jutland *r*; Måseskär *r*; E. of Scotland *rr*. *October to December*: Plym.; Skagerak, Väderö and Måseskär *r*. (In *November*: Irish Sea *rr*; E. of Newcastle *r*.)

This species was found in November 1898 at 51° N. 20° W. and in January 1899 at the Canaries.

**Streptothecca thamesis** SHRUBS. — *January*: St Vaast +. *February*: St Vaast +; Helder and N. of the Dutch coast + *r*. *March*: St Vaast +; Helder *r*; N. of Scotland *r*. *August and October*: Plym. *r*. *November*: off the Dutch coast *rr*; Irish Sea and Irish Channel *r*.

This species was seen in March and April 1899 at 48°—50° N. 6° W., in March 1898 at 45° N. 36° W.

**Thalassiosira gelatinosa** HENSEN. — *January*: St Vaast *r*. *February*: St Vaast *r*; Måseskär *r*. *March*: Plym. *r*; St Vaast *r*; Helder *rr*; Skagerak *rr*. *April, May*: 56° N. 7°—8° E. *r*. *November, December*: Skagerak, Väderö and Måseskär *rr*.

Arctic species, which occurred in April 1898 abundantly S. of Iceland, in June 1899 at 69° N. 13° W. and in deep-sea collections from 65° N. 1° W.

**T. gravida** CL. — *January*: St Vaast *rr*. *February*: St Vaast *rr*; Väderö and Måseskär *c r*; S. of Norway +. *March*: Plym. + *r*; Skagerak *cr*; Väderö and Måseskär + *r*. *April, May*: E. of Scotland to Newcastle *r*; 56°—57° N. 0°—1° E. *c*; 56° N. 6° E. +; W. of Denmark *r*; Plym. + *c*. *October*: Plym. *c r*.

Arctic species, that occurred from March to October 1898 at the Färöes, in 1899 March sparingly at 66° N. 20°—24° W. and more abundant at 65° N. 24° W., in April abundantly at the Färöes and in May at 61° N. 1° W. *c*.

**T. Nordenskiöldii** CL. — *January*: Måseskär *rr*. *February*: Väderö and Måseskär *cc*; S. of Norway *r*. *March*: whole Skagerak *cc*. *April, May*: W. and N. of Scotland *c*; E. of Scotland, *r* at some points; 56° N. 6° E. +; N. of Jutland *r*; Väderö and Måseskär *rr*; Plym. *c*. *November and December*: Skagerak and Måseskär *rr*.

Arctic species, which occurred in May and June 1898 abundantly N. of Iceland, in May abundantly at the Färöes. In April 1899 it was seen at the Färöes (*r c*).

**Thalassiothrix Frauenfeldii** GRUN. — *January*: Väderö and Måseskär + *c*. *February*: St Vaast + *c*; Skagen *r*; Väderö and Måseskär + *c*; S. of Norway *c*. *March*: Skagerak and Måseskär *r*. *April, May*: S. of Norway *c*; Måseskär *rr*; 56° N. 7°—8° E. *r*. *June*: Skagerak and Måseskär *r* +. *July*: Måseskär *rr*. *September to December*: Skagerak and Måseskär *r*. (In December *c* at Väderö and Måseskär.)

Northern species, which occurred in November 1898 from S. Iceland to the Shetlands, as a rule sparingly.

**T. longissima** CL. & GRUN. — *January*: Väderö *c*; Måseskär *rr*. *February*: 58° N. 2° E. *r*; S. of Norway *r*; Måseskär *r*. *March*: Väderö and Måseskär *r*. *April, May*: 58° N. 4° E. *r*; 57° N. 1° E. *c*, thence rare towards Skagen; Måseskär *rr*.

Arctic species, which in November 1898 occurred as far to the south as between 50° N. 10° W. and 47° N. 42° W., in April 1899 at 44° N. 15° W. It has about the same seasonal distribution as *Calanus finmarchicus*.

## Geographical and Seasonal Distribution of the plankton organisms of the North Sea in 1899.

### A. Forms that, as a rule, are confined to the space above the 50-metre plateau on the bottom.

1. From **January**: *Euterpe acutifrons* (to February, but reappeared in November), *Tintinnopsis beroidea* (to May, but reappeared in November), (*Chaetoceros curvisetus* and *C. didymus* in the Engl. Channel to March), *Biddulphia mobilensis* (to May, reappeared in September).

2. From **February**: *Biddulphia aurita* (to March), *Rhizosolenia Stolterfothii* (to July, reappeared in November), *Streptotheca thamesis* (to March, reappeared in November).

3. From **March**: *Asterionella japonica* (to May), *Cerataulina Bergonii* (to June reappeared in November), *Chaetoceros danicus* (to May), *Eucampia zodiacus* (April, reappeared in September), *Rhizosolenia setigera* (to May).

4. From **April**: *Phæocystis Pouchetii* (to June, also above the 200-metre plateau), *Chaetoceros densus* (to September), *Ditylum Brightwellii* (reappeared in November), *Guinardia flaccida* (to July, reappeared in November), *Rhizosolenia Shrubsolei* (to July), *Stephanopyxis turgida* (to May).

5. From **June**: *Podon polyphemoides*.

6. From **July-August**: *Oikopleura dioica*, *Evadne spinifera*, *Acartia biflosa*, *Isias clavipes*, *Cyttarocyclus serratus*, *Tintinnopsis campanula*, *T. ventricosa*, *Noctiluca miliaris*, *Lithodesmium undulatum*, *Rhizosolenia calcar avis*, *Bacteriastrum varians*.

7. From **November**: *Labidocera Wollastonii*, *Rhizosolenia robusta*.

### B. Forms that, as a rule, are confined to the space above the 100-metre plateau.

#### 1. Spring-forms, or such as occur in April-May.

Southern forms:  
*Ceratium tripos*.  
*Lauderia annulata*.

Northern forms:  
*Gonyaulax spinifera*.  
*Peridinium depressum*.  
*P. ovatum*.  
*Chaetoceros borealis*.  
var. *Brightwellii*.  
*C. decipiens*.



## 2. Summer-forms, or such as occur in July–August.

Southern:

*Podon intermedius.*  
*Anomalocera Patersonii.*  
*Centropages typicus.*  
*Oithona plumifera.*  
*Amphorella Steenstrupii.*  
*Acanthometron quadrifolium.*  
*Ceratium furca.*  
*C. macroceros.*

Northern:

*Acartia longiremis.*  
*Cyttarocylis denticulata.*

## 3. Winter-forms, or such as occur in November (February).

Southern:

*Acanthochiasma fusiforme.*  
*Distephanus speculum.*  
*Halosphæra viridis.*  
*Ceratium bucephalus.*

Northern:

*Limacina balea.*  
 (*Acartia longiremis.*)  
*Dinophysis acuta.*

## C. Forms that occur in the spring above the 100-metre plateau, in the summer or winter above the 50-metre plateau.

## 1. Occurring in the summer above the 50-metre plateau:

Southern:

*Evadne Nordmannii.*  
*Acartia Clausii.*  
*Oithona similis.*

Northern:

*Calanus finmarchicus.*  
*Centropages hamatus.*  
*Temora longicornis.*  
*Ceratium longipes.*

## 2. Occurring in the autumn or spring above the 50-metre plateau:

Southern:

*Paracalanus parvus* (November).  
*Ceratium fusus* (Jan., Febr.).  
*Diplopsalis lenticula* (Nov.).  
*Rhizosolenia styliformis* (Nov.).

Northern:

*Pseudocalanus elongatus* (Winter).  
*Fungella arctica* (Febr.).  
*Chætoceros debilis* (Spring).  
*Coscinodiscus concinnus* (Sept.).  
*C. radiatus* (Nov.).  
*C. excentricus* (Nov.).

## D. Forms, which occur chiefly in the eastern part of the North Sea.

*Fritillaria borealis.* — Febr.  
*Clione limacina.* — Jan.  
*Podon Leuckarti.* — May.

*Metridia hibernica.* — Febr.  
*Pleurobrachia pileus.* — Jan., April.  
*Ptychocylis acuta.* — Jan., March.

- Tintinnus acuminatus*. — Nov.  
*Plectophora arachnoides*. — Nov.  
*Dinobryum pellucidum*. — April.  
*Achnanthes seriata*. — Febr.  
*Chætoceros constrictus*. — Febr., April, May.  
*C. contortus*. — April, May.  
*C. diadema*. — Febr.; Sept.—Dec.  
*C. hiemalis*. — Febr., May.  
*C. scolopendra*. — Jan. to May; Sept., Nov.  
*C. seiracantha*. — March; Nov.
- C. socialis*. — Febr., March; Nov.  
*Coscinodiscus polychordus*. — Febr., April; Nov.  
*C. stellaris*. — Febr. March; Nov.  
*Leptocylindrus danicus*. — April, May.  
*Nitzschia seriata*. — Febr., May.  
*Rhizosolenia semispina*. — Jan., May.  
*Thalassiosira gravida*. — Febr., May.  
*T. Nordenskiöldii*. — Jan. to May.  
*Thalassiothrix Frauenfeldii*. — Jan. to May.  
*T. longissima*. — Jan. to May.

All are arctic or northern species.

The following are of southern origin:

- Microsetella atlantica*. — June.  
*Ceratium lineatum*. — Febr., July.  
*Rhizosolenia gracillima*. — May to December.
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## Species excluded from the Table I.

The North Sea in February 1899.

- Fritillaria borealis* LOHM.  $^{5/2}$  57° 53' N. 3° 8' E. *r.*;  $^{18/2}$  56° 44' N. 7° 22' E. *r.*  
*Bathyporeia pelagica* BATE.  $^{2/2}$  57° 5' N. 8° 33' E. *rr.*  
*Proto pedata* LEACH.  $^{4/2}$  56° 31' N. 7° 44' E. *rr.*;  $^{4/2}$  55° 32' N. 6° 45' E. *r.*;  $^{3/2}$  55° 48' N. 7° 29' E. *rr.*  
*Centropages hamatus* LILLJEB.  $^{5/2}$  53° N. 4° 30' E. and 52° 30' N. 3° 57' E. *r.*  
*Eutерpe acutifrons* DANA.  $^{10/2}$  52° 52' N. 4° 19' E.;  $^{2/2}$  57° 31' N. 9° 26' E.;  $^{2/2}$  56° 27' N. 7° 53' E., everywhere *r.*  
*Metridia hibernica* BRADY & ROBTS.  $^{4/2}$  56° 17' N. 1° 11' W. *r.*;  $^{2/2}$  57° 1' N. 5° 35' E. +;  $^{5/2}$  57° 10' N. 6° 46' E. *rr.*;  $^{5/2}$  57° 19' N. 8° 7' E. +.  
*Microsetella atlantica* BRADY & ROBTS.  $^{4/2}$  56° 17' N. 1° 11' W. *r.*;  $^{4/2}$  56° 26' N. 0° 10' E. *r.*;  $^{5/2}$  57° 10' N. 6° 46' E. *r.*  
*Oithona plumifera* BAIRD.  $^{3/2}$  56° 26' N. 4° E. *rr.*;  $^{4/2}$  56° 39' N. 5° E. +.  
*Evadne Nordmannii* LOVÉN.  $^{5/2}$  52° 30' N. 3° 57' E. *rr.*  
*Sagitta arctica* AURIY.  $^{3/2}$  56° 8' N. 2° 32' W. *rr.*;  $^{4/2}$  56° 17' N. 1° 11' W. *r.*;  $^{3/2}$  55° 19' N. 0° 44' W. *rr.*  
*Fungella arctica* CL.  $^{4/2}$  56° 39' N. 5° E. *rr.*;  $^{10/2}$  52° 52' N. 4° 19' E. *rr.*;  $^{19/2}$  57° 40' N. 9° 57' E. *rr.*;  $^{2/10}$  57° 31' N. 9° 26' E. *r.*  
*Ptychocylis acuta* BRANDT.  $^{5/2}$  57° 53' N. 8° 8' E. +; 58° 12' N. 4° 4' E. *rr.*  
*Tintinnopsis beroidea* STEIN.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*;  $^{4/2}$  57° 14' N. 8° 32' E. *r.*;  $^{3/2}$  55° 48' N. 7° 29' E. *rr.*  
*Tintinnus Steenstrupii* CLAP. & LACHM.  $^{5/2}$  57° 53' N. 8° 8' E. *rr.*;  $^{3/2}$  56° 13' N. 3° 3' E. *rr.*;  $^{4/2}$  56° 39' N. 5° E. *rr.*  
*Acanthochiasma fusiforme* HKL.  $^{6/2}$  58° 25' N. 1° 51' E. +.  
*Acanthometron quadrifolium* HKL.  $^{6/2}$  58° 12' N. 4° 4' E. *rr.*  
*Dictyocha fibula* EHB.  $^{4/2}$  56° 39' N. 5° E. *r.*  
*Ceratium lineatum* EHB.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*;  $^{3/2}$  56° 26' N. 4° E. +.  
*Dinophysis homunculus* STEIN.  $^{5/2}$  57° 19' N. 8° 7' E. *rr.*  
*Peridinium ovatum* POUCHET.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*;  $^{18/2}$  54° 57' N. 7° 43' E. *r.*  
*Actinocyclus Ehrenbergii* RALFS.  $^{5/2}$  57° 51' N. 9° 50' E. +;  $^{6/2}$  58° 12' N. 4° 4' E. +;  $^{5/2}$  57° 34' N. 9° 41' E. *r.*  
*Biddulphia aurita* LYNGB.  $^{19/2}$  57° 40' N. 9° 57' E. *r.*;  $^{3/2}$  54° 35' N. 8° 5' E. *c.*  
*Chaetoceros borealis* BTW.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*  
var. *Brightwellii* CL.  $^{5/2}$  57° 51' N. 9° 50' E. *rr.*;  $^{4/2}$  56° 39' N. 5° E. *r.*  
*C. constrictus* GRAN.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*  
*C. curvisetus* CL.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*  
*C. diadema* EHB.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*;  $^{3/2}$  55° 8' N. 7° 33' E. *r.*  
*C. hiemalis* CL.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*  
*C. Schüttii* CL.  $^{5/2}$  57° 34' N. 9° 41' E. *rr.*;  $^{3/2}$  56° 13' N. 3° 3' E. *rr.*;  $^{4/2}$  56° 39' N. 5° E. *r.*;  $^{2/2}$  57° 31' N. 9° 26' E. *r.*  
*C. scolopendra* CL.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*  
*Coscinodiscus polychordus* GRAN.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*;  $^{19/2}$  57° 40' N. 9° 57' E. *r.*;  $^{2/2}$  56° 27' N. 7° 53' E. *r.*;  $^{3/2}$  55° 48' N. 7° 29' E. *rr.*  
*C. stellaris* ROPER.  $^{5/2}$  57° 19' N. 8° 7' E. *rr.*  
*Guinardia flaccida* CASTR.  $^{4/2}$  54° 25' N. 5° 40' E. *rr.*  
*Streptotheca thamesis* SHRUBS.  $^{10/2}$  52° 52' N. 4° 19' E. *rr.*  
*Thalassiosira gravida* CL.  $^{5/2}$  57° 53' N. 8° 8' E. +.  
*T. Nordensköldii* CL.  $^{5/2}$  57° 53' N. 8° 8' E. *r.*  
*Thalassiothrix Frauenfeldii* GRUN.  $^{5/2}$  57° 51' N. 9° 50' E. *r.*;  $^{5/2}$  57° 53' N. 8° 8' E. *c.*  
*T. longissima* CL. & GRUN.  $^{5/2}$  57° 53' N. 8° 8' E. *rr.*; 58° 25' N. 1° 51' E. *rr.*

## Species excluded from the Table II.

The North Sea in April-May 1899.

- Fritillaria borealis* LOHM.  $^{30/4}$  54° 45' N. 5° 57' E. *r.*  
*Anomalocera Patersonii* TEMPT.  $^{1/5}$  54° 15' N. 5° 11' W. *rr.*  
*Paracalanus parvus* CLAUD.  $^{30/4}$  57° 14' N. 7° 6' W. *r.*  
*Temorella affinis* POPPE.  $^{7/5}$  57° 12' N. 9° 20' E. *r.*  
*Sagitta bipunctata* QUOI & GAIM.  $^{28/4}$  57° 45' N. 8° 37' E. *r.*;  $^{28/4}$  56° 30' N. 0° E. +.  
*Cyttarocylis denticulata* EHB.  $^{28/4}$  58° 9' N. 4° 50' E. *r.*  
*Fungella arctica* CL.  $^{28/4}$  56° 17' N. 1° 43' W. *rr.*;  $^{28/4}$  56° 30' N. 0° E. *rr.*  
*Tintinnopsis beroidea* STEIN.  $^{1/5}$  55° 37' N. 6° 49' W. *r.*;  $^{1/5}$  54° 15' N. 5° 11' W. *r.*;  $^{29/4}$  57° 39' N. 11° 26' E. *r.*  
*T. ventricosa* CLAP. & LACHM.  $^{30/4}$  56° 30' N. 4° 30' E. *r.*  
*Dietyocha fibula* EHB.  $^{29/4}$  56° 37' N. 1° 15' E. *r.*  
*Ceratium bucephalum* CL.  $^{29/4}$  56° 49' N. 3° 45' E. *rr.*;  $^{30/4}$  56° 30' N. 4° 30' E. *r.*  
*Dinophysis Michaëlis* EHB.  $^{29/4}$  57° 8' N. 7° 28' E. *r.*  
*Peridinium divergens* EHB.  $^{28/4}$  58° 9' N. 4° 50' E. *r.*  
*P. Michaëlis* EHB.  $^{30/4}$  57° 8' N. 8° 30' E. *r.*  
*Xanthidium multispinosum* MOEB.  $^{20/5}$  54° 34' N. 5° 48' E. *r.*  
*Phæocystis Pouchetii* LAGH.  $^{29/4}$  58° 27' N. 1° 39' E. *r.*;  $^{30/4}$  56° 30' N. 4° 30' E. *r.*  
*Chaetoceros borealis* var. *Brightwellii* CL.  $^{30/4}$  55° 39' N. 1° 10' E. *r.*;  $^{30/4}$  54° 45' N. 5° 57' E. *r.*  
*C. constrictus* GRAN.  $^{29/4}$  57° 39' N. 11° 26' E. *c.*;  $^{30/4}$  54° 45' N. 5° 57' E. *r.*;  $^{7/5}$  57° 12' N. 9° 20' E. *c.*  
*C. contortus* SCHÜTT.  $^{29/4}$  57° 39' N. 11° 26' E. *c.*;  $^{30/4}$  55° 54' N. 7° 30' E. *r.*;  $^{30/4}$  54° 45' N. 5° 57' E. *r.*  
*C. criophilus* CASTR.  $^{29/4}$  57° 47' N. 10° 33' E. *r.*  
*C. danicus* CL.  $^{29/4}$  57° 39' N. 11° 26' E. *c.*;  $^{30/4}$  54° 45' N. 5° 57' E. *r.*;  $^{7/5}$  57° 12' N. 9° 20' E. *ccc.*  
*C. diadema* EHB.  $^{29/4}$  58° 48' N. 2° 3' W. *r.*;  $^{30/4}$  58° 40' N. 4° 37' W. *r.*;  $^{30/4}$  55° 14' N. 7° 29' E. *r.*  
*C. lacinosus* SCHÜTT.  $^{30/4}$  58° 40' N. 4° 37' W. *rr.*  
*C. teres* CL.  $^{29/4}$  58° 27' N. 1° 39' E. *r.*;  $^{30/4}$  55° 39' N. 1° 10' E. *r.*  
*Corethron hystrix* HENSEN.  $^{29/4}$  58° 48' N. 2° 3' W. *rr.*  
*Coscinodiscus polychordus* GRAN.  $^{29/4}$  58° 48' N. 2° 3' W. *c.*  
*Leptocylindrus danicus* CL.  $^{29/4}$  58° 48' N. 2° 3' W. +;  $^{30/4}$  57° 14' N. 7° 6' W. *r.*;  $^{30/4}$  54° 45' N. 5° 57' E. *c.*  
*Navicula membranacea* CL.  $^{28/4}$  56° 17' N. 1° 43' W. *rr.*;  $^{29/4}$  56° 37' N. 1° 15' E. *rr.*  
*Nitzschia delicatissima* CL.  $^{30/4}$  55° 54' N. 7° 30' E. +.  
*Rhizosolenia alata* BTW.  $^{29/4}$  56° 37' N. 1° 15' E. *r.*  
*R. calcar avis* SCHULZE.  $^{29/4}$  57° 34' N. 9° 24' E. *r.*  
*R. setigera* BTW.  $^{28/4}$  56° 17' N. 1° 43' W. *rr.*;  $^{29/4}$  56° 37' N. 1° 15' E. *r.*;  $^{29/4}$  57° 39' N. 11° 26' E. *r.*  
*Skeletonema costatum* GREV.  $^{30/4}$  58° 40' N. 4° 37' W. *r.*;  $^{30/4}$  55° 54' N. 7° 30' E. *r.*  
*Thalassiosira gelatinosa* HENSEN.  $^{30/4}$  55° 54' N. 7° 30' E. *r.*  
*Thalassiothrix Frauenfeldii* GRUN.  $^{7/5}$  57° 12' N. 9° 20' E. *r.*

## Species excluded from the Table III.

The North Sea in July-August 1899.

- Acartia bifilosa* GIESBR.  $^{2/8}$  53° 28' N. 4° 39' E. *r.*  
*A. longiremis* LILLJEB.  $^{29/7}$  57° 11' N. 8° E. *r.*;  $^{29/7}$  56° 15' N. 4° 9' E. +;  $^{31/7}$  57° 44' N. 10° 52' E. *r.*;  
 $^{30/7}$  57° 7' N. 8° 28' E. *c.*  
*Isias clavipes* BOECK.  $^{29/7}$  55° 7' N. 7° 35' E. +;  $^{29/7}$  55° 59' N. 7° 37' E. +;  $^{3/8}$  55° 6' N. 6° 26' E. *r.*  
*Oithona plumifera* BAIRD.  $^{24/7}$  57° 53' N. 0° 6' W. *rr.*;  $^{29/7}$  55° 54' N. 2° 23' E. *r.*

- Tomopteris helgolandica* GREFF. <sup>24/7</sup> 57° 53' N. 0° 6' W. *rr.*  
*Pleurobrachia pileus* FABRIC. <sup>24/7</sup> 57° 53' N. 0° 6' W. *r.*; <sup>20/8</sup> 55° 15' N. 5° 47' W. +.  
*Cyttarocylis serrata* MÖEB. <sup>20/8</sup> 55° 15' N. 5° 47' W. *rr.*; <sup>22/8</sup> 58° 42' N. 2° 48' W. *r.*; <sup>29/7</sup> 54° 13' N. 8° 4' E. *c.*;  
<sup>29/7</sup> 55° 7' N. 7° 35' E. +.  
*Tintinnopsis campanula* EHB. <sup>31/7</sup> 57° 44' N. 10° 52' E. *r.*; <sup>29/7</sup> 54° 13' N. 8° 4' E. +.  
*Tintinnus subulatus* EHB. <sup>29/7</sup> 54° 13' N. 8° 4' E. +.  
*Acanthonia Mülleri* HKL. <sup>20/8</sup> 55° 15' N. 5° 47' W. *rr.*  
*Noctiluca miliaris* SURIR. <sup>29/7</sup> 55° 59' N. 7° 37' E. *c.*; <sup>2/8</sup> 53° 28' N. 4° 39' E. *ccc.*  
*Halosphæra viridis* SCHMITZ. <sup>21/8</sup> 58° 14' N. 5° 54' W. +.  
*Ceratium tripos var. bucephala* CL. <sup>29/7</sup> 55° 54' N. 2° 23' E. *r.*  
*Dinophysis Michaëlis* (EHB.) AURIV. <sup>30/7</sup> 57° 25' N. 9° 6' W. *r.*  
*D. Vanhöffenii* OSTENF. <sup>24/7</sup> 57° 53' N. 0° 6' W. *rr.*; <sup>30/7</sup> 57° 25' N. 9° 6' E. *r.*  
*Gonyaulax spinifera* CLAP. & LACHM. <sup>29/7</sup> 55° 7' N. 7° 35' E. *rr.*  
*Peridinium Michaëlis* EHB. <sup>24/7</sup> 57° 53' N. 0° 6' W. *r.*; <sup>30/7</sup> 57° 25' N. 9° 6' E. *r.*  
*P. oceanicum* VANHÖFFEN. <sup>24/7</sup> 57° 53' N. 0° 6' W. *rr.*; <sup>30/7</sup> 56° 57' N. 7° 37' E. *rr.*; <sup>29/7</sup> 54° 13' N. 8° 4' E. *c.*  
*P. pallidum* OSTENF. <sup>24/7</sup> 57° 53' N. 0° 6' W. *r.*  
*P. pellucidum* BERGH. <sup>22/8</sup> 58° 42' N. 2° 48' W. *r.*  
*Pyrophacus horologium* STEIN. <sup>24/7</sup> 57° 53' N. 0° 6' W. *rr.*; <sup>25/7</sup> 60° N. 1° E. *rr.*; <sup>22/8</sup> 58° 25' N. 0° 28' E. *rr.*  
*Xanthidium hystrix* CL. <sup>30/7</sup> 57° 25' N. 9° 6' E. *rr.*; <sup>31/7</sup> 57° 44' N. 10° 52' E. *rr.*  
*X. multispinosum* MÖEB. <sup>23/8</sup> 57° 38' N. 7° 2' E. *r.*  
*Bacteriastrum varians* LAUDER. <sup>29/7</sup> 54° 13' N. 8° 4' E. *ccc.*  
*Chaetoceros curvisetus* CL. <sup>31/7</sup> 57° 44' N. 10° 52' E. *rr.*  
*C. decipiens* CL. <sup>20/8</sup> 55° 15' N. 5° 47' W. *rr.*  
*C. densus* CL. <sup>22/8</sup> 58° 42' N. 2° 48' W. *r.*; <sup>29/7</sup> 54° 13' N. 8° 4' E. +.  
*Coscinodiscus concinnus* W. SM. <sup>29/7</sup> 54° 13' N. 8° 4' E. *r.*  
*C. radiatus* EHB. <sup>20/8</sup> 55° 15' N. 5° 47' W. *rr.*  
*Ditylum Brightwellii* WEST. <sup>31/7</sup> 57° 44' N. 15° 52' E. *rr.*  
*Guinardia flaccida* CASTR. <sup>22/8</sup> 58° 42' N. 2° 48' W. +.  
*Rhizosolenia calcar avis* SCHULZE. <sup>29/7</sup> 54° 13' N. 8° 4' E. *r.*; <sup>29/7</sup> 55° 59' N. 7° 37' E. +.  
*R. semispina* HENSEN. <sup>29/7</sup> 55° 7' N. 7° 35' E. +.  
*R. Shrubsolei* CL. <sup>29/7</sup> 55° 7' N. 7° 35' E. *c.*  
*R. Styliiformis* BTW. <sup>29/7</sup> 55° 7' N. 7° 35' E. +; <sup>29/7</sup> 55° 59' N. 7° 37' E. +.

## Species excluded from the Table IV.

The North Sea in November 1899.

- Centropages hamatus* LILLJEB. <sup>6/11</sup> 55° 40' N. 4° 48' E. *r.*  
*Labidocera Wollastonii* LUBB. <sup>5/11</sup> 56° 48' N. 6° 1' E. *r.*  
*Metridia hibernica* BRADY & ROBERTS. <sup>5/11</sup> 57° 34' N. 9° 21' E. *r.*  
*Oithona plumifera* BAIRD. <sup>4/11</sup> 57° 10' N. 3° 48' E. *rr.*; <sup>5/11</sup> 56° 48' N. 6° 1' E. *rr.*  
*Podon intermedius* LILLJEB. <sup>4/11</sup> 57° 10' N. 3° 48' E. *r.*  
*Limacina balea* MÖLLER. <sup>4/11</sup> 56° 24' N. 4° 25' E. +; <sup>5/11</sup> 57° 48' N. 6° 1' E. *c.*; <sup>5/11</sup> 57° 10' N. 7° 40' E. *c.*  
*Amphorella Steenstrupii* CLAP. & LACHM. <sup>3/11</sup> 57° 54' N. 6° 51' E. *rr.*; <sup>4/11</sup> 56° 24' N. 4° 25' E. *rr.*; <sup>5/11</sup> 55° 58' N. 7° 2' E. *rr.*  
*Cyttarocylis denticulata* EHB. <sup>5/11</sup> 58° 19' N. 0° 55' W. +.  
*Tintinnopsis beroidea* STEIN. <sup>9/11</sup> 54° 14' N. 5° 6' W. *r.*  
*T. campanula* EHB. <sup>9/11</sup> 54° 14' N. 5° 6' W. *r.*  
*Tintinnus acuminatus* CLAP. & LACHM. <sup>3/11</sup> 57° 54' N. 6° 51' E. *rr.*

- Plectophora arachnoïdes* CLAP. & LACHM.  $5/11$  58° 19' N. 0° 55' W. *rr*;  $5/11$  57° 34' N. 9° 21' E. *rr*.  
*Noctiluca miliaris* SUR.  $5/11$  57° 2' N. 8° 9' E. *r*.  
*Dictyocha fibula* EHB.  $3/11$  57° 54' N. 6° 51' E. *r*;  $4/11$  54° 14' N. 5° 6' W.;  $5/11$  57° 2' N. 8° 9' E. *r*.  
*Ceratium lineatum* EHB.  $1/11$  55° 13' N. 0° 35' W. +;  $5/11$  57° 10' N. 7° 40' E. *r*.  
*Dinophysis Michaëlis* (EHB.) AURIV.  $4/11$  57° 31' N. 8° E. *rr*;  $5/11$  55° 27' N. 6° 22' E. *rr*.  
*Peridinium pallidum* OSTENF.  $9/11$  54° 14' N. 5° 6' W. *r*;  $5/11$  55° 58' N. 7° 2' E. *rr*.  
*Xanthidium multispinosum* MÖEB.  $4/11$  56° 48' N. 2° 24' E. *rr*;  $6/11$  52° 58' N. 4° 25' E. *rr*.  
*Bacteriastrum varians* LAUDER.  $5/11$  57° 2' N. 8° 9' E. *rr*.  
*Cerataulina Bergonii* H. PER.  $3/11$  57° 54' N. 6° 51' E. *r*;  $6/11$  52° 58' N. 4° 25' E. *r*.  
*Chaetoceros borealis* BTW.  $3/11$  57° 54' N. 6° 51' E. *r*.  
*C. contortus* SCHÜTT.  $3/11$  57° 54' N. 6° 51' E. +.  
*C. curvisetus* CL.  $3/11$  57° 54' N. 6° 51' E. +;  $5/11$  57° 34' N. 9° 21' E. *r*;  $4/11$  57° 30' N. 9° 20' E. *rr*.  
*C. debilis* CL.  $3/11$  57° 54' N. 6° 51' E. +.  
*C. didymus* EHB.  $3/11$  57° 54' N. 6° 51' E. *rr*;  $9/11$  54° 14' N. 5° 6' W. *r*.  
*C. Schüttii* CL.  $4/11$  56° 35' N. 1° 7' E. *rr*;  $5/11$  57° 34' N. 9° 21' E. *r*;  $5/11$  55° 27' N. 6° 22' E. *r*;  $6/11$  54° 32' N. 5° 38' E. *rr*.  
*C. scolopendra* CL.  $3/11$  57° 54' N. 6° 51' E. *rr*.  
*Coscinodiscus stellaris* ROPBR.  $5/11$  55° 27' N. 6° 22' E. *r*.  
*Eucampia zodiacus* EKB.  $5/11$  57° 2' N. 8° 9' E. *rr*.  
*Lauderia annulata* CL.  $9/11$  54° 14' N. 5° 6' W. *r*.  
*Rhizosolenia atlantica* H. PER.  $5/11$  57° 2' N. 8° 9' E. *r*;  $5/11$  55° 58' N. 7° 2' E. *r*.  
*R. gracillima* CL.  $3/11$  57° 54' N. 6° 51' E. *r*.  
*R. robusta* NORM.  $5/11$  55° 27' N. 6° 22' E. *r*.  
*R. Shrubsolei* CL.  $3/11$  57° 54' N. 6° 51' E. *r*.  
*Stephanopyxis turgida* GREV.  $9/11$  54° 14' N. 5° 6' W. *r*; 55° 13' N. 0° 35' W. *r*.

### Species excluded from the Table V.

Måseskär 1899.

- Fritillaria borealis* LOHM.  $24/3$  *r*;  $23/4$  *r*.  
*Parathemisto obliuia* KRÖYER.  $4/1$  *rr*.  
*Proto pedata* LEACH.  $4/1$  +;  $17/11$  *rr*.  
*Acartia bifilosa* GIESBR.  $23/4$  *r*.  
*Anomalocera Patersonii* TEMPL.  $25/4$  *r*;  $21/8$  +.  
*Euterpe acutifrons* DANA.  $18/1$  *r*;  $8/9$  *r*.  
*Labidocera Wollastonii* LUBB.  $8/9$  *r*.  
*Metridia hibernica* BRADY & ROBTS.  $4/1$  *r*.  
*Microsetella atlantica* BRADY & ROBTS.  $17/11$  *r*.  
*Oithona plumifera* BAIRD.  $4/1$ ;  $24/1$ .  
*Temorella affinis* POPPE.  $5/7$  *r*.  
*Podon polyphemoides* LEACH.  $15/7$  +.  
*Limacina balea* MÖLLER.  $4/1$  *cc*.  
*Ptychocylis acuta* BRANDT.  $24/1$ ;  $10/2$  *r*.  
*Tintinnopsis beroidea* STEIN.  $4/1$  *r*;  $4/4$  *r*.  
*T. fistularis* MÖEB.  $28/7$  *r*;  $21/8$  *r*.  
*T. ventricosa* CLAP. & LACHM.  $25/4$  *r*;  $18/12$  *r*.  
*Tintinnus acuminatus* CLAP. & LACHM.  $6/12$  *rr*.  
*Acanthometron quadrifolium* HKL.  $31/7$  *r*.  
*Plectophora arachnoïdes* CLAP. & LACHM.  $24/1$  *r*;  $21/10$  *r*;  $7/11$  *r*.  
*Dictyocha fibula* EHB.  $20/5$  *r*;  $18/12$  *r*.  
*Ceratium lineatum* EHB.  $13/12$  *r*.  
*Diplopsalis lenticula* BERGH.  $21/10$  *rr*.  
*Gonyaulax spinifera* CLAP. & LACHM.  $7/11$  *rr*.  
*Peridinium pellucidum* BERGH.  $4/4$  *r*.  
*Protoceratium reticulatum* CLAP. & LACHM.  $30/8$  *rr*.  
*Pyrophacus horologium* STEIN.  $30/8$  *rr*.  
*Dinobryum pellucidum* LEVANDER.  $4/4$  +;  $14/4$  +;  $29/5$  *r*.  
*Xanthidium brachiolatum* MÖEB.  $26/6$  *r*;  $5/7$  *r*.  
*X. hystrix* CL.  $18/1$  *r*;  $8/6$  *r*.  
*X. multispinosum* MÖEB.  $29/5$  *rr*;  $31/7$  *r*;  $30/8$  *rr*.  
*Chaetoceros criophilus* CASTR.  $23/4$  *r*;  $7/11$  *rr*.  
*C. lacinosus* SCHÜTT.  $7/11$  *c*;  $17/11$  *r*.  
*C. similis* CL.  $17/11$  *r*;  $18/12$  *r*.  
*C. subtilis* CL.  $10/8$  *r*.  
*C. teres* CL.  $10/2$  *r*;  $17/2$  *r*;  $7/11$  *r*.  
*Coscinodiscus excentricus* EHB.  $6/12$ ;  $18/12$ ;  $28/12$  *r*.

- Coscinodiscus radiatus* EHB.  $4/1 r$ ;  $18/1 +$ ;  $20/5 r$ ;  $7/11 r$ ;  $17/11 r$ .  
*Nitzschia seriata* CL.  $23/2 +$ ;  $1/3 +$ ;  $16/3 +$ ;  $4/4 r$ .  
*C. stellaris* ROPER.  $7/11 r$ ;  $17/11 r$ ;  $18/12 r$ ;  $28/12 r$ .  
*Rhizosolenia obtusa* HENSEN.  $24/3 rr$ .  
*Eucampia zodiacus* EHB.  $23/4 +$ ;  $25/4 +$ ;  $29/5 rr$ .  
*R. Stolterfothii* H. PER.  $5/10 +$ .  
*Lauderia annulata* CL.  $23/4 c$ ;  $25/4 c$ ;  $18/12 r$ .  
*Thalassiosira gelatinosa* HENSEN.  $10/2 r$ ;  $7/11 rr$ ;  $18/12 r$ ;  $28/12 r$ .  
*Leptocylindrus danicus* CL.  $17/2 rr$ ;  $16/3 r$ ;  $4/4 r$ ;  $29/5 r$ .

## Species excluded from the Table VI.

Plymouth 1899.

- Corycaeus venustus* DANA.  $14/11 rr$ .  
*Isias clavipes* BOECK.  $14/6 r$ .  
*Microsetella atlantica* BRADY & ROBERTS.  $17/1 r$ .  
*Onca media* GIESBR.  $8/12$  and  $9/12 rr$ .  
*O. minuta* GIESBR.  $17/1 r$ ;  $3/2 r$ ;  $3/3 rr$ ;  $8/12 rr$ .  
*O. subtilis* GIESBR.  $7/3 rr$ .  
*Parapontella brevicornis* BRADY.  $20/3 rr$ ;  $12/4 r$ .  
*Amphorella subulata* EHB.  $28/7 r$ .  
*Cyttarocylis Claparedii* V. DAD.  $4/8 r$ .  
*Tintinnopsis beroidea* STEIN.  $20/2 r$ ;  $3/3 +$ .  
*T. ventricosa* CLAP. & LACHM.  $7/3 +$ ;  $24/5 +$ ;  $18/8 r$ .  
*Dinophysis acuta* EHB.  $11/8 r$ .  
*D. homunculus* STEIN.  $24/8 rr$ .  
*Peridinium exiguum* CL.  $4/8 rr$ .  
*P. Michaëlis* EHB.  $4/8 rr$ .  
*P. pellucidum* BERGH.  $27/4 rr$ .  
*P. vexans* MURRAY & WHITTING.  $5/6 rr$ ;  $4/8 r$ .  
*Xanthidium hystrix* CL.  $1/5 r$ ;  $29/6 rr$ ;  $4/8 rr$ ;  $18/8 r$ .  
*Cerataulina Bergonii* H. PER.  $29/6 r$ ;  $28/7 +$ ;  $24/8 +$ .  
*Chaetoceros debilis* CL.  $12/4 +$ ;  $27/4 r$ ;  $31/8 +$ .  
*C. furcellatus* BAIL.  $12/4 r$ ;  $27/4 r$ .  
*C. Lorenzianus* GRUN.  $24/8 r$ .  
*C. socialis* LAUDER.  $25/10 +$ .  
*Corethron hystrix* HENSEN.  $30/3 r$ .  
*Coscinodiscus radiatus* EHB.  $14/3 +$ .  
*Lauderia annulata* CL.  $4/4 +$ ;  $13/10 r$ .  
*Lithodesmium undulatum* EHB.  $31/8 r$ .  
*Rhizosolenia alata* BTW.  $10/10 r$ .  
*Streptothecca thamesis* SHRUBS.  $24/8 r$ ;  $7/10 r$ .  
*Thalassiosira gelatinosa* HENSEN.  $20/3 r$ .  
*T. Nordenskiöldii* CL.  $12/4 c$ ;  $27/4 +$ ;  $1/5 rr$ .

## Species excluded from the Table VII.

St Vaast la Hogue 1898—1899.

- Acartia Clausii* GIESBR.  $4/6 +$ .  
*Centropages hamatus* LILLJEB.  $4/6 r$ ;  $15/3 +$ .  
*Oithona similis* CLAUS.  $8/11 +$ .  
*Pseudocalanus elongatus* BOECK.  $4/6 r$ ;  $21/1 r$ ;  $15/3 +$ .  
*Peridinium oceanicum* VANHÖFF.  $18/6 r$ .  
*Bellerochea malleus* BTW.  $8/11 r$ ;  $21/11 rr$ .  
*Chaetoceros borealis* BTW.  $21/1 rr$ .  
*C. contortus* SCHÜTT.  $6/6 r$ ;  $12/8 +$ .  
*C. danicus* CL.  $6/7 r$ ;  $8/3 r$ .  
*C. Schüttii* CL.  $12/8 rr$ .  
*Coscinodiscus radiatus* EHB.  $6/2 r$ ;  $28/2 r$ ;  $15/3 r$ .  
*Leptocylindrus danicus* CL.  $6/7 r$ ;  $9/7 r$ ;  $12/8 r$ .  
*Navicula membranacea* CL.  $6/2 rr$ .  
*Rhizosolenia setigera* BTW.  $21/1 rr$ ;  $6/2 r$ .  
*Skeletonema costatum* GREV.  $6/2 +$ ;  $28/2 r$ ;  $8/3 r$ .  
*Thalassiothrix Frauenfeldii* GRUN.  $6/2 +$ ;  $28/2 c$ .

## Species excluded from the Table VIII.

Helder 1899.

- Pseudocalanus elongatus* BOECK.  $5/1 r$ ;  $4/2 r$ .  
*Podon polyphemoides* LEACH.  $23/6 r$ .  
*Tintinnopsis ventricosa* CLAP. & LACHM.  $4/8 c$ ;  $15/9 r$ .  
*Peridinium ovatum* POUCHET.  $13/4 r$ .  
*Pyrophacus horologium* STEIN.  $25/8 r$ ;  $7/9 r$ ;  $15/9 r$ .  
*Hexasterias problematica* CL.  $30/3 r$ .

- Xanthidium hystrix* CL.  $^{28}/_9$  r.  
*Asterionella japonica* CL.  $^{17}/_3$  rr.  
*Bacteriastrium varians* LAUDER  $^{28}/_9$  rr.  
*Chaetoceros danicus* CL.  $^{17}/_3$  r.  
*C. decipiens* CL.  $^2/_6$  rr.  
*C. diadema* EHB.  $^4/_2$  r;  $^{17}/_3$  cc.  
*C. didymus* EHB.  $^6/_7$  r.  
*C. Schüttii* CL.  $^6/_7$  +;  $^{17}/_7$  +.  
*C. teres* CL.  $^4/_2$  rr;  $^{17}/_3$  r.  
*Coscinodiscus excentricus* EHB.  $^{17}/_3$  r;  $^{30}/_3$  r;  $^{13}/_4$  r.  
*Lithodesmium undulatum* EHB.  $^6/_7$  r;  $^{15}/_9$  r;  $^{28}/_9$  c.  
*Rhizosolenia setigera* BTW.  $^{17}/_3$  r;  $^{27}/_5$  r.  
*Skeletonema costatum* GREV.  $^{10}/_3$  r;  $^{17}/_3$  +.  
*Thalassiosira gelatinosa* HENSEN.  $^{17}/_3$  rr.

### Species excluded from the Table IX.

Väderöboda 1899.

- Fritillaria borealis* LOHM.  $^{27}/_3$  c.  
*Clione limacina* PHIPPS.  $^8/_1$  rr.  
*Limacina balea* MÖLL.  $^{13}/_1$  r;  $^{16}/_{10}$  +.  
*Metridia hibernica* BRADY & ROBTS.  $^6/_12$  rr.  
*Oithona plumifera* BAIRD.  $^8/_1$  r;  $^{21}/_2$  rr.  
*Temorella affinis* POPPE.  $^{18}/_5$  r.  
*Podon intermedius* LILLJEB.  $^{11}/_9$  r.  
*Tomopteris helgolandica* GREFF.  $^6/_12$  rr.  
*Ptychocylis acuta* BRANDT.  $^{13}/_1$  rr;  $^{21}/_2$  rr;  $^{27}/_3$  r.  
*Tintinnopsis campanula* EHB.  $^{24}/_7$  r;  $^{16}/_{10}$  rr.  
*Tintinnus acuminatus* CLAP. & LACHM.  $^{21}/_{12}$  rr.  
*Acanthometron quadrifolium* HKL.  $^7/_8$  r.  
*Ceratium lineatum* EHB.  $^{16}/_{10}$  r;  $^{26}/_{10}$  r.  
*Dinophysis acuta* EHB.  $^{31}/_7$  rr.  
*Xanthidium hystrix* CL.  $^{24}/_7$  r.  
*Achnantes tæniata* GRUN.  $^{13}/_2$  rr.  
*Biddulphia mobilensis* BAIL.  $^8/_1$  rr;  $^{16}/_{11}$  rr;  $^6/_12$  rr.  
*Cerataulina Bergonii* H. PER.  $^{24}/_7$  rr.  
*Chaetoceros danicus* CL.  $^9/_5$  c;  $^{18}/_5$  cc.  
*C. lacinosus* SCHÜTT.  $^7/_11$  rr;  $^6/_11$  +;  $^{21}/_{12}$  r.  
*C. seiracanthus* GRAN.  $^8/_3$  r;  $^{21}/_{12}$  r.  
*C. teres* CL.  $^{21}/_2$  rr;  $^{28}/_8$  r;  $^7/_11$  r.  
*Coscinodiscus oculus iridis* EHB.  $^8/_1$  r;  $^8/_3$  r.  
*C. polychordus* GRAN.  $^{21}/_2$  +;  $^{21}/_{12}$  +.  
*C. radiatus* EHB.  $^8/_1$  r;  $^3/_2$  r.  
*Eucampia zodiacus*.  $^{26}/_{10}$  r;  $^6/_11$  rr.  
*Lauderia annulata* CL.  $^{21}/_4$  r.  
*Leptocylindrus danicus* CL.  $^{27}/_3$  r;  $^{12}/_6$  r.  
*Nitzschia seriata* CL.  $^8/_3$  r;  $^{16}/_3$  r;  $^6/_11$  r.  
*Rhizosolenia delicatula* CL.  $^{19}/_6$  rr.  
*R. setigera* BTW.  $^7/_11$  r;  $^{21}/_{12}$  r.  
*R. Shrubsolei* CL.  $^{26}/_{10}$  r;  $^6/_11$  r.  
*R. Stolterfothii* H. PER.  $^{16}/_{10}$  +.  
*Thalassiosira gelatinosa* HENSEN.  $^{21}/_{12}$  r.  
*T. gravida* CL.  $^{21}/_2$  c;  $^{28}/_2$  r;  $^8/_3$  +.  
*Thalassiothrix longissima* CL. & GRUN.  $^{13}/_1$  c;  $^{16}/_3$  r;  
 $^{12}/_6$  rr.



# TABLES.

Table I. The North Sea

Date	5	5	6	6	7	7	8	8	3
Lat. N. .	57° 51'	57° 53'	58° 12'	58° 25'	58° 47'	58° 37'	57° 6'	56° 14'	56° 8'
Long.	9° 50' E.	8° 8' E.	4° 4' E.	1° 51' E.	2° 37' W.	5° 5' W.	6° 13' W.	6° 42' W.	2° 32' W.
Temperature	5,2	3,5	5,0	7,0	6,4	7,2	7,6	7,9	6,4
Salinity	34,67	32,51	33,92	35,41	35,06	34,57	34,62	34,29	34,67
<i>Acartia Clausii</i> GIESBR.	—	c	+	—	rr	r	—	—	—
<i>Calanus finmarchicus</i> GUNN.	—	—	+	+	—	r	—	—	r
<i>Centropages typicus</i> KRÖYER .	—	r	—	—	—	—	—	—	—
<i>Corycaeus anglicus</i> LUBB.	—	—	—	—	—	—	—	—	—
<i>Oithona similis</i> CLAUS . . . . .	+	+	—	—	r	r	—	—	—
<i>Paracalanus parvus</i> CLAUS . . . . .	r	—	—	—	—	r	—	—	—
<i>Pseudocalanus elongatus</i> BOECK . . . . .	c	—	—	—	rr	+	—	—	—
<i>Temora longicornis</i> O. F. MÜLL. . . . .	c	c	—	—	—	—	—	—	—
<i>Sagitta bipunctata</i> QUOI & GAIM. . . . .	+	+	—	—	—	—	—	—	—
<i>Tintinnopsis ventricosa</i> CLAP. & LACHM. . . . .	—	r	—	—	—	r	—	—	—
<i>Acanthomethron pellucidum</i> J. MÜLL. . . . .	—	rr	rr	—	r	—	rr	—	rr
<i>Plectophora arachnoides</i> HKL. . . . .	rr	—	—	—	—	—	—	—	—
<i>Distephanus speculum</i> EHB.	—	r	—	—	—	—	—	—	—
<i>Halosphæra viridis</i> SCHMITZ . . . . .	r	c	c	+	r	—	—	—	—
<i>Ceratium furca</i> DUJ. . . . .	c	c	c	r	—	—	—	—	—
<i>C. fusus</i> DUJ. . . . .	r	c	r	—	—	—	rr	—	—
<i>C. tripos</i> NITZSCH . . . . .	cc	c	cc	r	r	—	rr	—	r
var. <i>hucephala</i> CL. . . . .	r	+	+	rr	—	—	—	—	—
var. <i>longipes</i> BAIL. . . . .	+	r	+	+	—	—	—	—	r
var. <i>macroceros</i> EHB. . . . .	cc	r	c	r	—	—	—	—	—
<i>Dinophysis acuta</i> EHB. . . . .	—	+	r	r	—	—	—	—	—
<i>Diplopsalis lenticula</i> BERGH. . . . .	—	—	r	—	—	—	—	—	—
<i>Gonyaulax spinifera</i> CLAP. & LACHM. . . . .	—	+	rr	—	—	—	—	—	—
<i>Peridinium depressum</i> BAIL. . . . .	—	+	—	+	—	—	—	—	—
<i>P. divergens</i> EHB. . . . .	+	—	+	—	—	—	—	—	—
<i>Pyrophacus horologium</i> STEIN . . . . .	rr	—	rr	—	—	—	—	—	—
<i>Biddulphia mobilensis</i> BAIL. . . . .	r	—	—	r	r	r	rr	—	—
<i>Chaetoceros atlanticus</i> CL. . . . .	r	r	—	r	—	—	—	—	—
<i>C. decipiens</i> CL. . . . .	r	r	—	+	r	—	—	—	—
<i>Coscinodiscus concinnus</i> W. SM. . . . .	r	+	—	r	r	+	rr	—	—
<i>C. excentricus</i> EHB. . . . .	—	—	—	—	—	r	rr	r	—
<i>C. oculus iridis</i> EHB. . . . .	—	r	rr	—	—	—	—	—	—
<i>C. radiatus</i> EHB. . . . .	+	r	r	+	—	—	—	r	—
<i>Ditylum Brightwellii</i> WEST. . . . .	r	r	—	—	—	—	—	—	—
<i>Rhizosolenia styliformis</i> BTW. . . . .	—	—	—	—	—	—	—	—	—
<i>Planktontype</i> . . . . .	Trp.	Trp. Nh.	Trp. Nh.	Nh. Na.	O.	(Nc.)	O.	O.	O.

in February 1899.

4	4	4	4	4	4	5	5	5	3	3	3	3	3
56° 17'	56° 26'	56° 35'	56° 43'	56° 52'	57° 1'	57° 10'	57° 19'	57° 34'	55° 19'	55° 33'	55° 46'	55° 59'	56° 13'
1° 11' W.	0° 10' E.	1° 32' E.	2° 53' E.	4° 14' E.	5° 35' E.	6° 46' E.	8° 7' E.	9° 41' E.	0° 44' W.	0° 8' E.	1° 4' E.	2° 4' E.	3° 3' E.
6,6	6,6	6,7	6,6	6,1	6,0	5,9	5,1	5,0	6,2	7,3	6,8	6,8	6,2
34,96	35,10	35,08	35,13	35,10	35,25	33,95	33,97	34,60	34,88	35,08	34,62	35,08	34,40
—	—	rr	—	—	r	—	+	—	—	—	—	r	—
c	—	r	—	+	+	+	+	—	+	r	c	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	r	—	—	—	—	—
r	—	—	—	—	—	—	r	r	—	—	—	+	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
+	—	+	—	c	+	c	c	r	c	c	c	c	—
—	—	+	—	—	—	—	+	r	c	c	—	+	—
—	—	—	—	+	+	—	—	r	+	c	c	c	—
—	—	—	—	—	—	rr	—	—	—	—	—	—	—
—	r	—	—	—	—	—	—	rr	rr	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	r	—	—	—
+	—	r	—	r	—	r	+	r	—	—	—	—	—
—	—	—	+	+	—	r	c	c	r	+	+	c	c
—	—	r	r	r	—	r	r	r	—	r	—	—	r
—	r	+	+	c	—	c	cc	c	r	+	+	c	c
—	—	—	r	+	—	+	+	+	r	—	—	—	+
—	—	—	—	—	—	+	r	—	—	—	—	—	—
—	—	+	r	c	—	c	+	c	r	+	+	cc	c
—	—	—	r	—	—	—	rr	—	r	c	r	rr	—
—	—	—	—	—	—	—	—	—	—	r	—	rr	—
—	—	—	—	—	—	—	—	r	—	—	—	—	—
—	r	r	—	—	—	r	r	r	r	—	—	r	—
—	—	—	r	—	r	r	r	r	r	+	+	r	—
—	—	—	—	—	—	—	—	—	—	—	—	r	—
r	—	—	—	—	—	—	—	r	—	—	—	—	—
—	—	—	—	—	—	—	—	rr	—	—	—	—	rr
rr	r	—	—	—	—	—	—	—	—	—	—	—	rr
r	r	+	—	+	—	r	—	r	—	—	—	c	—
r	—	—	—	—	—	—	—	—	—	—	—	—	+
+	—	—	—	r	—	r	r	—	—	—	—	—	—
—	r	r	—	—	—	—	—	r	+	+	—	—	+
—	—	—	—	—	—	—	—	r	—	—	—	—	—
—	—	—	—	—	—	—	—	r	—	—	—	—	—
(Nh. Ns.)	O.	(Tp. Nc.)	(Tp.)	Tp. (Nc.)	(Ns.)	Tp.	Tp.	Tp.	(Tp.)	(Tp.)	(Tp.)	Tp. Nc.	Tp.

Table I (continued). The North Sea

Date . . . . .	3	4	4	4	4	4	4	4
Lat. N.	56° 26'	56° 39'	56° 51'	57° 4'	57° 14'	57° 43'	56° 31'	56° 10'
Long.	4° E.	5° E.	6° E.	7° 3' E.	8° 32' E.	9° 58' E.	7° 44' E.	7° 13' E.
Temperature . . . . .	6,2	6,2	5,6	5,4	—	5,8	6,0	6,0
Salinity	34,88	33,71	34,35	34,72	—	34,72	34,72	34,11
<i>Acartia Clausii</i> GIESBR. . . . .	—	—	—	—	—	+	+	—
<i>Calanus finmarchicus</i> GUNN. . . . .	—	—	—	+	—	r	—	—
<i>Centropages typicus</i> KRÖYER . . . . .	—	—	—	—	—	—	r	—
<i>Corycæus anglicus</i> LUBB. . . . .	—	—	—	—	—	—	r	r
<i>Oithona similis</i> CLAUS . . . . .	—	—	—	c	—	—	—	—
<i>Paracalanus parvus</i> CLAUS . . . . .	—	—	—	—	—	—	—	—
<i>Pseudocalanus elongatus</i> BOECK . . . . .	+	c	r	cc	c	c	+	rr
<i>Temora longicornis</i> O. F. MÜLL. . . . .	+	—	—	—	—	c	—	—
<i>Sagitta bipunctata</i> QUOI & GAIM. . . . .	—	c	—	—	c	+	r	—
<i>Tintinnopsis ventricosa</i> CLAP. & LACHM. . . . .	—	—	—	—	—	—	—	—
<i>Acanthomethron pellucidum</i> J. MÜLL. . . . .	—	—	—	—	—	—	—	—
<i>Plectophora arachnoides</i> HKL . . . . .	—	—	—	rr	—	—	—	—
<i>Distephanus speculum</i> EHB. . . . .	—	r	—	r	—	—	—	—
<i>Halosphæra viridis</i> SCHMITZ . . . . .	—	r	—	c	—	—	—	—
<i>Ceratium furca</i> DUJ. . . . .	cc	cc	cc	cc	c	+	r	—
<i>C. fusus</i> DUJ. . . . .	r	r	r	r	+	r	—	r
<i>C. tripos</i> NITZCH. . . . .	cc	cc	c	c	cc	c	r	r
var. <i>bucephala</i> CL. . . . .	—	+	+	r	+	r	—	—
var. <i>longipes</i> BAIL. . . . .	—	r	—	r	—	r	—	—
var. <i>macroceros</i> EHB. . . . .	cc	cc	cc	cc	ccc	c	—	r
<i>Dinophysis acuta</i> EHB. . . . .	—	r	+	r	r	—	—	—
<i>Diplopsalis lenticula</i> BERGH . . . . .	r	—	—	—	—	—	—	—
<i>Gonyaulax spinifera</i> CLAP. & LACHM. . . . .	—	—	—	—	—	r	—	—
<i>Peridinium depressum</i> BAIL. . . . .	—	—	r	r	—	—	—	—
<i>P. divergens</i> EHB. . . . .	+	+	c	—	+	—	—	—
<i>Pyrophagus horologium</i> STEIN . . . . .	—	r	r	rr	—	—	—	—
<i>Biddulphia mobilensis</i> BAIL. . . . .	—	—	—	—	—	r	—	—
<i>Chaetoceros atlanticus</i> CL. . . . .	—	rr	—	rr	—	—	—	—
<i>C. decipiens</i> CL. . . . .	—	—	—	—	—	—	—	—
<i>Coscinodisens concinnus</i> W. SM. . . . .	r	+	+	c	r	r	r	—
<i>C. excentricus</i> EHB. . . . .	r	+	r	—	r	r	—	r
<i>C. oculus iridis</i> EHB. . . . .	—	—	—	—	—	—	—	—
<i>C. radiatus</i> EHB. . . . .	—	—	r	+	—	—	+	—
<i>Ditylum Brightwellii</i> WEST. . . . .	—	—	—	—	—	—	—	—
<i>Rhizosolenia styliformis</i> BTW. . . . .	—	—	—	—	—	—	—	—
<i>Planktontype</i> . . . . .	Tp.	Tp. (Nc.)	Tp. (Nc.)	Tp. Nc. Nh.	Tp.	Tp.	O.	O.

in February 1899.

4	4	5	5	10	18	18	19	2	2	2	3	3	3
55° 32'	54° 25'	53°	52° 30'	52° 52'	54° 57'	56° 44'	57° 40'	57° 31'	57° 5'	56° 27'	55° 48'	55° 8'	54° 35'
6° 45' E.	5° 40' E.	4° 30' E.	3° 57' E.	4° 19' E.	7° 45' E.	7° 22' E.	9° 57' E.	9° 26' E.	8° 33' E.	7° 53' E.	7° 29' E.	7° 33' E.	8° 5' E.
5,0	7,0	7,0	7,0	7,0	4,8	5,0	—	4,9	3,4	5,0	3,8	4,2	3,6
33,11	34,93	34,57	34,48	34,50	29,67	34,00	—	34,60	33,61	34,12	32,79	33,11	30,40
+	rr	+	r	—	c	c	—	—	—	—	—	—	—
—	—	—	—	—	—	rr	—	—	—	r	+	—	—
r	—	—	—	r	—	—	+	—	—	—	—	r	—
r	—	—	—	—	+	rr	—	—	—	—	—	+	—
—	—	—	—	r	—	—	+	—	—	—	+	+	—
—	rr	+	—	c	—	—	—	—	—	—	—	—	—
c	rr	—	—	+	+	cc	+	c	+	c	+	+	—
c	—	c	—	—	+	c	+	r	c	—	—	c	—
—	—	—	—	—	—	—	r	—	+	+	—	—	—
r	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
rr	—	—	—	—	—	—	—	—	—	r	—	rr	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
+	r	r	—	—	r	r	—	—	—	—	+	—	—
—	—	—	—	—	c	+	+	+	—	+	+	c	—
+	—	—	—	r	+	+	+	+	—	+	—	c	—
—	—	—	—	—	—	—	—	—	—	—	rr	—	—
—	—	—	—	—	c	rr	+	—	—	r	—	—	—
—	—	—	—	—	—	—	—	r	—	+	c	+	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
r	—	—	—	—	—	—	r	—	—	—	r	—	—
r	—	—	—	—	—	—	r	—	r	r	—	r	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	r	—	—	r	c	—	+	r	—	r	+	+	r
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	r	—	—	—	c	+	cc	r	+	+	+	c	+
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	r	—	—	—	—	—	—	—	—	—	r	—
—	—	—	—	—	—	—	—	—	—	—	—	c	—
—	r	—	—	—	r	+	+	+	c	+	+	—	c
—	—	—	—	—	—	—	r	—	—	—	r	r	—
—	—	—	—	—	—	—	r	—	r	—	r	—	r
Tp. (Nm.)	O.	O.	O.	O.	Ne. Ns.	Tp. Ne.	Ne.	(Tp. Ne.)	(Ne. Tp.)	(Ne. Tp.)	(Ne. Tp.)	Tp. Ne.	Ne.

Table II. The North Sea

Month	4	4	4	4	4	4	5
Date	28	28	29	29	30	30	1
Lat. N.	57° 45'	58° 9'	58° 27'	58° 48'	58° 40'	57° 14'	55° 37'
Long.	8° 37' E.	4° 50' E.	1° 39' E.	2° 3' W.	4° 37' W.	7° 6' W.	6° 49' W.
Temperature	—	5,5	6,5	7,0	9,0	8,5	8
Salinity	—	31,50	35,18	35,00	34,57	34,79	34,38
<i>Acartia Clansii</i> GIESBR.	—	—	r	—	r	r	+
<i>A. longiremis</i> LILLJEB.	+	—	—	—	—	—	—
<i>Calanus finmarchicus</i> GUNN.	c	+	c	—	c	c	+
<i>Centropages hamatus</i> LILLJEB.	+	—	r	—	—	—	—
<i>Oithona similis</i> CLAUS	—	r	r	—	r	—	—
<i>Pseudocalanus elongatus</i> BOECK	—	r	c	—	+	—	—
<i>Temora longicornis</i> O. F. MÜLL.	+	—	—	—	—	c	—
<i>Evadne Nordmannii</i> LOVÉN	+	r	—	—	—	—	—
<i>Halosphæra viridis</i> SCHMITZ	r	r	—	—	—	—	—
<i>Ceratium furca</i> DUJ.	r	r	—	—	—	r	—
<i>C. fusus</i> DUJ.	r	r	—	—	—	—	—
<i>C. longipes</i> BAIL.	c	cc	—	—	—	—	—
<i>C. macroceros</i> EHB.	r	r	—	—	—	—	—
<i>C. tripos</i> NITZSCH	cc	cc	—	—	—	—	—
<i>Dinophysis acuta</i> EHB.	+	r	—	—	—	—	—
<i>Gonyaulax spinifera</i> CLAP. & LACHM.	—	—	—	—	rr	—	—
<i>Peridinium depressum</i> BAIL.	c	+	—	—	—	r	+
<i>P. ovatum</i> POUCHET	—	—	—	—	—	+	r
<i>P. pellucidum</i> BEGGH.	—	—	—	—	—	+	r
<i>Asterionella japonica</i> CL.	—	—	—	r	—	—	—
<i>Biddulphia mobilensis</i> BAIL.	—	—	—	—	—	—	r
<i>Cerataulina Bergonii</i> H. PER.	—	—	—	—	—	—	—
<i>Chaetoceros atlanticus</i> CL.	—	—	—	—	—	—	—
<i>C. borealis</i> BRW.	—	—	+	—	—	—	—
<i>C. curvisetus</i> CL.	—	—	+	—	—	—	r
<i>C. debilis</i> CL.	—	—	c	c	ccc	—	c
<i>C. decipiens</i> CL.	—	—	ccc	+	+	—	r
<i>C. densus</i> CL.	—	—	rr	—	—	—	—
<i>C. didymus</i> EHB.	—	—	—	—	—	—	—
<i>C. hiemalis</i> CL.	—	—	—	—	—	—	r
<i>C. scolopendra</i> CL.	—	—	—	—	r	—	+
<i>Coscinodiscus concinnus</i> W. SM.	—	—	r	—	—	—	—
<i>C. oculus iridis</i> EHB.	—	—	—	—	—	—	—
<i>C. radiatus</i> EHB.	—	—	—	—	—	—	+
<i>Ditylum Brightwellii</i> WERT.	—	—	—	r	+	—	—

n April—May 1899.

5	4	4	4	4	4	4	4	4	4	4	4
1	28	28	29	29	29	29	29	29	29	29	29
54° 15'	56° 17'	56° 30'	56° 37'	56° 43'	56° 49'	56° 55'	57° 2'	57° 8'	57° 34'	57° 3'	56° 53'
5° 11' W.	1° 43' W.	0° E.	1° 15' E.	2° 30' E.	3° 45' E.	5° E.	6° 14' E.	7° 28' E.	9° 24' E.	7° 45' E.	6° 14' E.
8,5	7	7	7	8	7	6	6	6	6	6,5	6,1
34,36	34,89	35,00	35,17	34,79	34,74	34,94	35,00	34,91	34,21	35,00	35,00
c	r	+	—	rr	r	—	—	r	+	—	—
—	—	—	—	r	—	—	—	r	—	r	r
c	r	+	—	r	r	—	—	r	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	+	—	—	r	—	—	—	—	r	—
+	—	—	—	—	—	—	—	+	—	—	r
+	—	—	—	—	—	—	—	r	—	r	r
—	—	—	—	—	—	—	—	—	—	—	—
—	—	r	r	—	c	—	r	+	r	r	+
—	—	—	—	+	r	r	+	r	—	r	r
—	—	—	r	r	—	—	r	—	—	r	r
—	—	—	—	r	+	r	—	—	+	+	+
—	—	—	—	r	r	—	+	—	—	—	—
—	—	—	+	ccc	c	r	+	+	—	c	c
—	—	—	r	—	rr	—	+	r	r	r	r
—	—	r	—	—	—	—	r	—	—	—	—
—	—	+	+	—	+	—	+	—	—	r	r
—	cc	c	c	c	c	—	c	—	—	r	—
—	r	+	r	—	—	—	+	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	+	—	—	—	—	—	—	r	—	—
rr	—	—	r	—	rr	—	—	—	—	r	—
—	—	—	—	—	r	—	—	—	—	—	—
—	—	—	r	—	+	—	—	—	—	r	—
—	—	+	c	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	r	—	+	—	+	—	—	—	—	—	—
—	—	—	r	—	+	—	—	—	+	—	—
—	r	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	rr	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	r
—	—	—	—	+	—	—	—	—	—	—	—
+	r	—	—	r	—	—	r	+	r	—	—
—	r	+	rr	—	—	—	—	—	r	—	—

Table II (continued). The North-Sea

Month .	4	4	4	4	4	4	5
Date . . . . .	28	28	29	29	30	30	1
<i>Eucampia zodiacus</i> EHB.	—	—	—	—	—	—	—
<i>Guinardia flaccida</i> CASTR.	—	—	—	—	—	—	—
<i>Lauderia annulata</i> CL.	—	—	+	+	+	r	r
<i>Navicula membranacea</i> CL.	—	—	—	—	—	—	—
<i>Nitzschia seriata</i> CL. . . . .	—	—	+	+	r	—	—
<i>Rhizosolenia semispina</i> HENSEN	—	—	r	r	—	—	r
<i>R. Shrubsolei</i> CL.	—	—	r	r	—	—	—
<i>R. Stolterfothii</i> H. PER.	—	—	—	—	—	—	—
<i>R. styliformis</i> BTW. . . . .	—	—	r	—	—	—	—
<i>Stephanopyxis turgida</i> GREV. . . . .	—	—	—	—	—	—	—
<i>Thalassiosira gravida</i> CL. . . . .	—	—	—	r	—	—	—
<i>T. Nordenskiöldii</i> CL. . . . .	—	—	—	c	+	cc	c
<i>Thalassiothrix longissima</i> CL. & GUN.	—	—	—	—	—	—	—
<i>Plankton type</i> . . . . .	Ns. Tp.	Tp. Ns.	C.	Ns. Si.	Ns. (Si.)	Si.	Si.



1 April—May 1899.

5	4	4	4	4	4	4	4	4	4	4	4
1	28	28	29	29	29	29	29	29	29	29	29
—	—	—	rr	—	—	—	rr	—	—	—	—
—	r	r	c	—	—	ccc	cc	ccc	cc	ccc	c
—	c	c	—	—	+	r	—	—	r	—	—
—	rr	—	rr	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	+	r	+	—	—	—	—	—	—	—	—
—	—	—	—	—	r	—	—	—	—	r	—
—	r	r	+	—	r	—	rr	—	—	r	—
—	r	+	r	—	r	r	rr	r	cc	r	r
—	—	—	rr	—	—	—	—	—	r	—	—
—	r	c	c	—	—	—	—	—	—	—	—
—	—	—	+	—	—	—	—	—	—	rr	—
—	—	—	c	—	+	—	rr	rr	—	rr	—
S. Ns.	Ns.	Ns. S.	T. Ns.	Tp. Ns.	Ns. Nh.	Nm.	Nm. Ns.	Nm. (Ns.)	S. Nm.	Nm.	{ Tp. Nm. } { Nh. Ns. }

Table II (continued). The North Sea

Month . . . . .	4	4	4	5	4	4	4
Date . . . . .	30	30	30	1	29	29	30
Lat. N. . . . .	56° 30'	56° 7'	55° 39'	55°	57° 39'	57° 47'	57° 28'
Long. . . . .	4° 30' E.	2° 48' E.	1° 10' E.	0° 29' W.	11° 26' E.	10° 33' E.	9° 27' E.
Temperature . . . . .	6	7	7	6	6,5	6,3	6,3
Salinity . . . . .	34,96	35,10	35,10	34,79	23,12	33,20	33,95
Acartia Clausii GIESBR. . . . .	r	r	—	r	—	—	—
A. longiremis LILLJEB. . . . .	—	—	—	r	—	—	—
Calanus finmarchicus GUNN. . . . .	—	—	—	—	—	—	—
Centropages hamatus LILLJEB. . . . .	—	—	—	—	—	—	—
Oithona similis CLAUS . . . . .	—	r	r	r	—	—	—
Pseudocalanus elongatus BOECK . . . . .	+	c	+	+	—	—	—
Temora longicornis O. F. MÜLL. . . . .	r	+	—	r	—	—	—
Evadne Nordmannii LOVÉN . . . . .	—	—	—	—	—	—	—
Halosphæra viridis SCHMITZ . . . . .	—	—	—	—	—	—	—
Ceratium furca DUJ. . . . .	r	—	—	—	—	—	—
C. fusus DUJ. . . . .	r	r	—	—	—	—	—
C. longipes BAIL. . . . .	+	r	—	—	—	rr	—
C. macroceros EHB. . . . .	r	—	—	—	—	—	—
C. tripos NITZSCH . . . . .	+	c	—	—	r	—	—
Dinophysis acuta EHB. . . . .	r	—	r	r	r	—	—
Gonyaulax spinifera CLAP. & LACHM. . . . .	—	—	r	r	—	—	r
Peridinium depressum BAIL. . . . .	r	—	—	r	—	—	—
P. ovatum POUCHET . . . . .	r	—	r	c	—	—	—
P. pellucidum BERGH. . . . .	—	—	—	—	—	rr	r
Asterionella japonica CL. . . . .	—	—	—	—	—	rr	rr
Biddulphia mohilensis BAIL. . . . .	—	—	—	—	—	—	—
Cerataulina Bergonii H. PER. . . . .	—	r	r	—	r	r	—
Chaetoceros atlanticus CL. . . . .	—	r	r	—	—	—	—
C. borealis BRW. . . . .	—	cc	ccc	—	—	—	—
C. curvisetus CL. . . . .	—	—	r	+	—	—	—
C. debilis CL. . . . .	—	—	c	—	—	—	—
C. decipiens CL. . . . .	—	rr	c	—	+	rr	r
C. densus CL. . . . .	—	+	r	—	—	r	r
C. didymus EHB. . . . .	—	—	r	r	—	—	r
C. hiemalis CL. . . . .	—	—	—	—	c	r	—
C. scolopendra CL. . . . .	—	—	—	—	—	—	—
Coscinodiscus concinnus W. SM. . . . .	—	—	r	—	—	—	—
C. oculus iridis EHB. . . . .	—	—	—	—	—	—	—
C. radiatus EHB. . . . .	—	—	r	r	—	—	+
Ditylum Brightwellii WERT. . . . .	—	—	—	rr	—	ccc	c



Table II (continued). The North Sea

Month . . . . .	4	4	4	5	4	4	4
Date . . . . .	30	30	30	1	29	29	30
<i>Eucampia zodiacus</i> EHB. . . . .	—	—	rr	—	—	r	—
<i>Guinardia flaccida</i> CASTR. . . . .	+	ccc	e	—	—	—	e
<i>Lauderia annulata</i> CL. . . . .	—	—	e	—	—	c	+
<i>Navicula membranacea</i> CL. . . . .	—	—	—	—	—	—	—
<i>Nitzschia seriata</i> CL. . . . .	—	—	—	—	—	—	—
<i>Rhizosolenia semispina</i> HENSEN . . . . .	—	—	—	r	e	—	—
<i>R. Shrubsolei</i> CL. . . . .	—	—	—	—	—	r	—
<i>R. Stolterfothii</i> H. PER. . . . .	r	—	—	r	—	—	—
<i>R. styliformis</i> Brw. . . . .	rr	c	—	—	—	+	e
<i>Stephanopyxis turgida</i> GREV. . . . .	—	—	—	—	—	—	r
<i>Thelassiosira gravida</i> CL. . . . .	—	—	—	+	—	—	—
<i>T. Nordenskiöldii</i> CL. . . . .	—	—	—	rr	—	—	—
<i>Thalassiothrix longissima</i> CL. & GUN. . . . .	—	—	—	—	—	—	—
<i>Plankton type</i> . . . . .	Tr. Ns.	{ Nm. Tp. } { S. Ns. }	C. Ns. (Nm.)	Ns.	Ns. C.	Nm.	Nm. S.

n April—May 1899.

4	4	4	4	4	4	4	4	5	5	5	5
30	30	30	30	30	29	29	30	7	13	20	21
r	—	—	—	—	r	r	r	—	—	—	rr
r	—	—	—	—	r	r	+	—	—	+	+
—	e	+	—	—	—	r	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	r	—	r	—	—	—	—
—	—	—	—	—	+	—	—	r	—	r	—
r	—	—	—	—	r	—	—	—	r	—	r
—	—	—	—	—	—	—	—	—	—	—	rr
r	r	—	—	—	r	+	e	—	c	c	c
rr	—	—	—	—	—	e	c	—	—	—	—
rr	—	+	—	r	—	—	r	—	—	—	—
rr	rr	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Nm. (Ns.)	Nm. (Ns.)	Ns. C. Nm.	Ns. C.	(Ns.)	Ns. (Nm.)	Nm. S. Ns.	Ns. S.	Nm. Ns.	S.	S. (Ns.)	S.



in July—August 1899.

8	8	8	8	7	7	7	7	7	7	7	7	7	7
22	23	23	24	28	28	29	29	29	29	29	29	28	29
58° 25'	58° 6'	57° 38'	57° 53'	56° 14'	56° 22'	56° 31'	56° 40'	56° 49'	56° 58'	57° 4'	57° 11'	55° 10'	55° 34'
0° 28' E.	3° 44' E.	7° 2' E.	10° 13' E.	2° 2' W.	0° 36' W.	0° 50' E.	2° 18' E.	3° 44' E.	5° 2' E.	6° 33' E.	8° E.	1° 16' W.	0° 59' E.
15,0	14,0	15,4	—	12	15	15	15,5	16	16,5	16	16	14,5	16
35,08	32,51	30,38	—	34,38	34,71	35,10	35,06	34,33	33,32	32,96	29,76	34,36	34,83
—	—	—	—	—	—	—	—	—	—	—	r	+	+
+	—	—	—	r	cc	+	r	r	+	r	—	c	cc
—	—	—	—	—	—	r	—	—	—	—	—	—	—
—	—	+	+	+	c	—	+	+	—	+	—	—	+
—	—	—	—	—	—	—	—	—	+	—	r	+	—
c	+	—	+	—	—	r	—	—	r	—	—	—	c
—	—	—	—	—	—	r	—	—	—	—	—	—	—
—	+	+	—	—	c	+	e	+	c	c	+	cc	cc
c	—	c	+	—	—	—	r	—	+	—	r	—	cc
—	—	—	+	+	c	—	+	—	+	—	+	ccc	—
c	c	c	c	+	+	+	c	+	—	—	c	ccc	c
—	—	—	—	—	+	+	c	+	—	r	+	—	—
—	—	—	—	—	—	—	—	—	—	—	+	—	—
—	—	—	—	—	+	+	+	—	+	—	—	r	+
r	—	r	r	—	—	—	—	r	—	r	—	r	+
—	—	—	—	—	+	—	—	—	+	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	cc	—	—	—	—	—	+	—	—	—	—	—	—
cc	cc	—	—	—	—	—	—	r	r	r	—	—	—
—	—	—	—	+	—	—	—	r	r	r	r	r	—
—	—	—	—	+	+	—	—	—	+	—	—	r	—
+	r	cc	ccc	—	—	r	—	+	+	r	c	—	—
c	—	ccc	cc	+	—	r	c	+	—	c	+	r	r
rr	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	r	c	—	—	—	—	—	—	—	—
—	r	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	+
Tp.	Tp.	Tp.	Tp.	Tp.	Ns. S.	Tp.?	Tp.	Tp.	(Tp.) (Ns.)	Tp.	Tp.	Ns. S.	S. Ns.

Table III (continued). The North Sea

Month . . . . .	7	7	7	7	7	7
Day . . . . .	29	29	30	30	30	31
Lat. N. . . . .	55° 54'	56° 15'	56° 31'	56° 57'	57° 25'	57° 44'
Long. . . . .	2° 23' E.	4° 9' E.	5° 52' E.	7° 37' E.	9° 6' E.	10° 52' E.
Temperature . . . . .	16	16	16	16,5	15,8	16,5
Salinity . . . . .	35,03	33,78	33,61	31,01	29,41	29,53
<i>Oikopleura dioica</i> FOL.	+	+	—	+	+	+
<i>Acartia Clausii</i> GIESBR.	+	+	+	+	—	+
<i>Anomalocera Patersonii</i> BRADY & ROBTS.	—	—	—	rr	—	—
<i>Calanus finmarchicus</i> GUNN.	c	c	c	c	+	—
<i>Centropages hamatus</i> LILLJEB.	—	—	—	—	+	—
<i>C. typicus</i> KRÖYER.	c	+	c	+	—	+
<i>Corycaeus anglicus</i> LUBBOCK	—	r	r	—	—	—
<i>Oithona similis</i> CLAUS	cc	c	c	cc	cc	c
<i>Paracalanus parvus</i> CLAUS	c	c	c	c	—	c
<i>Pseudocalanus elongatus</i> BOECK	—	—	c	c	c	—
<i>Temora longicornis</i> O. F. MÜLL.	+	cc	—	—	cc	+
<i>Evadne Nordmannii</i> LOVÉN	—	r	—	r	—	—
<i>E. spinifera</i> P. E. MÜLL.	—	r	—	—	r	—
<i>Podon intermedius</i> LILLJEB.	—	—	+	—	—	—
<i>Sagitta bipunctata</i> QUOI & GAIM.	r	+	+	+	+	—
<i>Cyttarocyclus denticulata</i> EHB.	—	—	—	—	r	—
<i>Tintinnus Steenstrupii</i> CLAP. & LACHM.	—	—	—	r	r	r
<i>Acanthometron quadrifolium</i> HKL.	—	—	—	+	rr	—
<i>Ceratium furca</i> DUJ.	+	r	—	—	—	—
<i>C. fusus</i> DUJ.	—	—	—	—	—	—
<i>C. longipes</i> BAIL.	—	—	—	—	—	—
<i>C. macroceros</i> EHB.	c	c	c	+	c	c
<i>C. tripos</i> NITZSCH	c	c	—	c	c	c
<i>Dinophysis acuta</i> EHB.	—	—	—	r	+	+
<i>Diplopsalis lenticula</i> BERGH	—	—	—	r	r	—
<i>Peridinium depressum</i> BAIL.	—	—	—	—	r	—
<i>P. divergens</i> EHB.	—	r	—	r	r	+
<i>Rhizosolenia gracillima</i> CL.	—	—	—	cc	cc	+
<i>Planktontype</i>	Tp.	Tp.	Tp.	Tp. Nm.	Tp. Nm.	Tp. (Nm).



in July-August 1899.

7	7	7	7	7	7	8	8	8	8	8	8	8	8
29	29	29	30	30	30	2	2	2	2	3	3	3	3
54° 13'	55° 7'	55° 59'	57° 7'	57° 29'	57° 39'	51° 48'	52° 36'	53° 28'	54° 18'	55° 6'	55° 43'	56° 32'	57° 16'
8° 4' E.	7° 35' E.	7° 37' E.	8° 28' E.	9° 31' E.	10° 26' E.	3° 23' E.	3° 57' E.	4° 39' E.	5° 36' E.	6° 26' E.	7° 4' E.	7° 52' E.	8° 31' E.
17	17,3	17	17	16,8	16,5	—	18,2	18,2	16,5	16	16,8	15,3	15,0
31,19	32,82	33,97	30,91	29,65	29,17	—	35,27	33,46	34,40	33,87	31,65	31,13	31,70
—	c	c	+	—	—	—	—	—	—	+	+	+	—
c	+	+	—	—	+	—	—	+	—	—	—	—	+
—	—	rr	rr	—	—	—	—	—	—	—	r	—	—
—	r	—	—	—	r	—	—	r	r	+	—	+	—
+	r	+	c	c	+	+	—	—	—	—	r	+	—
—	—	—	r	—	c	—	—	—	—	—	c	c	—
r	+	—	—	—	—	—	—	—	—	r	—	rr	—
—	—	+	c	c	cc	—	—	+	+	—	c	c	c
c	c	c	c	—	c	c	—	c	c	c	cc	cc	c
—	+	—	r	+	—	—	—	—	—	+	—	+	—
c	+	+	c	cc	—	c	+	c	—	—	—	r	cc
—	—	—	r	+	e	—	—	+	+	r	—	c	+
—	—	—	+	—	+	—	—	—	c	+	c	c	c
—	—	—	—	—	—	—	—	—	r	—	—	—	r
—	—	e	r	c	r	c	—	—	—	+	—	+	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	rr	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	r	r	—	—	—	—	—	r	r	r
c	—	—	—	—	—	—	—	—	—	—	—	—	—
r	—	—	—	—	—	—	—	—	—	—	—	—	—
+	+	—	—	—	—	—	—	—	—	—	—	—	—
r	r	c	cc	c	cc	r	—	—	+	+	c	c	cc
+	—	+	+	cc	cc	r	—	—	+	r	+	+	r
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	r	—	—	—	—	—	—	—	—	—
+	—	—	—	—	—	—	—	—	—	—	—	—	—
Nm.	Nm. (Ns.)	Nm. Tp.	Tp. Ns.	Tp.	Tp.	Nm. Ns.	O.	Nm.	Tp.	(Tp.) Nm.	Tp.	Tp.	Tp.

Table IV. The North Sea

Date	3	4	4	5	6
Latitude N.	57° 54'	57° 46'	57° 55'	58° 19'	58° 42'
Longitude . . .	6° 51' E.	3° 41' E.	2° 20' E.	0° 55' W.	4° 32' W.
Temperature	10,5	9,5	9,5	10,5	11
Salinity . . . . .	32,91	35,12	35,24	35,22	34,86
Proto pedata LEACH.	—	—	—	—	—
Acartia Clausii GIESBR. .	—	—	+	r	+
A. longiremis LILLJEB. . .	—	—	—	—	—
Calanus finmarchicus GUNN.	—	—	+	r	+
Centropages typicus KRÖYER .	+	+	c	—	—
Corycæus anglicus LUBB. . .	r	—	r	—	—
Euterpe acutifrons DANA	—	—	—	—	—
Microsetella atlantica BRADY & ROBS.	—	—	—	r	r
Oithona similis CLAUS .	+	+	c	r	+
Paracalanus parvus CLAUS .	+	+	c	—	+
Pseudocalanus elongatus BOECK .	+	+	+	+	c
Temora longicornis O. F. MÜLL. .	+	+	—	—	+
Sagitta hipunctata QUOI & GAIM. .	—	—	c	r	—
Tintinnopsis ventricosa CLAP. & LACHM.	—	—	—	—	+
Acanthochiasma fusiforme HKL.	—	—	—	—	—
Halosphæra (small) . . . . .	r	r	—	r	r
Ceratium (tripos var.) hucephala CL.	r	r	r	—	—
C. furca DUJ. . . . .	+	cc	c	—	—
C. fusus DUJ. . . . .	+	c	c	+	—
C. (trip. var.) longipes BAIL. .	—	—	—	r	—
C. macroceros EHB.	ccc	cc	ccc	+	+
C. tripos NETZSCH	ccc	c	+	+	r
Dinophysis acuta EHB. . . . .	—	r	r	r	—
Diplopsalis lenticula BERGH	—	—	—	—	—
Peridinium depressum BAIL. . . . .	r	r	—	—	—
P. divergens EHB. . . . .	—	r	r	r	—
Pyrophacus horologium STEIN . . . . .	—	—	ff	—	—
Biddulphia mobilensis BAIL. . . . .	—	—	—	—	—
Choctoceros decipiens CL.	ff	—	—	r	—
C. dcnsus CL. . . . .	ff	—	—	—	—
Coscinodiscus concinnus W. SM.	—	—	—	—	—
C. excentricus EHB. . . . .	—	—	—	r	—
C. radiatus EHB. . . . .	—	r	—	c	+
Ditylum Brightwellii WEST. . . . .	r	—	—	—	—
Guinardia flaccida CASTR. . . . .	r	—	—	—	—
Rhizosolenia calcar avis SCHULZE . . . . .	ff	—	—	—	—
R. Stolterfothii H. PER. . . . .	r	—	—	—	—
R. styliformis BTW. . . . .	r	—	—	—	—
Streptothera thamesis SHRUBS.	—	—	—	—	—
Plankton type . . . . .	Tp.	Tp.	Tp.	(Tp.)	(Tp.) (Ns.)

in November 1899.

8	9	9	9	3	3	4	4	4	4	4	4
57° 54'	55° 50'	54° 14'	53° 52'	56° 13'	56° 22'	56° 35'	56° 48'	57° 10'	57° 17'	57° 24'	57° 31'
6° 30' W.	6° 44' W.	5° 6' W.	4° 27' W.	1° 28' W.	0° 10' E.	1° 7' E.	2° 24' E.	3° 48' E.	5° 12' E.	6° 36' E.	8° E.
11	12	12	11	10	9,75	9,75	10	10,5	10	9,5	9,5
34,83	34,94	34,36	34,45	34,50	34,53	37,41	34,69	35,55	35,05	35,03	35,00
—	—	—	—	—	—	—	—	—	—	—	—
r	—	r	+	r	+	c	+	+	—	—	—
—	—	—	—	—	+	+	—	—	—	—	—
+	—	+	—	r	+	c	r	—	—	—	—
—	—	—	—	+	—	c	+	—	—	c	—
—	—	—	—	—	—	—	—	+	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	+	—	r	—	—	—	—	—	—	—
+	—	—	—	r	—	+	r	+	—	+	—
+	—	—	—	—	—	—	—	—	r	—	—
+	—	+	r	+	+	+	+	c	r	+	—
—	—	—	—	+	+	c	r	c	r	+	—
—	—	r	—	r	r	c	+	—	r	+	—
cc	+	+	r	—	—	—	—	—	—	—	—
—	—	—	—	r	r	+	r	—	—	—	—
r	—	—	—	—	—	—	—	r	—	r	—
—	—	—	—	—	—	—	—	+	c	—	—
—	—	c	r	r	+	r	+	r	+	c	+
—	—	+	—	r	—	—	—	r	+	+	+
—	r	r	—	r	r	—	—	—	—	—	r
—	—	—	—	—	+	+	c	c	c	cc	c
—	+	r	—	+	+	+	c	c	cc	c	c
—	—	r	—	—	—	—	—	—	—	rr	r
—	—	—	—	—	—	—	—	—	—	—	r
—	—	r	—	—	r	—	r	r	r	—	r
—	—	r	—	—	—	—	—	—	r	+	r
—	—	—	—	r	—	—	—	r	—	rr	—
—	—	+	r	—	—	—	—	—	—	—	—
—	rr	r	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	r	—	—	—	—	—	—	—	—
—	r	c	r	—	—	—	—	—	—	—	—
—	+	c	r	—	—	—	—	—	—	rr	—
—	—	+	r	—	—	—	—	—	—	—	—
—	—	+	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	+	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	r	r	r	—	—	—	—	—	—	—	—
Ns.	Ns.?	Nm.	(Nm.?)	Tp.?	(Tp.)	Tp.	Tp.	Tp.	Tp.	Tp.	Tp.

Table IV (continued). The North Sea

Date . . . . .	1	4	4	4
Latitude N. . . . .	55° 13'	55° 35'	56°	56° 24'
Longitude . . . . .	0° 35' W.	1° 1' E.	2° 44' E.	4° 25' E.
Temperature . . . . .	10,5	10	10,5	11,25
Salinity . . . . .	34,71	34,89	35,00	34,62
Proto pedata LEACH	—	—	—	—
Acartia Clausii GIESER. . . . .	+	—	—	—
A. longiremis LILLJEB.	c	r	—	r
Calanus finmarchicus GUNN.	+	—	r	r
Centropages typicus KRÖYER . . . . .	c	—	+	+
Corycæus anglicus LUBB. . . . .	—	rr	—	—
Euterpe acutifrons DANA . . . . .	—	—	—	—
Microsetella atlantica BRADY & ROBERTS. . . . .	—	—	—	—
Oithona similis CLAUS . . . . .	+	r	r	r
Paracalanus parvus CLAUS . . . . .	—	—	—	—
Pseudocalanus elongatus BOECK	c	—	+	+
Temora longicornis O. F. MÜLL. . . . .	+	+	+	+
Sagitta bipunctata QUOI & GAIM. . . . .	—	ccc	c	—
Tintinnopsis ventricosa CLAP. & LACHM.	—	—	—	—
Acanthochiasma fusiforme HKL. . . . .	cc	cc	—	—
Halosphæra (small) . . . . .	—	—	—	r
Ceratium (trip. var.) bucephala CL. . . . .	—	—	cc	c
C. furca DUJ. . . . .	c	c	r	—
C. fusus DUJ. . . . .	+	—	—	—
C. (trip. var.) longipes BAIL. . . . .	—	—	—	—
C. macroceros EHB. . . . .	c	c	cc	c
C. tripos NITZSCH . . . . .	c	c	—	cc
Dinophysis acuta EHB. . . . .	—	r	r	r
Diplopsalis lenticula BERGH . . . . .	—	r	—	—
Peridinium depressum BAIL. . . . .	—	r	—	—
P. divergens EHB. . . . .	—	r	+	+
Pyrophacus horologium STEIN . . . . .	—	—	—	—
Biddulphia mobileosis BAIL. . . . .	—	—	—	—
Chatoceros decipiens CL. . . . .	—	—	—	—
C. densus CL. . . . .	—	—	—	+
Coscinodiscus concionus W. SM. . . . .	—	—	r	—
C. excentricus EHB. . . . .	r	—	—	r
C. radiatus EHB. . . . .	—	—	—	—
Ditylum Brightwellii WEST. . . . .	—	—	—	—
Guinardia flaccida CASTR. . . . .	r	—	r	—
Rhizosolenia calcar avis SCHULZE	—	—	—	—
R. Stolterfothii H. PER. . . . .	—	—	—	—
R. styliformis BTW. . . . .	—	—	—	—
Streptotheca thamesis SHRUBS. . . . .	—	—	—	—
Planktontype . . . . .	Tp.	Tp.	Tp.	Tp.

in November 1999.

5	5	5	4	5	5	5	5	6	6	6	6
56° 48'	57° 10'	57° 34'	57° 30'	57° 2'	56° 31'	55° 58'	55° 27'	54° 52'	55° 40'	52° 58'	52° 15'
6° 1' E.	7° 40' E.	9° 21' A.	9° 20' E.	8° 9' E.	7° 35' E.	7° 2° E.	6° 22' E.	5° 38' E.	4° 48' E.	4° 25' E.	3° 45' E.
12,2	11,75	11,2	10,2	11,1	11,4	11,2	11,6	12,2	12,2	12	12,6
34,50	34,47	34,29	34,36	33,99	33,83	33,35	33,97	34,53	33,90	33,90	34,89
—	r	—	—	—	—	—	r	+	+	—	r
—	e	r	—	r	r	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
r	—	r	—	—	—	—	—	—	—	r	—
r	+	r	r	—	—	r	—	—	r	e	r
+	+	—	—	r	r	r	c	r	r	—	—
—	—	—	—	e	—	e	c	r	c	+	—
—	—	—	—	—	—	—	—	—	—	—	—
+	—	r	r	+	—	r	+	r	c	+	—
—	+	e	r	+	+	c	c	—	+	+	e
c	e	+	—	r	r	r	+	r	—	—	—
+	e	+	r	—	—	—	+	+	—	c	e
+	c	+	—	e	e	r	+	—	—	—	—
—	—	—	—	—	—	—	—	—	+	—	—
r	—	—	—	—	—	—	—	—	—	—	—
r	—	—	—	—	—	—	—	—	—	—	—
r	e	+	—	—	—	—	—	—	—	—	—
+	—	—	+	+	+	+	c	+	—	r	—
—	r	r	r	—	—	r	+	—	—	r	—
—	—	—	—	—	—	—	—	—	r	r	—
+	e	cc	c	—	—	+	c	r	—	—	—
e	e	cc	e	r	+	c	e	r	—	—	—
—	—	—	—	—	—	—	rr	—	—	—	—
—	—	—	—	—	—	—	—	—	r	r	—
—	—	—	—	—	—	—	—	—	—	—	—
r	r	—	r	—	—	r	—	—	—	—	—
—	—	—	—	r	—	—	—	—	r	—	—
—	r	—	—	r	—	—	+	r	+	—	—
—	—	r	rr	—	—	—	—	—	—	—	—
—	r	+	—	—	—	—	—	—	c	—	—
—	r	—	—	r	—	—	—	—	—	—	—
—	—	—	—	—	—	—	c	e	—	r	—
—	r	—	—	+	+	+	c	—	r	+	—
—	—	—	+	r	+	+	+	e	+	r	—
r	—	+	+	+	+	+	c	+	+	cc	c
—	—	—	—	r	r	r	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	cc	c
r	—	—	r	r	r	r	e	r	r	—	—
—	—	—	—	—	—	—	—	rr	—	—	—
Tp.	Tp.	Tp.	Tp.	Nm.	Nm. Tp.	Tp. Nm.	Tp. S. Nm.	Nm.	Nm.	Nm.	Nm.





Table V (continued)

Month . . . . .	1	1	1	1	2	2	2	3	3	3	4	4	4	4	4
Day . . . . .	4	13	18	24	10	17	23	1	16	24	4	13	21	23	25
<i>C. daniens</i> CL. . . . .	—	—	—	—	—	—	—	—	—	—	—	r	—	r	—
<i>C. debilis</i> CL. . . . .	—	—	—	—	—	e	c	e	e	—	+	—	—	—	—
<i>C. decipiens</i> CL. . . . .	—	r	r	r	+	r	+	+	+	—	cc	c	+	+	+
<i>C. densus</i> CL. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—
<i>C. diadema</i> EHB. . . . .	—	—	—	r	+	+	c	c	c	c	+	+	—	—	—
<i>C. didymus</i> EHB. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>C. hiemalis</i> CL. . . . .	—	—	—	—	—	—	r	—	—	—	r	—	r	—	—
<i>C. Schüttii</i> CL. . . . .	—	—	r	—	—	—	—	—	—	—	—	—	—	—	—
<i>C. scolopendra</i> CL. . . . .	—	r	—	—	+	r	+	r	—	+	—	—	r	—	—
<i>C. socialis</i> LAUD. . . . .	—	—	—	r	r	c	c	c	ccc	—	—	—	—	—	—
<i>Coscinodiscus concinnus</i> W. SM. . . . .	c	cc	c	+	ccc	ccc	cc	—	—	—	—	+	—	+	—
<i>C. oculus iridis</i> EHB. . . . .	—	+	+	—	e	e	—	+	r	—	—	—	—	—	—
<i>C. polychordus</i> GRAN. . . . .	—	—	r	r	r	r	+	r	—	—	—	—	—	—	—
<i>Ditylum Brightwellii</i> WEST. . . . .	—	—	+	—	—	—	—	—	—	—	—	—	—	+	+
<i>Guinardia flaccida</i> H. PER. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+
<i>Rhizosolenia calcar avis</i> SCHULZE . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	r	—
<i>R. gracillima</i> CL. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>R. semispina</i> HENSEN . . . . .	—	r	r	—	r	r	r	r	c	c	c	c	+	—	—
<i>R. setigera</i> BTW. . . . .	—	—	—	—	—	—	—	—	—	—	r	—	r	—	—
<i>R. Shrubsolei</i> CL. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r
<i>R. styliformis</i> BTW. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	cc	c
<i>Skeletonema costatum</i> GREV. . . . .	—	rr	r	—	—	r	—	—	r	—	—	—	—	—	—
<i>Stephanopyxis turgida</i> GREV. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r
<i>Thalassiosira gravida</i> CL. . . . .	—	—	—	—	—	r	+	r	r	+	—	—	—	—	—
<i>T. Nordensköldii</i> CL. . . . .	—	rr	—	—	c	c	cc	cc	+	cc	—	—	—	rr	—
<i>Thalassiothrix Fraunfeldii</i> GRUN. . . . .	—	+	c	c	c	r	—	r	r	—	—	—	r	—	—
<i>T. longissima</i> CL. & GRUN. . . . .	—	rr	—	—	rr	rr	—	—	—	rr	—	—	—	—	—
<i>Planktontype</i> . . . . .	{ Tp. Ns. Nc.	{ Tp. Ns. Nc.	{ Tp. Ns. Nc.	{ Tp. Ns. (Nc.)	{ Nc. Ns. Si.	{ Nc. Ns. Si.	{ Si. Nc. Nc.	{ Si. Nc. Nc.	{ Si. Nc. Nc.	{ Si. Si.	{ C. Ns.	{ C. Ns.	{ C. Ns.	{ S. Nm. Ns.	{ S. Nm. Ns.



Åreskär 1899.

5	5	5	6	6	6	7	7	7	7	8	8	8	9	9	9	10	10	11	11	12	12	12
8	20	29	8	15	26	5	15	22	31	10	21	30	8	16	25	5	21	7	17	6	18	28
cc	cc	r	c	—	c	+	—	—	—	—	—	—	—	r	—	—	—	—	—	r	r	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	cc	cc	cc	r	+	—
r	r	rr	r	r	—	—	—	—	—	—	—	—	—	rr	—	—	—	r	—	r	r	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	rr	rr	—	r	rr	rr
—	—	—	r	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	—	—	—	—
—	—	—	—	r	—	—	—	—	—	r	—	rr	cc	cc	cc	—	cc	c	cc	+	+	—
+	cc	c	+	+	—	—	—	—	—	—	—	—	—	+	—	—	—	+	c	—	—	—
—	—	—	c	r	—	—	—	—	—	c	+	ccc	ccc	ccc	cc	—	cc	—	—	—	—	—
rr	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	r	—	—	—
—	—	—	—	—	—	—	—	—	—	r	—	—	—	ccc	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	cc	cc	—	r	—	—	—	—	—	—	—	—	—	—	—	r
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	rr	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	r	r	—
—	—	r	r	—	—	—	—	—	—	—	—	—	—	—	—	—	+	r	r	rr	r	rr
—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	—	—	—	+	r	r	—	rr
—	r	—	r	—	—	—	—	—	—	—	rr	—	—	r	—	—	—	—	—	rr	—	—
—	—	—	—	+	c	+	—	—	cc	r	+	r	r	+	—	—	r	—	r	—	r	—
+	c	—	r	r	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	+	—	+	—
—	r	+	+	r	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	r	c	r	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	r	—	—	—	r	—	—	—	—	—	—	—	—	—	r	r	—
—	—	rr	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	—	—	—	r	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	r	+	r	—	r	—	—	—	—	—	—	—	—	—	—	—	rr	—	—	rr	—
—	—	rr	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nm.	Nm.	Nm.	Nm.	Ns.	Tp.	Tp.	Tp.	Tp.	Tp.	Tp.	Tp.	Tp.	Nm.	Nm.	Nm.	Tp.	Nm.	Nm.	Nm.	Tp.	Tp.	Tp.
vs.	Ns.	S.	Ns.	Nm.	Nm.	Nm.	Nc.	Nc.	Nm.	(Nm.)	(Nm.)	Nm.	Si.	Nm.	Nm.	(Ns.)	(Ns.)	Ns.	(Nm.)	Nm.	Ns.	—

Table VI

Month	1	2	2	2	2	3	3	3	3	3	4	4	4	4	5	5	5	5	5
Day . . . . .	17	3	15	20	24	3	7	14	20	30	4	12	17	27	1	6	12	24	30
Fritillaria borealis LOHM.	—	—	—	—	—	—	r	—	r	—	—	—	—	—	—	—	—	—	—
Acartia Clausii GIESBR.	r	—	—	—	—	—	—	+	cc	c	cc	r	r	r	—	—	r	r	+
Calanus finmarchicus GUNN.	—	—	—	—	—	—	—	—	—	—	—	—	c	—	—	—	—	+	—
Centropages typicus KRÖYER	—	r	—	—	—	—	—	+	+	—	+	—	—	—	—	—	r	—	—
Corycæus anglicus LUBBOCK	r	—	—	—	+	r	—	—	+	cc	c	+	r	—	—	—	—	—	—
Euterpe acutifrons DANA	r	—	—	—	—	—	—	—	—	+	+	r	—	—	—	—	—	—	r
Oithona similis CLAUS.	r	+	r	—	+	r	+	+	cc	—	+	c	—	r	—	r	—	—	+
Paracalanus parvus CLAUS.	—	—	—	—	+	+	+	+	+	—	—	—	+	—	—	—	—	—	—
Pseudocalanus elongatus BÖCK	—	+	—	—	—	—	—	—	r	—	—	r	+	—	—	—	—	—	—
Temora longicornis O. F. MÜLL.	—	—	—	—	—	—	—	—	+	r	—	c	cc	—	—	—	—	—	—
Evadæ Nordmanni LOVÉN	—	—	—	—	—	—	—	—	—	—	—	—	—	r	c	—	—	—	—
Sagitta bipunctata QUOI & GAIM.	—	r	—	—	—	—	—	—	—	—	—	—	r	—	—	—	—	—	—
Cyttarocylis serratus MÆB.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tintinnopsis campanula EHB.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Noctiluca miliaris SURRAY	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Haloaphæra viridis SCHMITZ	—	+	r	r	c	—	r	+	—	—	—	—	—	—	—	—	—	—	—
Ceratium furca DUJ.	—	—	—	—	—	r	—	—	—	—	—	—	—	—	—	—	—	—	—
C. fusus DUJ.	—	—	—	—	—	r	—	—	r	—	—	—	—	—	—	r	—	c	+
C. longipes BAIL.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
C. macroceros EHB.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
C. tripos NITZSCH.	—	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Diplopsalis lenticula BERGH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Peridinium depressum BAIL.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
P. divergens EHB.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
P. ovatum POUCHET	—	—	—	—	—	—	r	—	—	—	r	r	—	rr	—	—	—	—	—
Phæocystis Pouchetii LAGH.	—	—	—	—	—	—	—	—	—	—	+	ccc	—	ccc	c	+	c	—	—
Asterionella japonica CL.	—	—	—	—	—	r	—	—	—	—	cc	c	—	+	—	—	—	—	—
Biddulphia mobilensis BAIL.	+	—	r	—	c	c	cc	cc	c	c	e	—	—	—	—	—	—	—	—
Chaetoceros curvisetus CL.	—	—	—	—	—	—	—	—	—	—	+	—	—	r	—	—	—	—	—
C. decipiens CL.	r	—	—	—	—	rr	r	c	e	cc	e	—	—	r	r	—	—	—	—
C. densus CL.	—	—	—	—	—	—	—	—	r	—	—	r	—	r	r	—	—	—	—
C. didymus EHB.	r	—	—	—	—	—	—	—	—	—	+	r	—	r	—	—	—	—	—
C. Schüttii CL.	—	—	—	—	—	—	—	—	r	r	+	r	—	—	—	—	—	—	—
C. teres CL.	—	—	—	—	—	—	—	+	c	c	+	—	—	—	—	—	—	—	—
Coccinodiscus concinnus W. SM.	+	—	—	—	—	+	c	e	+	e	e	—	—	—	—	—	—	—	—
C. extenticus EHB.	—	+	r	—	c	cc	cc	+	—	—	—	—	—	—	—	—	—	—	—
C. oculus iridis EHB.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ditylum Brightwelli WEST.	—	—	—	—	+	r	r	r	r	+	+	r	—	r	—	—	—	—	—
Eucampia zodiacus EHB.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Guinardia flaccida CASTR.	—	—	—	—	—	—	—	+	—	+	+	+	c	c	c	r	—	cc	cc
Leptocylindrus danicus CL.	—	—	—	—	—	—	—	—	—	—	—	rr	—	rr	r	—	—	r	—



Table VI (contin)

Month . . . . .	1	2	2	2	2	3	3	3	3	3	4	4	4	4	5	5	5	5	
Day . . . . .	17	3	15	20	24	3	7	14	20	30	4	12	17	27	1	6	12	24	
Rhizosolenia corpulenta CL.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
R. gracillina CL.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
R. robusta BTW.	r	—	—	—	—	—	—	r	—	—	—	—	—	—	—	—	—	—	—
R. Shrubsolei CL.	—	—	—	—	—	—	—	—	—	—	+	—	—	+	c	—	—	—	c
R. Stolterfothii H. PER.	—	—	—	—	—	—	—	—	—	—	—	—	—	rr	—	—	—	—	r
R. styliformis BTW.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Skeletonema costatum GREN.	—	—	—	—	—	r	—	—	—	r	cc	—	—	—	—	—	—	—	—
Stephanopyxis turgida GREN.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Thalassiosira gravida CL.	—	—	—	—	—	r	+	r	—	—	+	c	—	—	—	—	—	—	—
Plankton type .	{ Nm. } { Nc. }	Nh.	O.	O.	{ S. Nm. Nh. }	Nm.	{ Nm. Ns. }	Nm. Nh.	S. Nm. Ns.	Nm. Ns.	Ns. Nm.	C. Ns. }	Ns.	{ C. Ns. }	Nm.	O.	(C.)	Nm.	

Plymouth 1899.

6	6	6	6	7	7	7	7	8	8	8	8	8	9	9	10	10	10	10	10	10	11	11	11	12	12	12	12
5	14	26	29	12	19	24	28	4	11	18	24	31	10	25	7	10	13	19	25	14	23	28	8	14	28	19	
—	—	—	—	—	—	+	+	r	r	r	+	r	c	+	+	cc	c	c	r	—	—	—	—	—	—	—	
—	—	—	—	c	—	cc	cc	ccc	r	e	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	r	—	+	+	+	cc	c	c	r	—	—	—	—	—	—	—	
—	r	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	+	r	—	r	—	—	—	r	—		
r	r	r	—	r	—	+	c	r	—	—	—	—	—	—	—	—	c	—	+	—	—	—	—	—	—		
—	—	—	—	—	—	—	—	—	—	r	—	—	—	—	r	—	—	—	r	—	—	—	—	—	r	—	
—	—	—	—	—	—	—	—	—	—	—	—	cc	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	—	—	r	—	—	—	r	r	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	c	—	+	—	—	—	—	—	—	—	
S. T.	S.	S.	Nm.	Nm.	O.	{ S. Nm. }	{ S. Nm. }	Nm.	(Nm.)	Nm.	Nm.	Ns.	{ Tp. Nm. }	Nm.	(S.)	Nm.	{ Nm. Ns. }	{ Nm. (Ns.) Nc. }	{ C. Ns. Nm. }	?	Nc.	Nc.	{ Nc. Nm. C. }	O.	Nc.	{ C. Nm. }	

Table V

Month .	1	1	1	2	2	2	2	3	3	3	3	4	4	4
Day .	5	13	20	4	11	17	26	3	10	17	30	7	13	20
Temp. . . . .	5,7	5,7	6,1	4,2	5,4	5,7	3,6	5,0	4,9	6,0	6,4	7,6	7,3	8,7
Areom. Density .	1,0248	1,0244	1,0247	1,0252	1,0258	1,0244	1,0239	1,0258	1,0254	1,0248	1,0253	1,0246	1,0241	1,0246
Wind . . . . .	N.W.	S.W.	S.W.	S.W.	S.W.	S.E.	E.	W.	S.W.	W.	N.W.	S.W.	S.E.	S.W.
Tide . . . . .	Ebb.	Ebb.	Flood.	Ebb.	Ebb.	Ebb.	Ebb.	Ebb.	Flood.	Ebb.	—	Flood.	Ebb.	Flood.
<i>Oikopleura dioica</i> FOL. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Acartia Clausii</i> GIESBR. . . . .	rr	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Centropages hamatus</i> LILLJEB. . . . .	rr	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Eutерpe acutifrons</i> DANA . . . . .	—	r	—	—	—	—	—	—	—	—	—	—	—	—
<i>Oithona similis</i> CLAUS. . . . .	r	—	—	r	—	—	—	—	—	—	—	—	—	—
<i>Paracalanus parvus</i> CLAUS. . . . .	rr	—	—	r	—	—	—	—	—	—	—	—	—	—
<i>Temora longicornis</i> O. F. MÜLL. . . . .	r	r	r	r	—	—	—	—	—	—	—	r	—	—
<i>Cyttarocylis serrata</i> MOEB. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Tintinnopsis beroidea</i> STEIN. . . . .	r	r	r	+	—	—	r	—	—	—	r	r	—	r
<i>T. campanula</i> EHB. . . . .	r	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Noctiluca miliaris</i> SURIE. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Ceratium fusus</i> DUJ. . . . .	r	—	r	r	—	—	—	—	—	—	—	—	—	—
<i>C. longipes</i> BAIL. . . . .	r	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Phæocystis Pouchetii</i> LAGH. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	cc
<i>Biddulphia aurita</i> LYNGB. . . . .	rr	—	rr	+	+	+	+	c	cc	+	r	rr	—	—
<i>B. mobilensis</i> BAIL. . . . .	r	—	r	+	r	—	—	r	r	r	r	r	—	—
<i>Cerataulina Bergonii</i> H. PER. . . . .	—	—	—	—	—	—	—	r	r	cc	ccc	—	—	c
<i>Chaetoceros debilis</i> CL. . . . .	—	—	—	r	—	—	—	—	rr	cc	r	—	—	—
<i>C. densus</i> CL. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Coscinodiscus concinnus</i> W. SM. . . . .	r	—	r	—	—	—	—	—	—	—	—	—	—	—
<i>Ditylum Brightwellii</i> WEST. . . . .	—	r	—	—	—	rr	—	—	—	+	—	—	—	r
<i>Eucampia zodiacus</i> EHB. . . . .	—	—	—	—	—	—	—	—	—	+	r	cc	c	c
<i>Guinardia flaccida</i> CASTR. . . . .	—	—	—	—	—	—	—	—	—	c	r	cc	c	c
<i>Rhizosolenia Shrubsolei</i> CL. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	r
<i>R. Stolterfothii</i> H. PER. . . . .	—	—	—	—	—	rr	—	—	—	+	+	+	+	+
<i>Streptothera thamesis</i> SHRUBS. . . . .	—	—	—	+	—	+	—	r	—	—	—	—	—	—
<i>Plankton type</i> . . . . .	(Nc.)	{(Nm.) (Ns.)}	{(Nc.) (Ns.)}	(Ns.)	(Ns.)	(Ns.)	(Ns.)	Ns.	Ns.	{Ns. (Nm.)}	{Nm. (Ns.)}	Nm.	Nm.	Nm. C.

Helder 1899.

5	5	5	5	6	6	6	6	6	7	7	7	8	8	8	8	9	9	9	9
5	13	18	27	2	9	16	23	30	6	17	27	4	10	17	25	1	7	15	28
9,7	10,5	11,7	11,3	13,8	14	15	16,1	16,2	15,6	19,5	18	18,6	19,4	18,3	17,0	17,9	18,1	17,1	14
1,0232	1,0255	1,0230	1,0234	1,0232	1,0238	1,0240	1,0246	1,0245	1,0246	1,0226	1,0242	1,0240	1,0240	1,0252	1,0247	1,0248	1,0237	1,0224	1,0232
N.E.	S.W.	S.W.	N.	S.E.	N.W.	N.	N.E.	N.W.	N.W.	N.W.	N.W.	N.E.	N.	W.N.W.	E.	W.S.W.	E.N.E.	N.W.	W.S.W.
Flood.	Ebb.	Ebb.	Ebb.	Flood.	Ebb.	Ebb.	Flood.	Ebb.	Flood.	Ebb.	—	Flood.	Ebb.	Ebb.	Flood.	Flood.	Ebb.	Flood.	Flood.
—	—	—	—	—	—	—	—	—	—	—	r	—	r	—	—	+	—	—	—
—	—	—	—	—	—	—	r	—	—	—	r	—	—	—	r	+	—	—	—
—	—	—	—	—	r	—	r	—	r	—	—	—	—	—	+	—	—	—	—
—	—	—	—	—	—	—	—	r	+	+	+	—	+	r	+	—	—	—	cc
—	—	—	—	—	—	—	—	r	—	—	—	—	—	—	—	—	—	—	c
—	—	—	—	—	r	—	r	—	r	r	—	—	—	—	r	—	—	—	—
—	—	—	—	—	—	—	—	—	r	—	—	—	—	—	r	—	—	r	r
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	—
—	—	—	—	—	—	—	—	—	+	—	—	—	—	—	r	—	c	—	—
—	—	—	—	—	r	—	r	+	c	cc	ccc	c	c	ccc	+	+	+	r	—
—	—	—	rr	rr	r	—	—	—	—	—	—	—	—	—	—	—	—	r	—
—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	—	+	—	—	—
ccc	ccc	ccc	ccc	ccc	—	—	r	—	—	—	—	—	—	—	—	c	+	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	cc
—	—	—	—	—	—	—	r	—	—	—	—	—	—	—	—	—	—	—	—
rr	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	c	—
—	—	—	—	—	—	—	—	—	r	—	r	—	—	—	r	—	r	r	+
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	c
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	—
r	—	—	r	r	—	r	+	+	—	cc	—	+	r	—	—	—	—	—	—
r	—	—	—	—	—	—	r	—	+	cc	—	r	r	—	—	—	—	—	—
—	—	—	—	—	r	r	+	cc	cc	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
C.	C.	C.	C.	C.	(Nm.)	(Nm.)	Nm.	Nm.	Nm.	Nm.	Nm.	Nm.	Nm.	Nm.	Nm.	Nm.	C.	{ Nm. (Nm.) } { C. Ns. (Nc.) }	Nc.

Table

Month . . . . .	1	1	1	2	2	2	2	3	3	3	4	4	5	5	
Day . . . . .	8	13	24	3	13	21	28	8	16	27	13	21	9	18	
Temperature . . . . .	4	3,5	3,4	2,5	1,8	2,8	2,0	3	4	3	4,4	4,8	8,2	9,5	
Salinity . . . . .	31,01	28,72	30,25	32,49	28,53	28,78	24,20	33,11	30,76	32,97	32,49	31,57	21,71	20,86	EEEEEEEEEEEEEEEE
Oikopleura dioica FOL.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Proto pedata LEACH.	+	r	r	—	—	—	—	—	—	—	—	—	—	—	
Acartia Clausii GIESBR. . . . .	r	—	—	—	—	—	—	—	—	r	—	+	r	—	
A. longiremis LILLJEB. . . . .	—	—	r	+	—	—	—	—	—	+	r	e	e	e	
Anomalocera Patersonii TEMPLT.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Calanus finmarchicus GUNN. . . . .	+	r	—	—	—	—	—	—	r	—	+	e	—	—	
Centropages hamatus LILLJEB.	—	e	+	r	+	—	+	—	—	—	r	e	e	e	
C. typicus KRÖYER. . . . .	—	—	r	—	—	—	—	rr	—	r	—	—	—	—	
Corycæus anglicus LUBB. . . . .	—	rr	—	r	—	—	—	—	—	—	—	—	—	—	
Oithona similis CLAUS . . . . .	e	+	e	+	+	—	—	—	—	—	r	r	+	+	
Paracalanus parvus CLAUS . . . . .	e	—	+	+	—	—	—	—	—	—	—	—	—	—	
Pseudocalanus elongatus BOECK . . . . .	—	+	+	—	—	rr	—	—	—	+	+	+	+	+	
Temora longicornis O. F. MÜLL. . . . .	+	+	e	+	+	rr	e	—	—	+	—	—	e	r	
Evadne Nordmannii LOVÉN . . . . .	—	—	—	—	—	—	—	—	—	—	e	r	—	r	
E. spinifera P. E. MÜLL. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
P. Leuckartii G. O. SARS . . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Sagitta bipunctata QUOI & GAIM.	e	+	+	—	+	—	—	—	—	—	—	—	—	—	
Pleurobrachia pileus FABR. . . . .	—	+	—	—	—	—	—	—	—	—	—	—	—	—	
Cyttarocyclus denticulata EHB. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Plectophora arachnoides CLAP. & LACHM.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Halosphæra viridis SCHMITZ . . . . .	—	+	e	r	r	—	—	—	+	ee	e	e	—	—	
Ceratium (trip. v.) bucephalum CL. . . . .	r	r	r	—	—	—	—	—	—	—	—	r	—	r	
C. furca DUJ. . . . .	—	—	—	—	—	—	—	r	—	—	—	—	—	—	
C. fusus DUJ. . . . .	r	r	r	+	—	—	—	—	—	—	—	—	—	—	
C. longipes BAIL. . . . .	r	r	+	r	+	—	—	r	+	e	+	+	+	+	
C. macroceros EHB. . . . .	+	—	—	r	—	—	—	—	—	—	—	—	—	—	
C. tripos NITZSCH . . . . .	ee	eee	ee	e	e	—	e	r	—	ee	+	+	—	+	
Peridinium depressum BAIL. . . . .	r	—	—	—	—	—	—	—	r	ee	ee	+	—	—	
P. divergens EHB. . . . .	—	r	r	—	—	—	—	—	—	—	—	—	—	—	
Biddulphia aurita LYNGB.	rr	—	—	rr	+	e	+	+	e	r	—	—	—	—	
Chaetoceros borealis BTW.	rr	r	—	—	—	—	—	—	—	—	—	—	—	—	
v. Brightwellii CL.	—	—	—	r	—	—	—	—	—	—	—	—	—	—	
C. coustrictus GRAN	—	—	—	—	—	e	+	—	ee	r	—	e	e	e	
C. contortus SCHÜTT . . . . .	—	—	—	—	—	+	—	+	e	—	—	—	r	—	
C. curvisetus CL.	—	—	—	—	—	r	—	+	—	—	—	—	—	+	
C. debilis CL. . . . .	—	—	—	—	—	+	r	e	—	—	—	—	—	—	
C. decipiens CL. . . . .	rr	—	—	—	r	rr	+	+	ee	+	—	+	+	—	
C. densus CL.	—	—	—	—	—	—	—	—	—	—	—	+	—	—	



Väderöboda.

6	6	6	7	7	7	7	7	8	8	8	8	9	9	9	10	10	10	11	11	12	12
12	19	26	3	10	18	24	31	7	14	22	28	4	11	25	2	16	26	7	16	6	21
11,8	15,2	15,4	17,0	18,0	21,0	20,0	17	17,8	17,8	15,5	16,0	15,8	14,6	13	12	11,4	10,0	10	8,2	6,5	3,0
30,22	28,14	24,23	19,89	26,32	17,11	17,89	25,44	30,08	28,19	31,32	24,17	22,41	30,13	28,45	26,93	30,83	30,10	30,38	30,01	33,01	27,76
—	—	—	—	—	—	cc	—	—	—	+	c	c	c	—	+	+	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	rr	—	—	+	—
r	+	cc	—	+	—	+	+	c	—	—	—	—	—	—	—	c	—	—	r	r	—
+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	r	—	r	—	rr	—	—	—	—	+	—	—	—	—
c	e	e	—	+	—	—	+	c	+	e	—	r	+	r	—	—	+	r	+	+	r
—	+	+	r	c	cc	+	—	—	+	+	—	—	—	—	—	r	+	—	—	—	+
—	r	—	—	—	—	—	+	r	—	c	r	r	+	e	—	e	c	e	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	c	r	r	r	r	—
+	cc	cc	ccc	cc	c	+	—	cc	e	e	e	cc	+	cc	+	+	—	+	—	+	+
—	—	—	cc	+	cc	cc	ccc	cc	cc	cc	cc	cc	c	cc	e	cc	—	c	e	c	+
—	—	+	—	—	—	—	r	+	—	—	r	+	c	+	+	cc	c	+	c	c	+
—	—	c	+	—	e	—	r	c	+	c	—	r	cc	—	r	+	+	r	c	r	+
c	e	cc	e	cc	c	c	—	—	—	—	—	e	cc	—	—	—	—	—	+	—	—
—	—	—	—	—	r	—	—	+	+	r	—	r	—	r	—	—	—	—	—	—	—
r	r	—	r	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	r	+	r	—	r	+	—	e	+	c	+	r	c	c	—	+	+	r	—	+	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	rr	—	—	r	—
r	—	r	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	rr
—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	—	—	r	r	—	r	r
r	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	rr	—	r	r	+	+
r	—	—	—	—	—	—	—	—	—	—	—	r	—	r	r	r	—	+	r	r	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+
+	+	—	—	r	—	—	+	c	—	cc	c	—	ccc	ccc	c	ccc	cc	c	+	c	—
cc	ccc	cc	c	cc	c	c	c	c	e	cc	cc	c	cc	c	c	ccc	cc	c	c	c	e
+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	—	—	—	—	—	—
—	—	—	—	—	—	—	rr	—	—	—	—	—	—	—	r	—	—	—	—	r	—
r	r	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	—	—	—	+
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+
+	+	r	—	r	—	c	—	—	—	—	—	—	—	r	—	+	cc	cc	cc	—	c
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	—	+
r	r	r	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	r	—	—	+

Table IX (continued)

Month . . . . .	1	1	1	2	2	2	2	3	3	3	4	4	5	5
Day . . . . .	8	13	24	3	13	21	28	8	16	27	13	21	9	18
<i>Chaetoceros diadema</i> EHB. . . . .	—	—	—	—	+	c	—	c	c	—	—	—	—	—
<i>C. didymus</i> EHB. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>C. hiemalis</i> CL. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	+
<i>C. Schüttii</i> CL. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>C. scolopendra</i> CL. . . . .	—	—	—	—	—	rr	—	+	—	—	—	—	—	rr
<i>C. socialis</i> LAUDER. . . . .	—	—	—	—	—	c	+	c	r	—	—	—	—	—
<i>Coscinodiscus concinnus</i> W. SM. . . . .	c	c	c	c	ccc	cc	ccc	+	—	—	—	—	—	—
<i>Ditylum Brightwellii</i> WEST. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Guinardia flaccida</i> CASTR. . . . .	—	—	—	—	—	—	—	—	—	—	—	r	—	—
<i>Rhizosolenia calcar avis</i> SCHULZE. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>R. gracillima</i> CL. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>R. semispina</i> HENSEN . . . . .	—	—	r	—	—	+	—	+	+	c	—	—	—	—
<i>R. styliformis</i> BTW. . . . .	—	—	—	—	—	—	—	—	—	—	—	+	—	—
<i>Skeletonema costatum</i> GREV. . . . .	—	—	—	—	—	+	—	—	—	—	—	—	—	—
<i>Stephanopyxis turgida</i> GREV. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Thalassiosira Nordenskiöldii</i> CL. . . . .	—	—	—	—	+	cc	+	ccc	c	c	—	—	—	—
<i>Thalassiothrix Frauenfeldii</i> GRUN. . . . .	+	—	+	—	+	c	—	+	+	—	—	—	—	—
<i>Plankton type</i> . . . . .	Tp. Nc. {	Tp. Nc. {	Tp. Nc. }	Nc. Nc. Si. Nc. Nc. Si. Si. {	C. Ns. Si. Ns. Ns. Si. (Tp.)	Nh. Ns. Ns. (Tp.)	Nh. Ns. Ns. (Tp.)	Nh. Ns. Ns. (Tp.)	Ns. C. Balt. Ns. Balt. }	Ns. Balt. }	Ns. Balt. }	Ns. Balt. }	Ns. Balt. }	Ns. Balt. }

Väderöboda.

6	6	6	7	7	7	7	7	8	8	8	8	9	9	9	10	10	10	11	11	12	12
12	19	26	3	10	18	24	31	7	14	22	28	4	11	25	2	16	26	7	16	6	21
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	c	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	—	r	c	—	—	—	r
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	c	+	—	+
—	—	—	—	—	—	+	—	—	—	—	r	—	—	r	—	r	+	c	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	—	—	—
—	—	—	—	r	c	+	—	—	—	—	—	—	—	—	—	+	—	+	—	+	+
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	rr	r	r	r	r	r
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	—	r	r	r
—	—	—	—	—	—	—	—	rr	—	—	—	r	r	—	—	r	r	—	rr	r	r
—	r	—	—	r	—	+	+	—	—	—	+	—	—	r	—	—	r	—	r	—	c
—	r	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	—	r	r	r	rr	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	r	r	r	r	r
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	r	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	c
Tp.	Tp.	Tp.	Tp.	Tp.	{ Tp. Ne.	Tp. Nm. Ne.	Tp. Nm.	} Tp.	Tp.	Tp.	{ Tp. (Nm.)	} Tp.	Tp.	Tp.	Tp.	Tp.	{ Tp. Nm. (Ns.)	Tp. Nm. (Ns.)	Ns. Nm. (Tp.)	Tp.	{ Tp. Nm. Ns.