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DIATOMS FROM WEST GREENLAND

COLLECTED BY TYGE W. BÖCHER

BY

NIELS FOGED

WITH 3 FIGURES IN THE TEXT, 4 TABLES
AND 13 PLATES

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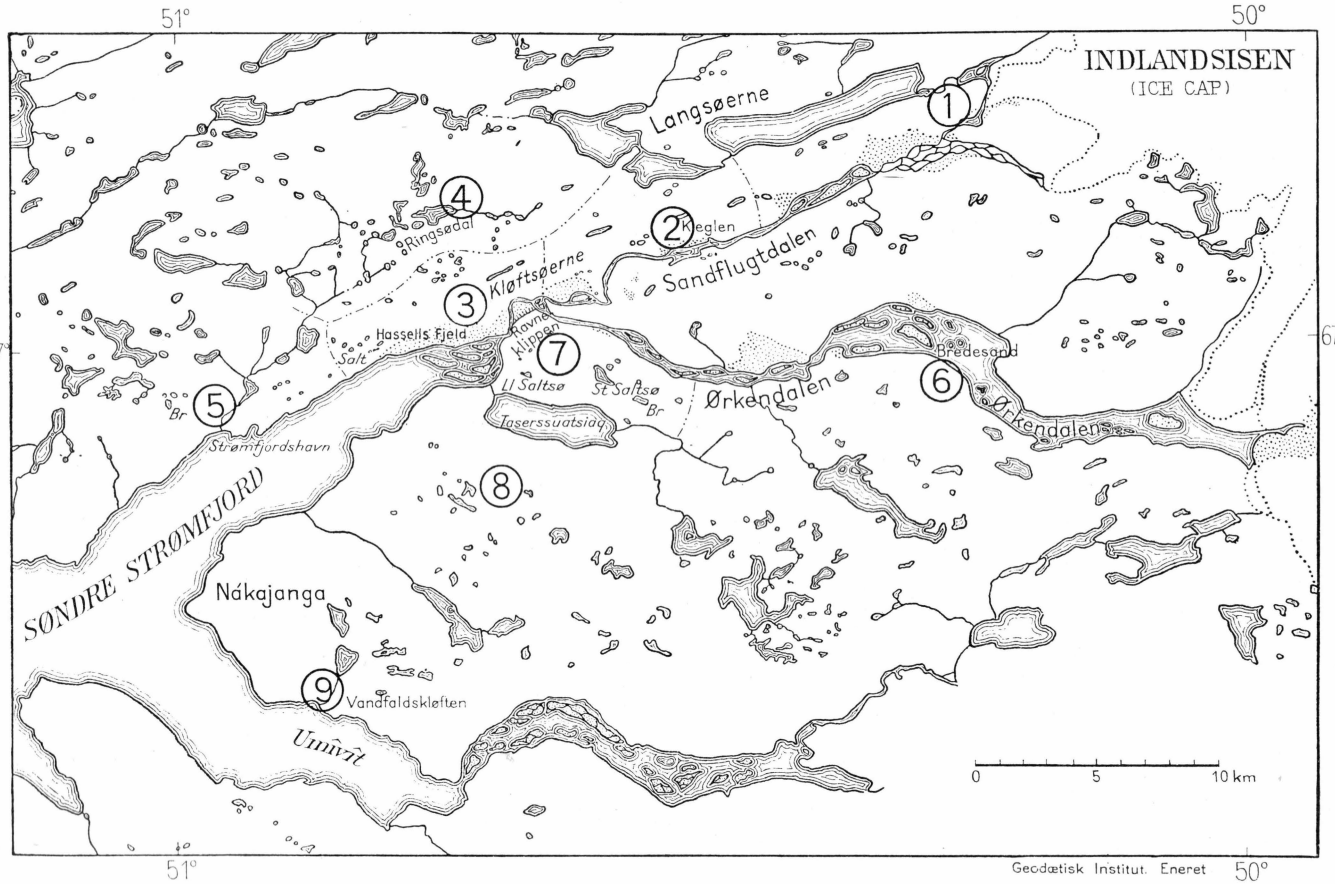

Fig. 1. Map of Søndre Strømfjord. (From BÖCHER 1949, fig. 1).

1. PREFACE

During "The Botanical Expedition to West Greenland" 1946 a number of samples of algae from fresh and saline waters were collected. Samples containing diatoms have by the leader of the expedition, Dr. Tyge W. Böcher, been entrusted to me for analysis, for which I feel greatly obliged to Dr. Böcher.

For the translation I am indebted to cand. mag. Niels Haislund and for latinizing of diagnoses to cand. mag. Tyge Christensen.

I offer my respectful thanks to the directors of the Carlsberg Foundation for a generous grant towards the execution of the work.

Odense, May 1952. Niels Foged.

2. INTRODUCTION

Few papers on Greenland fresh-water diatoms have been published. E. ØSTRUP in a paper from 1897 treated about 100 samples collected by N. HARTZ in East Greenland (Danmarks-Ø, about 70—71° lat. N.), in which the presence of a total of 154 forms was shown.

During the Denmark Expedition to the north-east coast of Greenland 1906—08 under the leadership of MYLIUS-ERICHSEN a total of 30 fresh-water samples from 14 (15?) localities (about 80° lat. N.) were collected. These were also examined by ØSTRUP, who in 1910 published the results of his analysis comprising a total of 128 fresh-water forms. A number of new species and forms is described in both of these papers.

During the Second Thule Expedition 1916—18 under the leadership of KNUD RASMUSSEN 12 samples from fresh-water localities in North Greenland (about 81—82° lat. N.) were collected by TH. WULFF. J. BOYE PETERSEN, 1924, in this material found 64 forms of diatoms, three of which were new species or varieties.

About West Greenland fresh-water diatoms a paper has been published by H. BACHMANN, 1921, who in 1908 made collections partly near Godthaab (about 64° lat. N.), partly and particularly on the island of Disko (69—70° lat. N.). A few samples were collected on the Nugssuak peninsula. The analyses of the diatoms were made by A. LÖTSCHER, who demonstrated the presence of a total of 386 species and varieties of diatoms.

During A. E. NORDENSKIÖLD's expedition to West Greenland in 1883 (the Sophia Expedition) diatom material was collected, which has been classified by Å. BERG (1945). Dating as well as precise indications of localities (between lat. 61° and 69° N.) are lacking for this material.

Apart from a few short floral lists the literature studied by me contains nothing about Greenland fresh-water diatom communities.

The fresh-water diatoms in the western Eurasian arctic area—from Iceland to Finland—have been discussed in a good number of papers,

whereas Asiatic and North American arctic areas seem to have been discussed in very few works.

The present paper on fresh-water diatoms from the central part of West Greenland (about 67° lat. N.) include an ecological part based upon chemical analyses of the water samples collected by Dr. TYGE W. BÖCHER, and a floristic part.

As I hope later to get an opportunity to study fresh-water diatoms from other parts of Greenland, thus obtaining a possibility of comparing the various floral areas there, an evaluation of the Greenland flora of diatoms in relation to that of other arctic areas—in so far as this will be possible on the basis of the literature available—will be postponed until later.

3. MATERIAL

37 samples in all were analyzed. Three samples (nos. 12, 36, and 39) originate from Ivigtut (about 61°10′ lat. N.), one (no. 42) from Godthaab (about 64° lat. N.), one (no. 4) from Kangamiut (about 65°50′ lat. N.), and one (no. 1) from Ítivdlinguaq, Søndre Strømfjord (about 66°30′ lat. N.).

Among these the samples no. 12, 36, 39, and 4 originate from localities with acid water. Data for these samples therefore are found in Table 1 together with the other "acid" samples. Sample no. 1 originates from circumneutral water and is found in Table 2 (B). Sample no. 42 (from Godthåb) is put last in Table 2 (E)—as it originates from a locality which is under great marine influence.

The other 31 samples, which all originate from the Søndre Strømfjord area—the localities indicated in the map fig. 1—have been divided into four groups according to Böcher 1949 p. 44 ff. The pieces of information available as regards the origin of the samples and the known ecological conditions of greatest importance for the diatoms have been compared in Tables 1 and 2.

After treatment with diluted HCl, at which samples 8, 25, and 35 showed slight effervescence (slight content of $CaCO_3$), all samples were cleared of organic matter by boiling with concentrated H_2SO_4 with addition of KNO_3. Hyrax preparations have been made from all samples, and realgar preparations have been made from a few samples in which there were a particularly large number of diatoms with hyaline valves of a fine structure.

The drawings have all been made by means of a Reichert drawing-apparatus at a magnification of about 3300 times. In the reproduction the magnification is about 1500 times.

In the diagrams the samples are placed in the same sequence as in the text. For the sake of clearness the five groups—A, B, C, D, E—have been separated somewhat from each other. Samples from the same

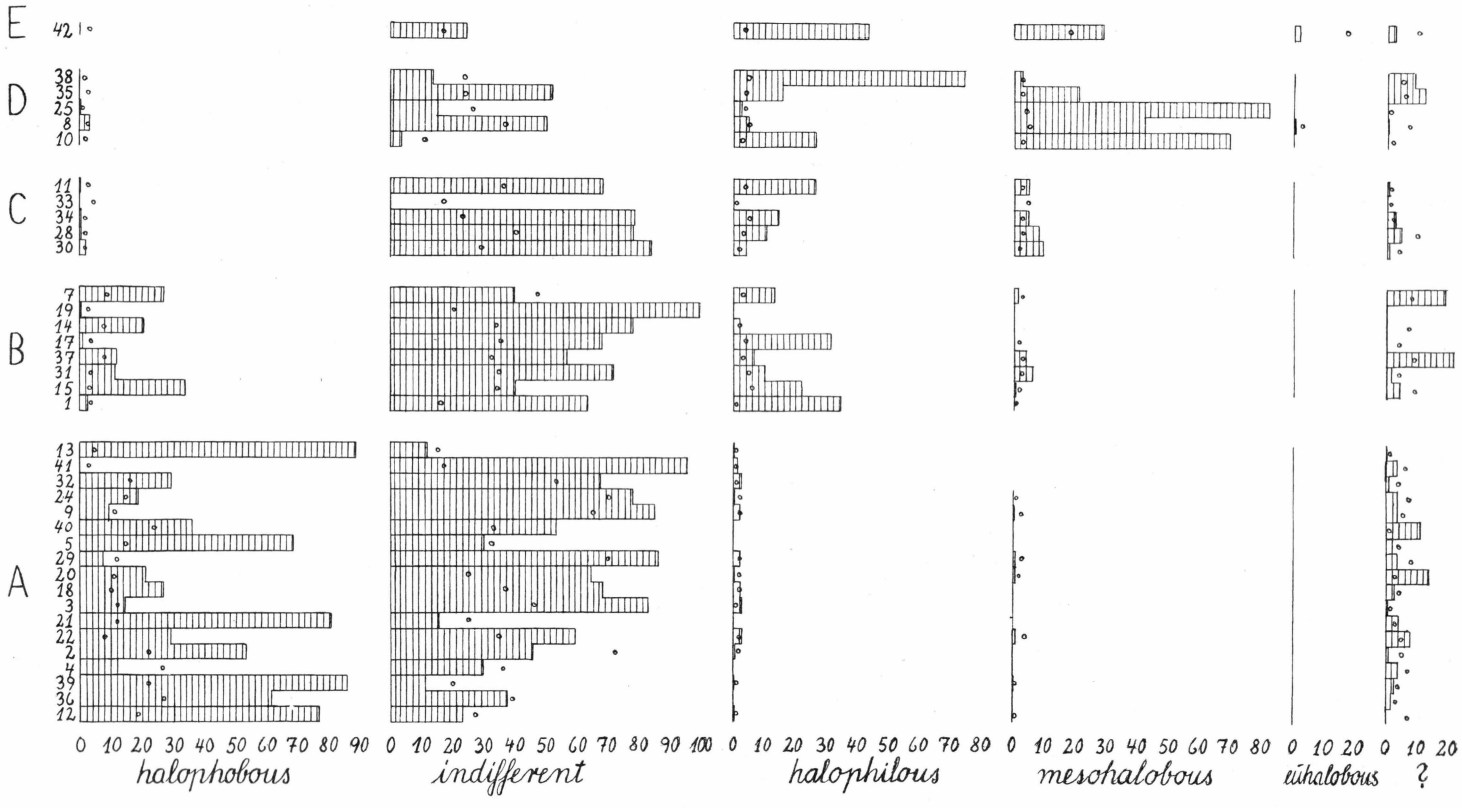

Fig. 2. Halobion diagrams.

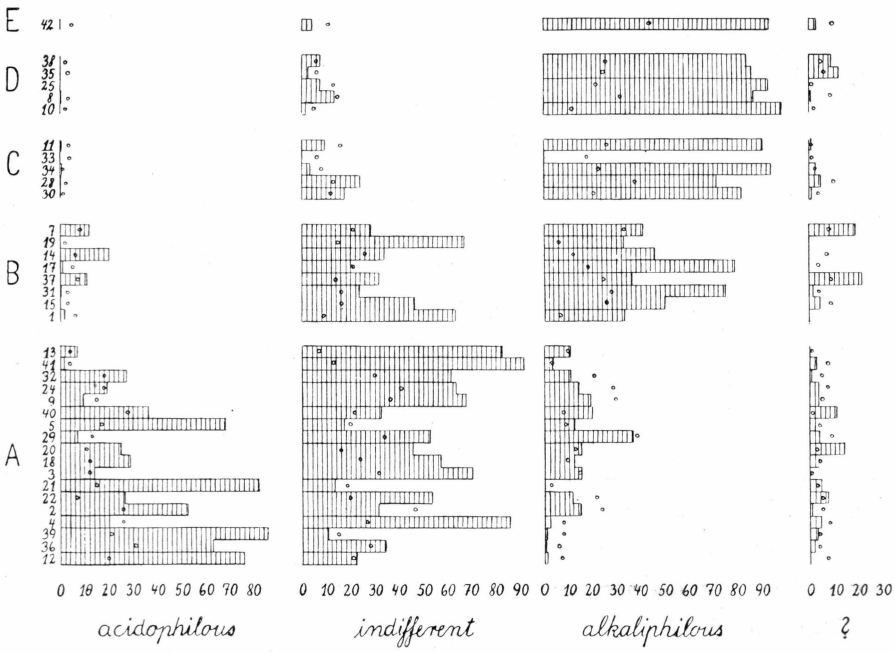

Fig. 3. pH diagrams.

locality have not been separated by a longitudinal dividing line. The figures of the abscissa can be used both for the reading of the percentage value of the group in question and for a simultaneous ascertainment of the number of species of diatoms in the group, this being marked by an o in the diagrams.

Sample 33, which is very poor in diatoms, is only indicated in the diagrams.

Table 1.

			A. Acid Waters poor in Salt (TWB. 1949 p. 44 ff.).																	
			a. Coastal regions SW Greenland				b. Inland region at Sdr. Strømfjord												c. Deviating samples	
				Ivigtut																
Localities (TWB)			Small pond at Ivigtut	Small acid pond	Scirpus austriacus vegetation	Kangamiut off Evighedsfjord	Kløftsøerne at the head of Sdr. Strømfjord		Acid mountain lake with Sphagnum Loc. 3	Menyanthes lake 400 m above sea level			Acid lake northwest of Strømfjordshavn	Nakajanga at Vandfaldskløften	Mountain lake Nakajanga Loc. 8	Lake Loc. 5		Small lake with Potamogeton, Menyanthes, etc. NW of Strømfjordshavn	South facing slope of Mt. Hassell Loc. 3	Moist Rhododendron lapponicum heath Loc. 3
Sample no.....			12	36	39	4	2	22	21	3	18	20	29	5	40	9	24	32	41	13
Origin of sample (TWB.).				Algae	Scirpus austriacus vegetation	Moss on vertical rock surface with water trickling down		Sphagnum squeeze						Waterfall	Nostoc etc.	Big balls of Nostoc	Big balls ol Nostoc		Water oozing out beside rock. Nostoc etc.	Moss squeeze. The bottom of the heath
pH (TWB.).....			No doubt acid	acid	5		6	6	5	5-6	5-6	5-6				Presumably slightly acid-neutral		Moderately acid		7
Cl⁻ mg/l							7	7	4	12	12	12								
TWB. Anions milli-equiv./l							0.84	0.84	0.59	1.43	1.43	1.43								
1949 SiO_2 mg/l							10	10	9	7	7	7								
Consumption of O_2..							38	38	9	26	26	26								
Movements of water.....			Stagnant	Stagnant	Slowly percolating	Running	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Running	Stagnant	Stagnant	Stagnant	Stagnant	Running	Stagnant
Number of forms			55	69	48	69	101	54	40	60	53	43	95	51	58	86	95	74	27	22
Halobion Spectra	Halophobous	Forms	19	27	22	26	22	8	12	12	10	11	12	15	24	11	15	16	3	5
		per cent	76.8	61.2	85.8	7.0	53.2	29.0	80.8	14.2	26.6	21.0	7.6	68.2	36.0	9.4	18.6	29.4	0.0	88.2
	Indifferent	Forms	27	39	20	36	72	35	25	46	37	25	70	32	33	65	70	53	17	15
		per cent	23.0	37.2	11.0	89.2	45.2	59.4	15.2	82.8	68.6	64.4	86.0	29.8	53.0	84.6	77.8	67.4	95.2	11.6
	Halophilous	Forms	1	0	1	0	2	2	0	1	2	2	2	0	0	2	2	1	1	1
		per cent	0,2	0,0	0,2	0,0	0,8	3,0	0,0	2,6	2,2	0.2	2.0	0.0	0.0	2.2	0.2	2.6	1.6	0.2
	Mesohalobous	Forms	1	0	1	0	0	4	0	0	0	2	3	0	0	3	1	0	0	0
		per cent	0.0	0.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.4	1.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
	?	Forms	7	3	4	7	5	5	3	1	4	3	8	4	1	5	7	4	6	1
		per cent	0.0	1.6	2.8	3.8	0.8	7.6	4.0	0.4	2.6	14.0	3.4	2.0	11.0	3.4	3.4	0.6	3.2	0.0
pH-Spectra	Acidophilous	Forms	20	31	21	26	26	7	15	12	12	11	13	17	28	15	18	18	4	4
		per cent	76.4	63.0	85.6	7.0	52.6	26.8	82.0	14.0	29.2	24.8	7.0	68.2	36.4	9.8	19.0	27.2	1.6	7.0
	Indifferent	Forms	21	28	15	27	46	20	19	32	27	16	34	20	21	36	41	30	13	7
		per cent	22.4	34.8	10.8	86.6	31.6	53.8	13.8	70.2	56.0	45.6	52.8	17.2	32.6	67.4	63.4	61.2	91.4	82.4
	Alkaliphilous	Forms	7	6	8	8	24	22	3	15	10	13	39	9	8	30	29	21	3	10
		per cent	1.2	0.6	0.8	2.2	15.0	11.8	0.2	15.4	12.2	15.6	36.8	12.6	20.0	19.4	14.2	10.8	3.6	10.6
	?	Forms	7	4	4	8	5	5	3	1	4	3	9	5	1	5	7	5	7	1
		per cent	0.0	1.6	2.8	4.2	0.8	7.6	4.0	0.4	2.6	14.0	3.4	2.0	11.0	3.4	3.4	0.8	3.4	0.0
Grönblad 1952: sample no.			32	..	..	31	8	9	15	10	..	13	25	29	..	21	20	24	..	16

Table 2.

			B. Circumneutral Waters Poor in Salts. TWB. 1949 p. 46 ff.								C. Rather Saline Alkaline Waters. TWB. 1949 p. 48 ff.					D. Saline, Highly Alkaline Waters. TWB. 1949 p. 52 ff.					E. Deviating Water
Localities (TWB.)			Small lake Sdr. Strømfjord 66°30′ lat. N.	Small pond in dune area in Sandflugtsdalen Loc. 2		Alkaline lake at Keglen Loc. 2	Brook at Keglen Loc. 2	River from the inland ice Loc. 1	Small pool near the inland ice Loc. 1	Lake no. 1 beside the harbour road between Loc. 3, 4 and 5	Road river terrace Loc. 2	Slightly salt lake TWB. 1949 Table 14 (a) Loc. 5	Lille Saltsø TWB. 1949 pp. 50-51	Salt crust on the shore of the salt lake N of the Harbour road	Store Saltsø Loc. 7 TWB. 1949, p. 53	Salt lake north of the Harbour road TWB. 1949, pp. 52-53	Pond beside salt lake TWB, 1949 p. 52 (a)		Store Saltsø Loc. 7 TWB, 1949, p. 53		Godthåb, pool near the colony
Sample no.			1	15	31	37	17	14	19	7	30	28	34	33	11	10	8	25	35	38	42
Origin of sample (TWB.)			Pool rich in humus i. a. with Utricularia			Algae i. a. Nostoc	Algae	Algae	Moss	Lake shore vegetation Scirpus pauciflorus		Algae	Ranunculus cymbalaria vegetation	Algae from salt-crust	Between ramparts of loess and moss				*	Moss from loess-moss terrace	
pH (TWB.)				No doubt neutral-alkaline water		Alkaline	Alkaline			Alkaline	7.5	8	8-9		ca. 9	Slightly below 9	Slightly below 9	Slightly below 9	ca. 9	9.5	
TWB. 1949 Anions	Cl^- mg/l					9						154	169							708	
	milliequival./l					1.47						9.582	c.11.3							48.9	
	SiO_2 mg/l					13						15	13							10	
	Consumption of O_2					38						20	50							47	
Movement of water			Stagnant	Stagnant	Stagnant	Stagnant	Running	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant	Stagnant
Number of forms			22	54	51	55	49	51	23	70	38	58	35	29	47	21	59	36	40	39	70
Halobion Spectra	Halophobous	Forms	4	3	4	8	4	8	3	9	2	2	2	5	3	2	3	1	3	2	4
		per cent	2.6	33.8	11.2	11.8	1.0	20.4	0.6	27.0	2.0	0.2	0.4	17 valves	0.2	0.0	3.4	0.4	0.0	0.0	0.0
	Indifferent	Forms	16	34	35	32	35	34	20	47	28	40	23	17	36	11	37	26	24	24	17
		per cent	62.8	39.8	71.6	56.4	67.8	77.6	99.4	39.6	83.6	77.0	78.2	32 valves	68.0	3.4	49.8	14.8	51.6	13.8	24.4
	Halophilous	Forms	1	6	5	3	4	2	0	3	2	3	5	1	4	3	5	4	4	5	4
		per cent	34.6	21.6	10.0	6.6	31.2	2.0	0.0	13.0	4.2	10.2	14.2	2 valves	26.6	27.4	4.8	2.8	15.6	74.4	43.2
	Mesohalobous	Forms	1	2	3	3	2	0	0	3	2	3	3	5	3	3	5	4	3	3	18
		per cent	0.0	0.8	6.0	3.8	0.0	0.0	0.0	1.6	9.6	8.0	4.8	13 valves	5.0	69.2	41.8	82.0	20.4	2.8	28.4
	Euhalobous	Forms	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	17
		per cent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
	?	Forms	0	9	4	9	4	7	0	8	4	10	2	1	1	2	7	1	6	5	10
		per cent	0.0	4.0	1.2	21.4	0.0	0.0	0.0	18.8	0.6	4.6	2.4	2 valves	0.2	0.0	0.2	0.0	12.4	9.0	2.4
pH Spectra	Acidophilous	Forms	6	3	3	7	5	6	2	8	1	2	2	4	4	2	3	0	3	2	5
		per cent	2.0	0.0	0.2	10.8	1.0	20.2	0.0	11.8	0.2	0.2	0.4	12 valves	0.2	0.0	0.2	0.0	0.0	0.0	0.0
	Indifferent	Forms	9	16	16	14	21	26	15	21	12	13	8	6	16	5	15	13	6	6	11
		per cent	63.4	46.0	23.6	31.6	20.0	34.0	67.0	28.4	17.8	24.0	3.2	13 valves	9.4	1.8	13.4	7.2	2.2	7.2	4.4
	Alkalifilous	Forms	7	26	28	25	19	12	6	33	21	38	23	18	26	12	32	22	25	26	44
		per cent	34.6	50.0	75.0	36.2	79.0	45.8	33.0	41.0	81.4	71.2	94.0	39 valves	90.2	98.2	86.2	92.8	85.4	83.8	93.2
	?	Forms	0	9	4	9	4	7	0	8	4	10	2	1	1	2	9	1	6	5	10
		per cent	0,0	4,0	1,2	21,4	0,0	0,0	0,0	18,8	0.6	4.6	2.4	2 valves	0.2	0.0	0.2	0.0	12.4	9.0	2.4
Grönbl. 1952: Sample no.			30	3	4	5	12	1	2	22	6	23	..	..	14	17	18	19	..	..	..

* Dark coloured sand and mud under layer of Daphniae in another drying-up puddle surrounded by vegetation with many ± halophilous species (Carex marina, Triglochin palustris).

4. DIATOM SPECTRA

The halobion and pH spectra calculated for all samples are listed in Tables 1 and 2, p. 12 and 13. As for calculation and arrangement reference is made to FOGED 1947—48.

The grouping for the samples has been made on the basis of BÖCHER 1949, p. 44 ff.

In most cases the two types of spectra show close agreement, the so-called halophobus forms generally being acidophilous as well and the forms indifferent to salt generally also being indifferent as regards pH. Halophilous and mesohalobous as a rule be alkaliphilous (perhaps alkalibionts), as the reaction in environments rich in salts mostly (always?) is alkaline.

The difficulties of arrangement in both cases are particularly found in the indifferent group, which must be considered to include partly the actually indifferent forms, partly the large number of forms of whose ecology insufficient information is available and finally a large group which is eurytopic.

A simplification has been made in the pH spectra, the acidobiontic and alkalibiontic forms—the two extreme groups, which are often problematic—being referred to the acidophilous and the alkaliphilous forms, respectively. In the halobion spectra the usual five-partition has been retained.

In the following account "dominant forms" means diatom species occurring with 10 per cent. or more of the number of valves counted in a sample. In certain cases a species is considered dominant even though the number of valves does not quite reach 10 per cent. In such cases the percentage figures will always be added.

A. Acid Waters Poor in Salts (BÖCHER 1949, p. 44 ff.).

18 out of the 37 samples analyzed belong here. 13 samples originate from stagnant water, 4 (nos. 39, 4, 5, 41) come from more or less markedly running water, and one (no. 13) originates from moss growing on soil in *Rhododendron* heath.

The halobion spectra are of a rather homogenously "acid" character, the halophobous group (the indifferent group being left out of account) in all samples being the most prominent one. The two haline groups—halophilous and mesohalobous—are either very slightly or not at all represented in the spectra.

Particularly the genera *Eunotia*, *Pinnularia*, and *Cymbella* occur with many halophobous forms in these samples. From the list of species (Table 4) the predominance of these genera in this group will appear immediately, the sequence of the samples in Table 4 being the same as that in Tables 1 and 2.

The pH spectra show similar conditions, the acidophilous group on the whole being much more strongly represented than the alkaliphilous one so that the "balance point" of the spectrum is clearly on the "acid" side of the spectrum. The differences between the various samples here seem to be somewhat more pronounced than in the halobion spectra, a fact which will be mentioned in detail below at the discussion of the various samples.

(a) Samples from localities in coastal regions in SW.-Greenland (nos. 12, 36, 39, and 4).

No. 12. Small pond at Ivigtut. Stagnant water. 55 forms of diatoms. Dominants: *Eunotia lunaris*, *Tabellaria flocculosa* (67.2 per cent.). Markedly oligotrophic flora of small lakes.
General character: Halophobous, acidophilous.

No. 36. Small acid pond at Ivigtut. Stagnant water. 69 forms. Dominants: *Anomoeoneis serians* var. *brachysira*, *Eunotia alpina*, *Fragilaria virescens* (9.0 per cent.), *Nitzschia frustulum* var. *perpusilla*, *Tabellaria flocculosa*. There are small numbers of *Cyclotella antiqua* and *Melosira distans* (2.6 per cent.), which both are centric plankton forms characteristic of oligotrophic water. Otherwise centric forms are of very rare occurrence in the present material. *Surirella delicatissima*, which is also an oligotrophic form, has been found in this sample as well, but otherwise it has not been found in the material.
General character: oligotrophic, halophobous, acidophilous.

No. 39. *Scirpus austriacus* vegetation at Ivigtut. Water: slowly percolating. 48 forms. Dominants: *Cymbella incerta* (34.4 per cent.), *Eunotia praerupta*, *E. praerupta* var. *bidens* (7.4 per cent.), *Frustulia rhomboidea* var. *saxonica* (+ fo. *capitata*) (9.0 per cent.), *Navicula petersenii*, which has not been found in any other samples, occurs in a small number here. *Eunotia fallax* is of no rare occurrence in this sample.
General character: oligotrophic, halophobous, acidophilous.

No. 4. Kangamiut off Evighedsfjord. Slightly running water (algae in water trickling down over moss on vertical rock). 69 forms. Dominant: *Navicula perpusilla* (70.8 per cent.). This species here occurs in great masses, whereas the other species found in the sample are comparatively scarce. Numerous characteristic aerophilous forms occur, most of them having previously been found widely distributed in mosses. Less common forms are *Caloneis fasciata* fo. *acuta*, *Eunotia crista galli*, *E. lapponica*, *E. praerupta* var.

muscicola, and many other *E.* species. Furthermore *Melosira distans*, *M. roeseana*, *Navicula contenta* fo. *biceps*, *N. fossalis*, *N. subfossalis*, *Pinnularia lata*, *P. lata* fo. *thuringiaca*, *P. krockii*, and *P. obscura*.
General character: aerophilous, oligotrophic, halophobous, acidophilous.

(b) Samples from the inland region at Søndre Strømfjord.
(Map fig. 1).

No. 2. Kløftsøerne at the head of Søndre Strømfjord. Stagnant water. 101 forms. Dominants: *Achnanthes linearis*, *Tabellaria fenestrata* var. *intermedia*, *T. flocculosa*. Sample very rich in species, but apart from the dominants most species are scarce.
General character: litoral sample. Oligotrophic, halophobous, acidophilous.

No. 22. Kløftsøerne. Stagnant water. 54 forms. Dominants: *Eunotia tenella*, *Pinnularia hustedtii* Mölder (18.6 per cent.), *Stauroneis phoenicenteron*.
General character: the same as that of the preceeding sample.

No. 21. Acid mountain lake with *Sphagnum* border. Loc. 3. Stagnant water. 40 forms. Dominants: *Tabellaria fenestrata* var. *intermedia* (23.6 per cent.), *T. flocculosa* (47.2 per cent.), *Eunotia* and *Pinnularia* species are common. *Melosira distans* var. *lirata* showed a percentage of 3.4 and was not found in other samples.
General character: oligotrophic lake. Halophobous, acidophilous.

No. 3. *Menyanthes* lake. 400 m above sea level. Stagnant water. 60 forms. Dominants: *Achnanthes linearis*, *A. minutissima*, *A. microcephala*, *Fragilaria capucina*, *Nitzschia perminuta*, *Tabellaria flocculosa*. Less common species are *Achnanthes petersenii* and *Cymbella latens*. The centric *Cyclotella kützingiana* var. *radiosa* was found only in this sample, in which there were rather large numbers of alkaliphilous species of the genera *Cymbella*, *Gomphonema*, and *Navicula*, none of them, however, being very frequent. Even though there were 15.4 per cent. alkaliphilous forms, the trend was clearly indifferent-acid, some of the indifferent forms undoubtedly having an "acid" bias.
General character: oligotrophic lake. Halophobous, acidophilous.

No. 18. *Menyanthes* lake. Moss. Stagnant water. 53 forms. Dominants: *Fragilaria capucina* (7.6 per cent.), *Nitzschia perminuta*, *Tabellaria flocculosa*. *Pinnularia divergentissima* var. *wulffii* was rare in this sample. The halophilous species *Nitzschia ignorata* was scarce (cf. no. 41).
General character: Oligotrophic, aerophilous, acidophilous, halophobous.

No. 20. *Menyanthes* lake. Stagnant water. 43 forms. Dominants: *Nitzschia perminuta*, *Pinnularia* sp. Pl. IX, fig. 3, *Neidium affine* var. *capitata* (7.2 percent.), *Pinnularia microstauron* var. *bréb.* fo. *diminuta* (7.6 per cent.). Like other samples this sample, too, contains aerophilous as well as haline forms, none of them, however, being very common.
General character: oligotrophic, aerophilous, acidophilous, halophobous.

No. 29. Acid lake with *Comarum*, *Menyanthes*, etc., northwest of Strømfjordshavn, cf. BÖCHER 1949, p. 49 and fig. 15. Stagnant water. 95 forms. Dominants: *Achnanthes linearis*, *A. minutissima* + var., *Nitzschia denticula* (8.4 per cent.), *N. perminuta* (8.6 per cent.).
There is a large number of halophobous forms in the sample, but none of these are frequent. None of the few haline species are common. The pH spectrum shows an alkaliphilous tendency.

Rarer forms in the sample: *Navicula rotunda*, *N. semen*, *Pinnularia karelica*, *P. pulchra*.
General character: oligotrophic, halophobous, indifferent-alkaliphilous.

No. 5. Nakajanga at Vandfaldskløften. Waterfall on southern slope. 51 forms. Dominants: *Anomoeoneis zellensis* var. *linearis*, *Cymbella laevis* (9.8 per cent.), *Tabellaria fenestrata* var. *intermedia*, *T. flocculosa*. The sample is characteristic by typically acidophilous, in part boreal forms: *Cymbella norvegica*, *Diatomella balfouriana*, *Navicula bryophila*, *N. fossalis*, *Pinnularia balfouriana*, *Synedra ulna* var. *abiskoensis*.
General character: Halophobous, acidophilos. Somewhat aerophilous.

No. 40. Mountain lake. Nakajanga. *Nostoc*. 58 forms. Dominants: *Cymbella gracilis*, *Melosira distans*, *Navicula ivigtutensis*, *Nitzschia frustulum*.
The sample contained a number of rather rare forms: *Eunotia fallax*, *E. papilio*, *Navicula lagerstedtii*, *N. cuspidata* var. *héribaudi*, *Pinnularia lata* fo. *thuringiaca*.
General character: oligotrophic, acidophilous, halophobous.

No. 9. Lake. Loc. 5. Stagnant water. *Nostoc*. 86 forms. Dominants: *Achnanthes linearis*, *A. minutissima*, *Tabellaria flocculosa* (7.0 per cent.).
In this sample there seems to be a number of imported forms alien to the locality. Such mesohalobous species as *Cocconeis scutellum*, *Rhopalodia musculus*, and *Synedra pulchella* are of the strangest character. A total of 30 of the 86 forms found in the sample must be referred to the alkaliphilous group, which constitutes 19.4 per cent. of the valves counted. Particularly species of the genera *Cymbella*, *Gomphonema*, and *Navicula* belong here. The commonest alkaliphilous form, however, is *Cocconeis placentula* (3.4 per cent.), which otherwise is not particularly common in the area. The centric *Cyclotella comta* is rare in the sample. The same applies to *Pinnularia pulchra*.
General character: Slightly oligotrophic, nearly indifferent.

No. 24. Lake. *Nostoc*. Algae. Stagnant water. 95 forms. Dominants: *Achnanthes linearis*, *A. minutissima*, *Tabellaria flocculosa*.
In this sample, too, there were a large number (29) of alkaliphilous forms. There was rather a close similiarity between nos. 24 and 9, which obviously must be of nearly the same origin.
General character: slightly oligothrophic, nearly indifferent.

No. 32. Small lake with *Potamogeton*, *Menyanthes*, etc., northwest of Strømfjordshavn. Stagnant water. 74 forms. Dominants: *Achnanthes linearis*, *Tabellaria fenestrata* var. *intermedia*, *Nitzschia perminuta*, (7.8 per cent.). The sample contains a good number of alkaliphilous species of the genera *Cymbella*, *Fragilaria*, *Gomphonema*, and *Navicula*. The specimens, however, are scarce. The two fairly rare species *Navicula semen* and *Pinnularia biceps* fo. *petersenii* are also of rare occurrence in the sample.
General character: oligotrophic, acidophilous, halophobous.

(c) Deviating samples from seeping water on southern slope and *Rhododendron*-heath below the slope.

No. 41. South facing slope of Mount Hassell. Loc. 3. Water oozing out beside rock. 27 forms. Dominants: *Nitzschia perminuta* (62.6 per cent.), *Pinnularia borealis* (20.8 per cent.). *Nitzschia perminuta* is a very eurytopic form, which often appears on rock surfaces with water oozing out. The sample

is particularly characteristic by the occurrence of a number of typically aerophilous forms: *Melosira roeseana*, *Navicula contenta* fo. *biceps*, *N. lagerstedtii* var. *palustris*, *N. mutica*, and *N. mutica* var. *nivalis*. The halophilous species *Amphora veneta* was fairly common in the sample, which again establishes the fact that halophilous and aerophilous diatoms often appear in the same biotope. Certain halophilous forms are often found in mosses, on earth, on rock surfaces, and in similar places. This may perhaps be explained by the fact that in places much exposed to great fluctuations in the supply of water, the concentration of salt, too, will be greatly fluctuating. Periods rich in water and with a poor concentration of salt will alternate with periods of drying-up and an increasing concentration of salt. Consequently the flora of diatoms will easily become of an apparently heterogeneous character, a character which, however, in itself is very characteristic of the environment.

General character: Aerophilous, indifferent.

No. 13. *Rhododendron lapponicum* heath: Moss on moist soil. Moss squeeze. 22 forms. Dominant: *Pinnularia gracillima* (81.2 per cent.). This form is often found as character form in environments poor in salt (halophobous), but seems to be rather tolerant as regards pH about 7. Therefore it is included in the indifferent group in the pH spectrum. The three characteristically aerophilous forms: *Hantzschia amphioxys* + var., *Navicula perpusilla*, and *Nitzschia amphibia* constitute a total of 7.4 per cent. of the valves counted.

General character: aerophilous, indifferent.

B. Circumneutral Waters Poor in Salts (BÖCHER 1949, p. 46 ff.).

Eight of the samples analyzed are referred to localities in this group. Six of the samples originate from stagnant water, two from running water. A water analysis is available only from a lake near Mount Keglen, Loc. 2, Sample 37 (BÖCHER 1949, Table 13). According to this analysis the water was poor in chlorides and other electrolytes with pH about 7. Similar conditions must be supposed to obtain in the other localities in B.

In all samples there are some halophobous forms, most of which however, show an indifferent trend. This appears from the fact that in several of the pH spectra there were much lower percentage values in the acidophilous group than was the case in the halophobous group in the halobion spectra. Halophilous forms begin to assert themselves in several of the spectra, and even mesohalobous forms, which were extremely rare in A (and probably always secondary there), are found in most of the samples. In the pH spectra the decreasing acid reaction in the water is clearly reflected in a great increase of the alkaliphilous group.

No. 1. Small lake. Itivdlinguaq. Søndre Strømfjord. Pool rich in humus, i. a. with *Utricularia*. Stagnant water. 22 forms. Dominants: *Achnanthes petersenii* (54.6 per cent.), *Diatoma elongatum* (34.6 per cent.).

This sample is particularly characteristic by its large numbers of *Achnanthes petersenii* and *Diatoma elongatum*. Whereas *A. petersenii*, which was first

found by HUSTEDT in moss from Spitsbergen, and which in the present West Greenland material occurs—although not frequently—in acid as well as neutral and alkaline water, must be considered indifferent with regard to both halobion and pH conditions, perhaps with a tendency towards a a halophobous-acidophilous character, *Diatoma elongatum* is found so frequently in a halophilous environment that it is often considered characteristically halophilous. The spectra for this sample (especially the pH spectrum) thus is of a character somewhat deviating from the other samples in the group. General character: aerophilous, indifferent.

No. 15. Small pond in dune area in Sandflugtdalen. Loc. 2. Stagnant water. 54 forms. Dominants: *Achnanthes minutissima, Diatoma elongatum, Pinnularia gracillima, Synedra acus* (8.6 per cent.).
There is a certain discrepancy between the two types of spectra. The halobion spectrum indicates an environment poor in salts in all cases, and the pH spectrum clearly shows an alkaliphilous trend. The discrepancy is more appearent than real since it is *Pinnularia gracillima* which, placed in the halophobous group, gives the high percentage value to this group. As its place is highly open to discussion, which here is reflected in the fact that in the pH spectrum it is placed in the indifferent group, the result is that the point of gravity in both spectra must be considered to be situated in the indifferent group. This is furthermore supported by the fact that *Diatoma elongatum*, which is placed in the halophilous group here, is also so eurytopic that it is often placed in the indifferent group in the halobion spectrum.
This sample also contains *Melosira roeseana, Navicula semen,* and *Synedra ulna* var. *abiskoensis.*
General character: indifferent with alkaline tendency.

No. 31. As no. 15. 51 forms. Dominants: *Nitzschia denticula, Pinnularia gracillima, Diatoma elongatum* (6.4 per cent.), *Epithemia argus* (7.4 per cent.).
The halobion spectrum is dominated by the indifferent group. In the pH spectrum there is a great predominance of the alkaliphilous forms (particularly from the genera *Caloneis, Cymbella, Diatoma, Epithemia, Gomphonema, Navicula,* and *Nitzschia*). The flora consists of typical lake epiphytes.
General character: indifferent with alkaline tendency.

No. 37. Alkaline lake near Mount Keglen. Loc. 2. *Nostoc* and other algae. Stagnant water. 55 forms. Dominants: *Cymbella ventricosa* var. *groenlandica, Navicula cryptocephala* fo. *terrestris*? (Pl. V, fig. 10).
The spectra with their points of gravity in indifferent groups; in the pH spectrum, however, with a clearly alkaliphilous trend.
A small number of specimens of *Navicula amphibola* occurred in the sample.

No. 17. Brook near Mount Keglen. Loc. 2. Running water. Algae. 49 forms. Dominants: *Cymbella naviculiformis, Diatoma elongatum* var. *tenuis, Gomphonema angustatum, Meridion circulare.*
Meridion circulare is a widely distributed character species for running water. The spectra have their points of gravity in the indifferent group. 30.6 per cent. of 31.2 per cent. halophilous forms being constituted by *Diatoma elongatum* var. *tenuis*, which is very eurytopic. This is also the form which gives the alkaliphilous group its high percentage value in the pH spectra.
Eunotia and *Pinnularia* species are very little prominent in this sample.

No. 14. River from the inland ice. Loc. 1. Algae. Running water. 51 forms. Dominants: *Ceratoneis arcus* var. *linearis*, *Fragilaria vaucheriae*, *Synedra rumpens*, *Tabellaria flocculosa*.
Ceratoneis arcus var. *linearis* is a character diatom for running, cold water. *Eunotia* and *Pinnularia* species are rare.
The halobion spectrum is indifferent, with a trend towards the halophobous group. The pH spectrum covers a wide range as both the acidophilous and the alkaliphilous group are very well represented.

No. 19. Small pool near the inland ice. Loc. 1. Moss. Stagnant water. 23 forms. Dominants: *Gomphonema angustatum* var. *producta*, *G. longiceps* var. *subclavata*, *Nitzschia perminuta*, *Pinnularia pulchra*.
The indifferent group is completely dominant in the halobion spectrum, and there are no forms with affinity to salts. In the pH spectrum there is a preponderance of indifferent forms, although with a great admixture of alkaliphilous forms.
The less frequent forms *Navicula lagerstedtii* var. *palustris* and *N. semen* occur in the sample.

No. 7. Alkaline lake north of the harbour road between Localities 3, 4, and 5. *Scirpus pauciflorus* lake-shore vegetation. Stagnant water. 70 forms. Dominants: *Amphora veneta*, *Navicula ivigtutensis*, *Nitzschia amphibia* var. *thermalis*, *Pinnularia gracillima*.
Fairly great representation of halophobous species in the halobion spectrum. In the pH spectrum alkaliphilous forms are more prominent than acidophilous ones.
Less frequent forms found here are *Amphora triundulata*, *Navicula bryophila*, and *N. festiva*.

C. Rather Saline, Alkaline Waters (BÖCHER 1949, p. 48 ff.).

This group includes a total of five samples, all of them from stagnant water. Water analyses are available from three lakes—Samples 28, 34, and 11—(BÖCHER 1949, Tables 14 and 15), which show that the water has a considerable content of electrolytes.

The percentage of halophobous forms have been greatly reduced, whereas the percentages for halophilous and mesohalobous diatoms have greatly increased. Alkaliphilous forms predominate in most pH spectra.

Sample 33 contains very few diatoms, and as it originates from a salt crust, they must all be considered to be of secondary occurrence.

No. 30. Small alkaline pond on the river terrace. Loc. 2. Stagnant water. 38 forms. Dominants: *Epithemia zebra* var. *saxonica*, *Nitzschia denticula*, *Navicula halophila* (9.6 per cent.), *N. cryptocephala* (7.8 per cent.).
In the halobion spectrum the indifferent group dominates; haline forms, however, are represented by 13.8 per cent. of the valves counted. The pH spectrum is of an alkaliphilous character.
Rarer forms: *Navicula amphibola*, *Synedra ulna* var. *abiskoensis*.

No. 28. Slightly salt lake (BÖCHER 1949, Table 14a). Algae. Stagnant water. 58 forms. Dominants: *Cocconeis placentula*, *Fragilaria capucina*, *Nitzschia denticula*, *Amphora veneta* (8.6 per cent.), *Achnanthes minutissima* (8.0 per cent.).

In the halobion spectrum the indifferent group is dominant, but there is a distinct element of haline forms. The high content of electrolytes in the water is much in evidence, alkaliphilous forms being greatly dominant. A few specimens of *Navicula tuscula* were found in the sample. It has not been found in others of the samples examined.

No. 34. Lille Saltsø (Böcher 1949, pp. 50—51). *Ranunculus cymbalaria* vegetation. Stagnant water. 35 forms. Dominants: *Denticula tenuis* var. *frigida* (66.0 per cent.!), *Nitzschia dubia* (9.2 per cent.).
Indifferent and haline forms dominates in the halobion spectrum. In the pH spectrum dominance of alkaliphilous forms.

No. 33. Salt lake north of the harbour road, cf. no. 10. Salt crust on the shore. Stagnant water. 29 forms. Dominants: none.
The station does not represent any natural habitat of diatoms and so the number of valves is very small (in four preparations only a total of 66 valves was found and it is the only sample in which counting to 500 valves could not be done).
The stock of valves is highly suggestive of a secondary occurrence, partly because of the small number of valves, partly because the forms are distributed irregularly all over the spectrum.

No. 11. Store Saltsø. Loc. 7. (Böcher 1949, p. 53). Small drying-up puddle between two mounds of loess + mud. Stagnant water. 47 forms. Dominants: *Diatoma elongatum* var. *tenuis*, *Fragilaria capucina*, *Gomphonema angustatum* var. *producta*. The halobion spectrum is not of a particularly haline character. Apart from *Diatoma elongatum* var. *tenuis*, which, as pointed out above, must be considered rather euryhaline, there is a great dominance of indifferent forms. The pH spectrum is of a clearly alkaline character.
The station perhaps has rather a good number of secondary forms.

D. Saline, Highly Alkaline Waters (Böcher 1949, p. 52 ff.).

All five samples from stagnant water. Water analyses (Böcher 1949, Table 16) from Store Saltsø (Samples 35 and 38) show high contents of chloride and other electrolytes. The water is highly alkaline (pH about 9.5).

Halobion as well as pH spectra all unambiguously point to a saline and alkaline environment. In all halobion spectra haline forms are very dominant. In a pond near a salt lake (Samples 8 and 25) mesohalobous forms are more dominant than in Store Saltsø itself. At the sampling the content of chloride must be assumed to have been at least 400—500 mg/l as "The water had a slightly salt and somewhat bitter taste" (Böcher 1949, p. 52). Probably the fluctuations in the content of salts are great, a fact which perhaps may explain the great dominance of the mesohalobous forms there.

The pH spectra are still more biassed than the halobion spectra, the alkaliphilous group in all the spectra constituting more than 83 per cent. of all valves counted.

No. 10. Alkaline, salt lake north of the harbour road (BÖCHER 1949, p. 52—53). Algae. Stagnant water. 21 forms. Dominants: *Diatoma elongatum* var. *tenuis*, *Synedra pulchella* (63.4 per cent.!).
The sample was completely dominated by the incontestably halophilous (mesohalobous?) *Synedra pulchella*. *Diatoma elongatum* var. *tenuis* was very frequent, too, a fact which emphasizes the euryhalinity of this species and form. The mesohalobous *Navicula halophila* is rather common. Other diatoms play quite a subordinate part in the sample, which also is very poor in species. Thus the spectra are completely dominated by the haline and alkaliphilous groups.

No. 8. Small pond near salt lake (BÖCHER 1949, p. 52). Stagnant water. 59 forms. Dominants: *Synedra pulchella* (38.2 per cent.), *Nitzschia denticula* (9.8 per cent.). The sample is greatly characterized by the mesohalobous *Synedra pulchella*. *Nitzschia denticula* in several of the West Greenland samples accompanies the haline forms and consequently must be considered euryhaline. Halobion spectrum: of a clearly haline character. The pH spectrum: markedly alkaline.

No. 25. Like no. 8. Stagnant water. 36 forms. Dominants: *Synedra pulchella* (80.4 per cent.!).
The sample is very onesidedly characterized by *Synedra pulchella*, which is accompanied by seven other halophilous-mesohalobous forms, none of which, however, being common. The pH spectrum: markedly alkaline.

No. 35. Store Saltsø. Loc. 7. (BÖCHER 1949, p. 53). Dark coloured sand and mud under layer of *Daphniae* in another drying-up puddle surrounded by vegetation with many ± halophilous species (*Lomatogonium*, *Carex maritima*, *Triglochin palustris*). Stagnant water. 40 forms. Dominants: *Amphora veneta*, *Navicula cryptocephala*, *N. digitoradiata* var. *minor*, *Nitzschia frustulum*, *Navicula halophila*, *N. cincta*? (Pl. VI, fig. 3) (7.6 per cent.), *Denticula tenuis* var. *frigida* (7.6 per cent.).
The halobion spectrum is markedly haline and the pH spectrum is of a greatly alkaline character.
Rarer forms: *Navicula cuspidata* var. *héribaudi*, *Nitzschia tryblionella* var. *debilis*, *Cocconeis pediculus*.

No. 38. Like no. 35. Moss hanging from loess-moss terrace. Stagnant water. 39 forms. Dominant: *Diatoma elongatum* (70.0 per cent.).
The halobion spectrum is of a clearly haline character, as besides the euryhaline *Diatoma elongatum* there are at any rate seven other clearly haline forms.
The pH spectrum has a clear dominance of alkaliphilous forms.

E. Deviating Water.

No. 42. Godthåb. Hole filled with water close to the colony. Stagnant water. 70 forms. Dominants: *Navicula digitoradiata* var. *minor*, *N. cryptocephala*, *N. salinarum* var. *minima*, *N. viridula* var. *slesvicensis* (9.4 per cent.).
This sample deviates from all the others in the material investigated by its considerable content of mesohalobous and euhalobous forms, a considerable number of which are decidedly marine forms, which must be supposed to be of secondary occurrence at the station.

Because of the special character of the flora in this sample a list of the forms found in the sample is given below in Table 3. The forms marked with an asterisk have been found in Sample 42, only.

Table 3.

	Percentage	Halobion rate
*Achnanthes brevipes Ag.	×	mesohalobous
* — delicatula Kütz.	×	—
* — hauckiana Grun.	1.2	—
*Amphora lineolata Ehr.	×	—
* — normanni Rabh.	4.2	indifferent
* — sp.	×	?
*Actinocyclus curvatulus Janisch	×	euhalobous
Caloneis bacillum Grun.	×	indifferent
*Cocconeis costata Greg.	×	euhalobous
— scutellum Ehr.	0.2	mesohalobous
— — var. parva Grun.	1.6	—
* — — var. stauroneiformis W. Smith	0.4	euhalobus
*Coscinodiscus excentricus Ehr.	×	—
* — sp.	0.2	—
Denticula tenuis Kütz.	0.2	indifferent
Diatomella balfouriana Grev.	×	—
*Diploneis didyma (Ehr.) Cleve	0.2	mesohalobous
* — finnica (Ehr.) Cleve	×	indifferent
* — interrupta (Kütz.) Cleve	×	mesohalobous
Epithemia turgida (Ehr.) Kütz.	×	indifferent
Eunotia praerupta Ehr.	×	halophobous
— triodon Ehr.	×	—
Frustulia rhomboidea (Ehr.) de Toni var. saxonica (Ehr.) de Toni	×	—
*Gomphonema boreale Østrup var. minor Foged	×	?
*Licmophora gracilis (Ehr.) Grun. var. anglica (Kütz.) Peragallo	×	euhalobous
*Navicula cancellata Donk.	0.4	—
— cryptocephala Kütz.	10.4	indifferent
— digitoradiata (Greg.) A. Schmidt	×	mesohalobous
— — var. minor. var. nov.	44.8	—
* — elegans W. Smith	×	euhalobous
* — forcipata Grev. var. suborbicularis Grun.	×	?
* — gregaria Donkin	0.2	halophilous
* — humerosa Bréb.	×	mesohalobous
* — ignobilis Krasske	×	?
— mutica Kütz.	×	indifferent
— peregrina (Ehr.) Donkin	0.4	mesohalobous
* — — var. meniscus Schum.	×	—
* — plicata Donkin	0.4	euhalobous
— protracta Grun.	×	indifferent

Table 3 (continued).

	Percentage	Halobion rate
Navicula pusilla W. Smith	0.4	halophilous
* — pygmaea Kütz.	0.8	mesohalobous
* — rhombica Greg.	×	euhalobous
— salinarum Grun.	0.2	mesohalobous
* — — var. minima Kolbe	21.4	—
— viridula Kütz. var. slesvicensis (Grun.) Cleve	9.4	indifferent
Nitzschia ignorata Krasske	0.2	halophilous
* — sp.	×	?
Pinnularia borealis Ehr.	×	indifferent
* — intermedia Lagerst.	×	?
— krockii Grun.	×	indifferent
— microstauron (Ehr.) Cleve var. brébissoni (Kütz.) Hustedt	×	? —
* — nobilis Ehr.	0.2	—
— streptoraphe Cleve	×	—
* — sp.	2.4	?
*Plagiogramma staurophorum (Greg.) Heiberg	0.2	euhalobous
*Pleurosigma sp.	×	—
*Rhabdonema minutum Kütz.	×	—
*Rhoicosphenia marina (W. Smith) M. Smith	×	—
Rhopalodia musculus (Kütz.) C. Müller	0.4	mesohalobous
Stauroneis anceps Ehr.	×	indifferent
— parvula Grun.	×	—
Synedra tabulata (Ag.) Kütz.	×	mesohalobous
Tabellaria fenestrata (Lyngbye) Kütz.	×	indifferent
— flocculosa (Roth) Kütz.	×	halophobous
*Trachyneis aspera Ehr.	×	euhalobous

5. SYSTEMATIC SECTION

The systematic classification of the species of diatoms found in the present material which has been used in the following survey is that found in Fr. Hustedt's works. Immediately after each specific name it is stated according to which illustration and description the species is determined here. For documentation and in cases in which there may be some doubt about full agreement between the original species and the form described here, some drawings of the West Greenland forms are reproduced in the plates at the end of the paper.

For each species it is furthermore indicated within which of the 4 (5) ecological groups of localities it occurs, by means of the previously used group designations A, B, C, D (and E). It is also in each group stated in which sample the species has been found. Besides other information about the species which may be adduced, an indication is given of the place of the species in the halobion and pH system as used at the calculation of spectra above.

As for more details about the occurrence of the various species in the material reference is made to the alphabetical list of the species in Table 4.

A. Centrales.

Fam. **Coscinodiscaceae.**

The genus **Melosira** Agardh.

Melosira distans (Ehr.) Kütz. Hustedt 1930, p. 92, fig. 53.
Scarce in A (12, 36) and C (34). Rare in A (4) and in B (17).
Boreal form of small lakes. Halophobous, acidophilous.

— — var.
Common in A (40: 12.6 per cent.).
Halophobous, acidophilous.

— — var. *lirata* (Ehr.) Bethge. Hustedt 1930, p. 93, fig. 55.
Common in A (21: 3.4 per cent.).
Boreal form of small lakes. Halophobous, acidophilous.

— *italica* (Ehr.) Kütz. subsp. *subarctica* O. Müller. Hustedt 1930, p. 91, fig. 52.
Scarce in A (22).
Indifferent, alkaliphilous.

Melosira nummuloides (Dillw.) Ag. HUSTEDT 1930, p. 84, fig. 39.
Rare in A (2).
Mesohalobous.

— *pfaffiana* (Reinsch) Grun. HUSTEDT 1930, p. 93, fig. 58.
Rare in A (2).
Boreal, perhaps stenothermal cold-water form. Halophobous, acidophilous.

— *roeseana* Rabh. HUSTEDT 1930, p. 93, fig. 59.
Scarce in A (4, 41), rare in B (15).
Widely distributed aerophilous form often occurring in overflowed moss.
Hal.: indifferent, pH: indifferent.

— *sulcata* (Ehr.) Kütz. HUSTEDT 1930—37, II, p. 276, fig. 119.
Rare in D (8).
Euhalobous coastal form.

The genus **Cyclotella** Kütz.

Cyclotella antiqua W. Sm. HUSTEDT 1930, p. 102, fig. 75.
Rare in A (36).
Boreal. Halophobous, acidophilous.

— *comta* (Ehr.) Kütz. HUSTEDT 1930, p. 103, fig. 69.
Rare in A (22, 9, 24) and C (33).
Cosmopolitan plankton form. Hal. and pH: indifferent.

— — var. *oligactis* (Ehr.) Grun. HUSTEDT 1930, p. 103.
Rare in B (14).
Hal. and pH: indifferent.

— *kützingiana* Thwaites var. *radiosa* Fricke. HUSTEDT 1930, p. 99, fig. 64.
Rare in A (3).
Hal. and pH: indifferent.

The genus **Stephanodiscus** Ehr.

Stephanodiscus astraea (Ehr.) Grun. HUSTEDT 1930, p. 110, fig. 85.
Rare in C (11).
Cosmopolitan eutrophic plankton form, which is not common in alpine and subalpine localities.
Hal.: indifferent, pH: alkaliphilous.

The genus **Coscinodiscus** Ehr.

Coscinodiscus excentricus HUSTEDT 1930—37, I, p. 388, fig. 201.
Scarce in E (42).
Euhalobous.

The genus **Actinocyclus** Ehr.

Actinocyclus curvatulus Janisch. HUSTEDT 1930—37, I, p. 538, fig. 307.
Rare in E (42).
Euhalobous. (According to JØRGENSEN previously found in Norwegian fjords).

Melosira distans and varieties are the most widely distributed centric forms of diatoms found in the material. *M. roeseana*, which particularly occurs in overflowed moss, is presumably rather widely distributed in the area, too, whereas the ecological basis of the occurrence of the other centric forms will probably rarely be present.

B. Pennales.

I. Araphideae.

The genus **Tabellaria** Ehr.

Tabellaria fenestrata (Lyngb.) Kütz. HUSTEDT 1930, p. 122, fig. 99.
Most frequent in A (2, 3, 18, 29, 24, 32, 13). Scarce or rare in B (14), C (11), and E (42).
Particularly pelagic in oligotrophic water. Hal. and pH: indifferent.

— — var. *intermedia* Grun. HUSTEDT 1930—37, II, p. 27, fig. 556.
Dominant in several samples in A (2, 21, 5, 32). Less frequent in a number of other A-samples (12, 36, 22, 3, 20, 9, 24), in B (37, 17, 7), in C (33), and in D (35, 38).
Much more frequent than the species. Halophobous, acidophilous.

— *flocculosa* (Roth.) Kütz. HUSTEDT 1930, p. 123, fig. 101.
Dominant in some A-samples (2, 21, 18, 5, 24, 12, 36) with respectively 31.8—47.2—18.6—22.0—11.0—67.2—14.4 per cent. Dominant in a B-sample (no. 14: 20.2 per cent.). Otherwise rather common, particularly in acid or neutral samples, but rare in alkaline ones. Rather eurytopic species, which is very common in subarctic areas. If anything, however, halophobous and acidophilous.

The genus **Licmophora** Ag.

Licmophora gracilis (Ehr.) Grun. var. *anglica* (Kütz.) Perag. HUSTEDT 1930—37, II, p. 60, fig. 583.
Rare in E (42).
Euhalobous.

The genus **Meridion** Ag.

Meridion circulare Ag. HUSTEDT 1930, p. 130, fig. 118.
Dominant in B (17). Rare in A (9, 12, 29), B (15), and C (33).
A characteristic rheobiont, which here, too, occurs in running water (no. 17).
Hal.: indifferent, pH: alkaliphilous.

— — var. *constricta* (Ralfs) *van Heurck*. HUSTEDT 1930, p. 131, fig. 119.
Rare in A (36). Ecology as the species.

The genus **Diatoma** De Candolle.

Diatoma elongatum Ag. HUSTEDT 1930, p. 127, fig. 111.
Very common (dominant) in neutral samples B (1: 34.6 and 15: 18.6 per cent.), and alkaline sample D (38: 70.0 per cent.). Otherwise common—scarce in several A, B, C, and D samples.
It is a very eurytopic species, as has already been pointed out by P. A. C. HEIBERG (1863, p. 57): "occurs in all kinds of localities, in peat bogs, stagnant and running water, etc." KRIEGER (1927, p. 30) states about this species that it "umfasst mehrere ökologisch bestimmte Rassen," which seems corroborated by my own observations, as I have found the species in all localities so far investigated (except for the dystrophic wood lake Sorte Sø in South Funen) and with somewhat varying morphological traits. Its occurrence in West Greenland, too, shows that it is very eurytopic, at any rate as regards halinity and pH. Halophilous. Alkaliphilous.

— — var. *tenuis* (Ag.) van Heurck. HUSTEDT 1930—37, II, p. 100, fig. 629 d-g.
Dominant in B (17: 30.6 per cent.), C (11: 25.6 per cent.), and D (10: 27.2 per

cent.). Furthermore rather common in many neutral-alkaline samples, whereas it seems to be less numerous in the acid samples. It may be somewhat more alkaliphilous than the species. Halophilous. Alkaliphilous.
Plate I, figs. 1—3: Fig. 1 is a form of *D. elongatum* var. *tenuis* (nearly like A. Schmidt's Atl. T. 268, fig. 58). Figs. 2 and 3 are more like var. *minor* Grun. (like A. S. Atl. T. 268, figs. 52—53, 61), and must be considered very short forms of this variety. Size and outline also remind of *D. anceps*, but as the number of striae here is 3—6 as against 6—10 in 10 μ in *D. elongatum*, and as transitional forms between those pictured in figs. 1—3 are common, I consider the determination above as the correctest.

The genus **Plagiogramma** Grev.

Plagiogramma staurophorum (Greg.) Heiberg. HUSTEDT 1930—37, II, p. 110, fig. 635.
Scarce in E (42).
Euhalobous.

The genus **Ceratoneis** Ehr.

Ceratoneis arcus Kütz. HUSTEDT 1930, p. 134, fig. 122.
Rare in B (14) together with var. *linearis*.
The species is common in cold running water, in rivers as well as rivulets and springs.
Hal. and pH: indifferent.

— — var. *linearis* Holmboe. HUSTEDT 1930, p. 135, fig. 124.
Dominant in B (14: 16.0 per cent.). Rare in A (36, 20) and C (34). Like the species frequent in running water; markedly rheophilous.
Hal. and pH: indifferent.

The genus **Fragilaria** Lyngbye.

Fragilaria brevistriata Grun. HUSTEDT 1930—37, II, p. 168, fig. 676 a-e.
Common in A (40), but otherwise not found in the material.
Hal.: indifferent, pH: alkaliphilous.

— *capitellata* (Grun.) Boye Petersen. BOYE PETERSEN 1946, p. 54, fig. 4.
Scarce in A (41).
Hal.: indifferent, pH: ?

— — var. *petersenii* Foged. FOGED 1951, p. 42, Pl. VI, fig. 10a, b.
Plate I, figs. 14—15.
Scarce in A (2, 9, 24, 32), common in B (14: 8.0 per cent.).
Hal.: indifferent, pH: indifferent (alkaliphilous?).

— *capucina* Desmazieres. HUSTEDT 1930, p. 138, fig. 126.
Plate I, fig. 17.
Dominant in B (14: 13.6 per cent.), and C (28: 17.6 per cent., 11: 28.0 per cent.). Besides, in 14 other samples from acid as well as neutral and alkaline water; often rather common.
Hal.: indifferent, pH: alkaliphilous.

— — var. *lanceolata* Grun. HUSTEDT 1930, p. 138, fig. 126.
Plate I, fig. 16.
Rare in A (2).
Halophilous. Alkaliphilous.

Fragilaria constricta Ehr. HUSTEDT 1930—37, II, p. 166, fig. 674a-c.
Rare in A (4).
Boreal form. Halophobous. Acidophilous.

— *construens* (Ehr.) Grun. HUSTEDT 1930, p. 140, fig. 135.
Scarce in A (2), C (11), and D (38).
One of the most frequent freshwater diatoms in Europe. Rather eurytopic.
Hal.: indifferent, pH: alkaliphilous.

— *crotonensis* Kitton. HUSTEDT 1930, p. 137, fig. 125.
Scarce in A (12).
Plankton form. Hal.: indifferent, pH: alkaliphilous.

— *laevissima* Cleve. (?). BOYE PETERSEN 1924, p. 318, fig. 7.
Scarce in A (41).
Ecology: ?

— *lapponica* Grun. HUSTEDT 1930, p. 145, fig. 155.
Scarce in A (4).
Hal.: indifferent, pH: ?

— *pinnata* Ehr. HUSTEDT 1930, p. 142, fig. 141.
Plate I, figs. 10—11.
Scarce in A (18, 29, 9, 24), B (1) and C (28).
Hal.: indifferent, pH: alkaliphilous.

— *vaucheriae* (Kütz.) Boye Petersen. BOYE PETERSEN 1938, p. 167, fig. 1.
Plate I, figs. 6, 7.
Dominant in B (14: 38.0 per cent.). Scarce in A (2, 22, 3, 29, 5, 32), in B (31, 7), and common in C (30, 28) and D (8, 25).
Hal.: indifferent, pH: alkaliphilous.

— *vaucheriae* Boye Petersen. ?.
Plate I, figs. 9, 12.
The specimens pictured are referred to *F. vaucheriae* with some doubt, as they have slightly radiate striae and therefore in that respect resemble *F. capitellata*. As, however, the "pseudoraphe is as a rule lanceolately expanded in the middle" (BOYE PETERSEN 1946, p. 54) and the striae are "distinctly radiate" in *F. capitellata*, the forms pictured seem to be most closely related to *F. vaucheriae*.
Scarce in A (9, 41) and B (14).

— *virescens* Ralfs. HUSTEDT 1930—37, II, p. 162, fig. 672 Aa, b.
Common in A (36: 9.0 per cent.), rather common in A (12, 4, 2, 9, 24).
Hal. and pH: indifferent.

— — var. *elliptica*. Hustedt. HUSTEDT 1930—37, II, p. 163, fig. 672 Ae.
Plate I, fig. 13.
Rare in A (2).
Hal. and pH: indifferent.

— sp. Plate I, figs. 4, 5. Scarce in A (9) and B (14).

— sp. Plate I, fig. 8. Scarce in B (14).

The genus **Synedra** Ehr.

Synedra acus Kütz. HUSTEDT 1930, p. 155, fig. 170.
Common in B (15: 8.6 per cent.). Scarce or rare in A (24, 29) and in C (30).
Hal.: indifferent, pH: alkaliphilous.

Synedra acus var. *radians* (Kütz.) Hustedt. HUSTEDT 1930, p. 155, fig. 171.
Common in B (31).
Hal.: indifferent, pH: alkaliphilous.

— *amphicephala* Kütz. HUSTEDT 1930, p. 156, fig. 173.
Scarce in A (18).
Hal. and pH: ?.

— *formosa* Hantzsch. HUSTEDT 1930—37, II, p. 233, fig. 720.
Scarce in D (8).
Euhalobous coastal form particularly common in warmer seas.

— *investiens* W. Smith. HUSTEDT 1930—37, II, p. 209, fig. 699.
Plate I, fig. 24.
Scarce in E (42).
Euhalobous coastal form common on North Atlantic coasts.

— *montana* Krasske. HUSTEDT 1930—37, II, p. 204, fig. 694.
Rare in A (29).
Hal. and pH: indifferent.

— *rumpens* Kütz. HUSTEDT 1930, p. 156, fig. 175.
Rather common in many samples. A (21, 18, 29, 9, 24), B (31), C (30, 28, 34), D (8, 25).
Hal. and pH: indifferent.

— — var. *fragilarioides* Grun. HUSTEDT 1930—37, II, p. 208, fig. 697a.
Scarce in D (8, 25).

— *pulchella* Kütz. HUSTEDT 1930, p. 160, fig. 187.
Dominant in D (10: 63.4 per cent., 8: 38.2 per cent., 25: 80.4 per cent.). Scarce in A (12, 22, 20, 9), B (17), C (34, 33, 11), and D (38).
Mesohalobous. Alkaliphilous.

— *tabulata* (Ag.) Kütz. HUSTEDT 1930, p. 159, fig. 184.
Scarce — rare in A (20, 13), C (33), and E (42).
Mesohalobous. Alkaliphilous.

— *tenera* W. Smith. HUSTEDT 1930—37, II, p. 211, fig. 703.
Common in A (2), scarce in A (5, 9) and B (17).
Hal. and pH: indifferent.

— *ulna* (Nitzsch) Ehr. HUSTEDT 1930, p. 151, figs. 158—159.
Widely distributed, but not particularly common in A (36, 18, 29, 5, 9, 24, 32), in B (15, 37, 17, 7), in C (30, 34, 33), and in D (8, 25).
Hal.: indifferent, pH: alkaliphilous.

— — var. *aequalis* (Kütz.) Hustedt. HUSTEDT 1930, p. 152, fig. 164.
Common in B (31), scarce in A (2).
Hal.: indifferent, pH: alkaliphilous.

— — var. *abiskoensis* (Hustedt) var. nov. HUSTEDT 1944, p. 92, fig. 1b.
Scarce in several samples: A (5, 32), B (15, 31), C (30).
This peculiar form, which is characterized by the fact that the distance between the striae varies greatly on the same shell, was first observed by HUSTEDT (1942, p. 92) in a rivulet in the Abisko area in Lapland. As it is rather widely distributed and constant in the present West Greenland material, it may perhaps be justifiable to consider it a special variety.

II. Raphidioideae.

The genus **Eunotia** Ehr.

Eunotia alpina (Naeg.) Hustedt. HUSTEDT 1930—37, II, p. 304, fig. 770.
Dominant in A (36: 19.9 per cent.). Found only in A, and not rarely there.
A (12, 2, 22, 21, 3, 18, 20, 40, 9, 24, 32, 13).
Halophobous. Acidophilous.

— *arcus* Ehr. HUSTEDT 1930, p. 175, fig. 216.
Plate I, fig. 18.
Plate I, fig. 20.
Scarce in A (29, 5, 40), and B (7).
Hal. and pH: indifferent.
This species is stated by HUSTEDT (1944, p. 93) as well as KRASSKE (1949, p. 10) to be calciphilous. Accordingly it is here considered indifferent as regards halinity as well as pH.

— *bidentula* W. Smith. HUSTEDT 1930—37, p. 277, fig. 744.
Plate I, fig. 23.
Rare in A (40, 41).
Boreal form. Halophobous. Acidophilous.

— *bigibba* Kütz. HUSTEDT 1930—37, p. 282, fig. 747 B.
Plate II, fig. 1.
Scarce or rare in A (12, 36, 39, 2, 5).
Halophobous. Acidophilous.

— *crista-galli* Cleve. HUSTEDT 1930—37, p. 294, fig. 760.
Plate I, figs. 19 and 22.
Scarce in A (36, 4).
Halophobous. Acidophilous.

— *denticulata* (Bréb.) Rabh. HUSTEDT 1930—37, p. 290, fig. 757a-d.
Rare in A (4).
Halophobous. Acidophilous.

— *diodon* Ehr. HUSTEDT 1930—37, p. 276, fig. 742.
Plate II, figs. 11—13.
Rather common in some samples in A (12, 4, 29, 5, 40, 24).
Halophobous. Acidophilous.

— *elegans* Østrup. (?). ØSTRUP 1910, p. 172, Plate V, fig. 105.
Plate II, figs. 9—10.
Rare in A (2, 24).
BOYE PETERSEN's examinations of ØSTRUP's original slide (BOYE PETERSEN 1950, p. 5, Pl. I, figs. 1—2) show that the valves there have 24 striae in 10 μ, while HUSTEDT (1930, p. 183, and 1930—37, II, p. 287) states 20 striae, only, in 10 μ, as also the dimensions of the valves stated by HUSTEDT (l: 29—70 μ, b: 2—5 μ) exceed the measures of the original specimens (l: 19—28 μ, b: 2.4—2.5 μ). The specimen pictured in Pl. II, fig. 10, has the dimensions 22 $\times$ 3.2 μ and 18—20 striae in 10 μ. Pl. II, fig. 9 is 27.3 μ l and 2.6 μ b and likewise has 18—20 striae in 10 μ. The form and number of striae are as in HUSTEDT 1930—37, p. 287. BOYE PETERSEN considers HUSTEDT's form as being closely related to *E. exigua*. BERG (1939, p. 438) for the same form states 17—20 striae in 10 μ. I consider the forms from West Greenland pictured here to be identical with the Swedish specimens described by BERG, which I have myself seen in several Swedish samples, where it is rather common. As both *E. elegans* and *E. exigua*

according to the type specimens have 24 striae in 10 μ, the present form (like the Swedish one), which seems very constant, perhaps should be considered an independent species.
Boreal. Halophobous. Acidophilous.

Eunotia exigua (Bréb.) Grun. HUSTEDT 1930—37, II, p. 285, fig. 752. BOYE PETERSEN 1950, p. 6, Pl. 1, figs. 3—13.
Not rare in most A-samples (36, 39, 4, 2, 22, 21, 18, 20, 5, 40, 9), scarce in B (37), and not found in C, D, and E.
As in the case of the preceding species there is great uncertainty in the literature as regards *E. exigua* and *E. tenella*. HUSTEDT (1930—37, II, pp. 284—87) both in text and illustrations has tried to simplify conditions, but cannot be said to have made matters much clearer. BOYE PETERSEN (1950) has taken the problem up for renewed research and by, as far as possible, going back to the type specimens, he tries to delimit and define these difficult forms. BOYE PETERSEN's delimitation of the species, which is characterized by great accuracy and clarity, has been followed, as far as possible, in the present work. Thus I have on the basis of the number of striae tried to refer the forms examined to the designations used by BOYE PETERSEN.
Halophobous. Acidophilous.

— *fallax* A. Cleve. HUSTEDT 1930—37, II, p. 288, fig. 753.
Plate II, fig. 5.
Scarce in A (39, 40).
Halophobous. Acidophilous.

— *flexuosa* (Bréb.) Kütz. HUSTEDT 1930—37, II, p. 312, fig. 778.
Rather common or scarce in several samples in A (12, 36, 2, 21, 32).
Rare in C (33).
Like most other *Eunotia* species reckoned as halophobous and acidophilous. It has undoubtedly a tendency towards indifference in both spectra.

— *gracilis* (Ehr.) Rabh. HUSTEDT 1930—37, II, p. 305, fig. 771.
Scarce—rare in A (2, 9, 32), and in B (1). Not observed in any of the other neutral samples or in alkaline samples. According to HUSTEDT (1944, p. 96) this species in the temperate zone occurs under other ecological conditions than in arctic regions.
Halophobous. Acidophilous.

— *lapponica* Grun. HUSTEDT 1930—37, II, p. 295, fig. 762.
Rare in A (4).
Boreal species. Halophobous. Acidophilous.

— *lunaris* (Ehr.) Grun. HUSTEDT 1930, p. 183, fig. 249.
Common in most A-samples (dominant in no. 12), scarce in B (31, 17, 14, 19, 7), scarce in C (33), and rare in C (11).
A rather eurytopic species, which, however, seems to prefer oligotrophic localities, as its optimum undoubtedly occurs in a humic acid milieu.
Hal. and pH: indifferent.

— — var. *capitata* Grun. HUSTEDT 1930, p. 185, fig. 250.
Scarce in B (1).
Hal. and pH: indifferent.

— — var. *subarcuata* (Naeg.) Grun. HUSTEDT 1930, p. 185, fig. 251.
Distribution and occurrence as the species. Undoubtedly connected with it by

transitional forms, as it is sometimes very difficult to decide which of the forms is present.
Hal. and pH: indifferent.

Eunotia monodon Ehr. HUSTEDT 1930—37, II, p. 305, fig. 772a, b.
Scarce — rare in A (36, 39, 4, 2, 21, 3, 18, 40, 32).
Halophobous. Acidophilous.

— — var. *bidens* (Greg.) W. Smith. HUSTEDT 1930—37, II, p. 306, fig. 286b.
Scarce in A (39, 5).
Halophobous. Acidophilous.

— — var. *maior* (W. Smith) Hustedt. HUSTEDT 1930, p. 186, fig. 255.
Scarce in A (2, 32).
Halophobous. Acidophilous.

— *paludosa* Grun. BOYE PETERSEN 1950, p. 8, Plate 1, figs. 14—21.
Plate II, fig. 19.
HUSTEDT (1930—37, II, p. 286) considers this species synonymous with *E. exigua*. BOYE PETERSEN (1950, p. 8) re-establishes the species and demonstrates that its number of striae is 22—24 in 10 μ (other dimensions in Danish material: l: 13—40 μ, b: 2.2—3.3 μ). Pl. II, fig. 19, the dimensions of which are l: 12.3 μ, b: 2.8 μ, and the number of striae 22—24 in 10 μ, should probably be referred to this species.
Scarce in A (22).
Halophobous. Acidophilous.

— *papilio* (Grun.) Hustedt. HUSTEDT 1930—37, II, p. 278, fig. 745.
Rare in A (5, 40) and B (31).
Boreal species. Halophobous. Acidophilous.

— *parallela* Ehr. HUSTEDT 1930—37, II, p. 302, fig. 768.
Rare in A (4).
Boreal species, particularly connected with *Sphagnum*.
Halophobous. Acidophilous.

— *pectinalis* (Kütz.) Rabh. HUSTEDT 1930, p. 180, fig. 237.
Rather common in A (3, 18) and B (37).
Like *E. lunaris* seems to be rather eurytopic.
Hal. and pH: indifferent.

— — var. *minor* (Kütz.) Rabh. HUSTEDT 1930, p. 182, fig. 238.
Common in A (2, 21, 18, 29, 9, 24, 32), scarce in B (31, 17) and C (28).
Hal. and pH: indifferent.

— — — fo. *impressa* (Ehr.) Hustedt. HUSTEDT 1930—37, II, p. 298, fig. 763g, h.
Rather common in A (4, 2, 21, 3, 29, 9, 24), rare in B (17).
Hal. and pH: indifferent.

— — — fo. *intermedia* Krasske. HUSTEDT 1930—37, II, p. 298, fig. 763 l-o.
Rather common in A (2, 18).
This form probably has its optimum in localities with somewhat more acid water than the other *pectinalis* forms.
Hal.: halophobous, pH: acidophilous.

— *praerupta* Ehr. HUSTEDT 1930, p. 174, fig. 211.
Dominant in A (39: 18.8 per cent.). Scarce in most samples in A (12, 36, 4, 2, 18, 29, 5, 40, 9, 24, 32, 13), rare in B (15, 37, 7), in C (34) and E (42).
Halophobous. Acidophilous.

Eunotia praerupta var. *bidens* Grun. HUSTEDT 1930, p. 174, fig. 213.
Frequent in A (39: 7.4 per cent.) together with the species.
Otherwise scarce in A (36, 40).
Halophobous. Acidophilous.

— — var. *inflata* Grun. HUSTEDT 1930, p. 174, fig. 212.
Plate II, figs. 3—4.
Rare or scarce in A (36, 39, 2, 40, 32).
Halophobous. Acidophilous.

— — var. *muscicola* Petersen. HUSTEDT 1930—37, II, p. 280, fig. 747 h.
Plate II, fig. 2.
Rather common in A (39, 4), rare in A (1, 41), and in B (1).
Halophobous. Acidophilous.

— *polydentula* Brun. HUSTEDT 1930—37, II, p. 280, fig. 747 h.
Plate II, fig. 18.
Rare in A (4).
Halophobous. Acidophilous.

— *polyglyphis* Grun. HUSTEDT 1930—37, II, p. 294, fig. 761.
Rare in A (4).
Halophobus. Acidophilous.

— *rhomboidea* Hustedt. HUSTEDT 1950, p. 435, Plate XXXVI, figs. 34—41.
Plate II, figs. 16—17.
Rather common in A (12, 36, 2, 21).
A species previously unnoticed, but obviously widely distributed.
Common in acid environments poor in nutrients in Denmark, Norway, Sweden.
Halophobous. Acidophilous.

— *rhyncocephala* Hustedt. HUSTEDT 1937, p. 170, figs. 5—6.
Plate I, fig. 21. L: 13.6 μ, b: 2.6 μ. 14 striae in 10 μ. Scarce in A (36).
Hal. and pH: indifferent.

— *septentrionalis* ØSTRUP 1897, p. 274, Plate 1, fig. 10. BOYE PETERSEN 1950, p. 10, Pl. 2, figs. 1—9.
Plate II, fig. 7—8.
Scarce in A (2), rare in A (12, 36, 21).
Halophobous. Acidophilous.

— *sudetica* (O. Müller) Hustedt. HUSTEDT 1930, p. 182, fig. 242.
Scarce in A (20) and in B (7).
Halophobous. Acidophilous.

— *tenella* (Grun.) Hustedt. HUSTEDT 1930—37, II, p. 284, fig. 749. BOYE PETERSEN 1930, p. 12, Pl. 2, figs. 16—25.
Plate II, figs. 14—15. Sporangial form Plate II, figs. 20—21.
Dominant in A (22: 20.8 per cent.). Common in most A-samples (12, 36, 39, 4, 3, 18, 20, 29, 40, 9, 24, 32), not rare in B (37, 17, 19, 7), scarce in C (28, 33), and rare in D (8).
This species is perhaps somewhat more eurytopic than the other, closely related, small E. species.
Halophobous. Acidophilous.

— *triodon* Ehr. HUSTEDT 1930—37, II, p. 274, fig. 741.
Scarce in A (4).
Halophobous. Acidophilous.

III. Monoraphideae.

The genus **Cocconeis** Ehr.

Cocconeis costata Greg. HUSTEDT 1930—37, II, p. 332, fig. 785.
Rare in E (42).
Euhalobous.

— *pediculus* Ehr. HUSTEDT 1930, p. 188, fig. 259.
Rare in A (32) and D (35).
Indifferent. Alkaliphilous.

— *placentula* Ehr. HUSTEDT 1930, p. 188, fig. 259.
Dominant in C (28: 12.8 per cent.). Rather common in A (39, 2, 22, 9, 24, 32), scarce in B (1, 37, 7), in C (34, 11), and D (8, 35, 38).
Indifferent. Alkaliphilous.

— — var. *lineata* (Ehr.) Cleve. HUSTEDT 1930, p. 190, fig. 262.
Scarce in A (29).
Indifferent. Alkaliphilous.

— *scutellum* Ehr. HUSTEDT 1930, p. 191, fig. 267.
Secondary in A (9). Scarce in E (42).
Euhalobous.

— — var. *parva* Grun. HUSTEDT 1930—37, II, p. 338, fig. 791.
Scarce — rare in A (39) and in D (8). Rather common in E (42).
Mesohalobous. Alkaliphilous.

— — var. *stauroneiformis* W. Smith. HUSTEDT 1930—37, II, p. 339, fig. 792.
Scarce in E (42).
Euhalobous.

The genus **Achnanthes** Bory.

Achnanthes brevipes Ag. HUSTEDT 1930, p. 210, fig. 309.
Scarce in E (42).
Mesohalobous. Alkaliphilous.

— *clevei* Hustedt. HUSTEDT 1930, p. 203, fig. 294.
Scarce in A (4).
Indifferent. Alkaliphilous.

— *coarctata* (Bréb.) Grun. var. *elliptica* Krasske. HUSTEDT 1930, p. 210, fig. 308b.
Rather common in A (41).
Typical form of wet rocks and overflowed mosses.
Indifferent. Acidophilous.

— *conspicua* A. Mayer. HUSTEDT 1930, p. 202, fig. 291.
Scarce in A (29).
Indifferent. Alkaliphilous.

— *delicatula* Kütz. HUSTEDT 1930, p. 202, fig. 293.
Scarce in E (42).
Mesohalobous, euryhaline. Alkaliphilous.

— *depressa* (Cleve) Hustedt. HUSTEDT 1930—37, II, p. 417, fig. 870.
Scarce in A (2, 24).
Boreal species. Halophobous. Acidophilous.

— *flexella* (Kütz.) Brun. HUSTEDT 1930—37, II, p. 415, fig. 869 a-c.
Rather common in A (5). Rare in A (24), B (14), and C (11).
Boreal form; prefers cold water.
Halophobous. Acidophilous.

Achnantes brevipes var. *alpestris* Brun. HUSTEDT 1930—37, II, p. 416, fig. 869 d.
Scarce in A (2, 3, 5, 24), rare in A (29).
Ecologically behaving like the species.

— *hauckiana* Grun. HUSTEDT 1930—27, II, p. 388, fig. 834.
Scarce in E (42).
Mesohalobous. Alkaliphilous.

— *lapponica* Hustedt. HUSTEDT 1930—37, II, p. 414, fig. 868.
Rather common in A (5). Otherwise not found in the material.
Aerophilous cold-water form, particularly found on wet rocks and moss overflowed by water.
Halophobous. Acidophilous.

— *linearis* W. Smith. HUSTEDT 1930, p. 198, fig. 276.
Dominant in A (2, 3, 29, 9, 24, 32) with up to 40 per cent.
Otherwise in A (21, 18, 20) and B (15, 14).
Very common boreal form.
Hal. and pH: indifferent.

— — var. *pusilla* Grun. HUSTEDT 1930—37, II, p. 378, fig. 821 c-d.
Plate III, figs. 1—2.
As this variety may be difficult to distinguish from the species, both are here included in the species.

— *microcephala* Kütz. HUSTEDT 1930, p. 198, fig. 273.
Dominant in A (3: 10.4 per cent. and 29: 8.4 per cent.). Otherwise very common in many samples: A (36, 12, 2, 22, 18, 20, 5, 9, 24, 32), B (15, 31, 14, 7), C (30, 28, 34), D (8, 25, 35, 38).
Rather eurytopic. Hal. and pH: indifferent.

— *minutissima* Kütz. HUSTEDT 1930, p. 198, fig. 274.
Dominant in A (3, 9, 24). Common in many other samples: A (36, 4, 2, 18, 20, 29, 5, 32, 41), B (15, 31, 17, 7), C (30, 28, 11), scarce in D (10, 8, 25).
Like the preceding species rather eurytopic and generally together with it.
Hal. and pH: indifferent.

— *petersenii* Hustedt. Bot. Arch. 1938, p. 179, figs. 10—14.
Dominant in B (1: 54.6 per cent.). Rather common — scarce in A (2,22, 3, 29, 32), B (17), C (11), D (8, 38).
Hal. and pH: indifferent.

— *laterostrata* Hustedt. HUSTEDT 1930—37, II, p. 392, fig. 840.
Scarce in B (14).
Boreal. Hal.: ? pH: ?

— *marginatula* Grun. HUSTEDT 1930—37, II, p. 404, fig. 855.
Rather common in A (40: 3.4 per cent.), rare in A (2).
Aerophilous, boreal form, often found on wet rocks and in moss. Halophobous. Acidophilous.

— *pygmaea* (Schum.) Cleve. (?). BOYE PETERSEN 1928, p. 379, fig. 5. P. T. CLEVE 1894—95, p. 184.
Plate III, fig. 3, 4. Rapheless valve: L: 14.3 μ, b: 6.5 μ. 20—22 striae in 10 μ.
The number of striae is stated to be 15 in 10 μ in CLEVE, 16—18 in BOYE PETERSEN. The silicon ribs observed by BOYE PETERSEN along the raphe have not been observed here.
Scarce in A (4).

IV. Biraphideae.

a. Naviculoideae.

The genus **Diatomella** Grev.

Diatomella balfouriana Grev. HUSTEDT 1930, p. 214, fig. 312.
Plate III, fig. 5. L: 8.5 μ, b: 5.8 μ, striae: 22 in 10 μ.
Rare in A (5) and E (42). In the latter locality probably secondary. A widely distributed boreal form which seems to be rather eurytopic, at any rate as regards pH, as in tropic localities it has its optimum at pH 7.5—8 (HUSTEDT 1930—37, p. 208). This also applies to some northern localities (HUSTEDT 1944, p. 101). In other northern localities it is most frequent at pH 6.5—6.8 (KRASSKE 1949, p. 14).
Hal. and pH: indifferent.

The genus **Mastogloia** Thwaites.

Mastogloia braunei Grun. HUSTEDT 1930, p. 218, fig. 320.
Rare in C (30).
Mesohalobous. Alkaliphilous.

— *crucicula* (Grun.) Cleve. HUSTEDT 1930—37, II, p. 475, fig. 894.
Plate III, fig. 6. L: 16.0 μ, b: 7.8 μ, 15—16 striae in 10 μ.
Rare in D (8).
Marine, euhalobous, southern species, particularly occurring in warmer seas (Southern Europe, Central America). Syn.: *M. quadrinotata* Østrup, Bot. Tidsskrift, vol. 26, p. 301, Plate 2, fig. 33. 1904.

The genus **Diploneis** Ehr.

Diploneis didyma (Ehr.) Cleve. HUSTEDT 1930, p. 252, fig. 399.
Scarce in E (42).
Mesohalobous. Alkaliphilous.

— *elliptica* (Kütz.) Cleve. HUSTEDT 1930, p. 250, fig. 395.
Rare in B (37).
Hal. and pH: indifferent.

— *finnica* (Ehr.) Cleve. HUSTEDT 1930—37, II, p. 669, fig. 1064 a.
Rare in E (42); probably secondary.
Boreal species. Hal. and pH: indifferent.

— *interrupta* (Kütz.) Cleve. HUSTEDT 1930, p. 252, fig. 400.
Rare in E (42).
Mesohalobous. Alkaliphilous.

— *ovalis* (Hilse) Cleve. HUSTEDT 1930, p. 249, fig. 390.
Plate III, fig. 7. L: 20 μ, b: 11 μ, 10—11 striae in 10 μ.
Scarce or rare in A (12, 22, 29, 9, 24, 32), B (17, 7), C (11), and D (8).
Hal. and pH: indifferent.

— *petersenii* Hustedt. HUSTEDT 1930—37, II, p. 676, fig. 1068 f-h.
Rare in A (24).
Aerophilous form, often found in mosses overflowed by water.
Hal. and pH: indifferent.

The genus **Frustulia** Ag.

Frustulia rhomboidea (Ehr.) De Toni var. *saxonica* (Rabh.) De Toni. HUSTEDT 1930, p. 221, fig. 325.
Common in A (36, 39), scarce in A (12, 4, 40), rare in B (31), and in E (42), in E secondary.
Boreal form, very characteristic of certain oligotrophic localities. Halophobous. Acidophilous.

— — — fo. *capitata* A. Mayer. HUSTEDT 1930, p. 221.
Common in A (39), rare in A (12, 2).
Ecology as var. *saxonica*.

— *vulgaris* Thwaites. HUSTEDT 1930, p. 221, fig. 327.
Rare in A (40).
Hal.: indifferent. Alkaliphilous.

The genus **Neidium** Pfitzer.

Neidium affine (Ehr.) Cleve. HUSTEDT 1930, p. 242, fig. 376.
Rare in A (12, 36).
Hal. and pH: indifferent.

— — var. *amphirhynchus* (Ehr.) Cleve. HUSTEDT 1930, p. 243, flg. 377.
Scarce in A (36, 18), rare in A (2).
Hal. and pH: indifferent.

— — var. *capitata* Mölder. MÖLDER 1937, p. 30, fig. 1.
Very common in A (20: 7.2 per cent.) and in B (37: 5.6 per cent.).
Rare in A (2, 24).
Halophobous. Acidophilous.

— — var. *longiceps* (Grey.) Cleve. HUSTEDT 1930, p. 244, fig. 378.
Plate III, fig. 10.
Scarce in A (21, 9, 24, 41).
Boreal form. Halophobous. Acidophilous.

— — var. *undulata* Grun. P. T. CLEVE 1894—95, I, p. 68.
Rare in A (9, 32) and B (7).
Halophobous. Acidophilous.

— *bisulcatum* (Lagerst.) Cleve. HUSTEDT 1930, p. 242, fig. 374.
Occurs only in acid samples. Rather common in a good number of these: A (4, 2, 22, 21, 40, 9, 24, 32).
Hal. and pH: indifferent.

— *iridis* (Ehr.) Cleve. HUSTEDT 1930, p. 245, fig. 379.
Rather common in B (37), rare in A (2, 29, 9, 32), and B (7).
Halophobous. Acidophilous.

— — var. *ampliata* (Ehr.) Cleve. HUSTEDT 1930, p. 245, fig. 381.
Scarce in A (2, 24, 18), rare in A (3, 29, 9).
Hal. and pH: indifferent.

— sp.
Plate III, fig. 11. L: 48.0 μ, b: 18.8 μ, 14 striae in 10 μ.
Scarce in D (8).
Hal. and pH: indifferent.

The genus **Stauroneis** Ehr.

Stauroneis agrestis Boye Petersen. Boye Petersen 1915, p. 289, fig. 9.
Scarce in B (7).
Hal. and pH: indifferent. Probably an aerophilous species.

Stauroneis anceps Ehr. Hustedt 1930, p. 256, fig. 405.
Scarce in many acid and neutral samples: A (12, 36, 2, 22, 3, 18, 40, 9, 24, 32, 47), B (37, 17, 14), rare in E (42).
Hal. and pH: indifferent.

— — fo. *gracilis* (Ehr.) Cleve. Hustedt 1930, p. 256, fig. 406.
Common in A (40), rare in A (4).
Hal. and pH: indifferent.

— — fo. *linearis* (Ehr.) Cleve. Hustedt 1930, p. 256, fig. 407.
Rare in A (40).
Hal. and pH: indifferent.

— *legumen* Ehr. Hustedt 1930, p. 260, fig. 419.
Plate IV, fig. 2. L: 26.6 μ, b: 4.4 μ, 22—24 striae in 10 μ.
Scarce in A (22).
Hal. and pH: indifferent.

— *obtusa* Lagerst. Hustedt 1930, p. 260, fig. 416.
Scarce in some acid samples: A (5, 40, 41).
Hal. and pH: indifferent.

— *parvula* Grun. Hustedt 1930, p. 260, fig. 417 a.
Plate III, fig. 12, 14, 15.
Scarce in A (20, 41), rare in B (7) and E (42).
Hal. and pH: indifferent.

— — var. *prominula* Grun. Hustedt 1930, p. 260, fig. 417 b.
Plate IV, fig. 1.
Rare in A (24).
Hal. and pH: indifferent.

— *phoenicenteron* Ehr. Hustedt 1930, p. 255, fig. 404.
Dominant in A (22—10.4 per cent.). Besides, widely distributed and rather common in acid, neutral, as well as alkaline samples: A (12, 36, 39, 2, 22, 21, 18, 20, 29, 9, 24, 32), B (1, 15, 31, 37, 17, 14, 19, 7), C (30, 33, 11), D (8, 25).
Hal. and pH: indifferent.

— *smithii* Grun. Hustedt 1930, p. 261, fig. 420.
Rare in A (2, 24).
Hal. and pH: indifferent.

— — var. *incisa* Pantocsek. Hustedt 1930, p. 261, fig. 421.
Rare in A (24).
Hal. and pH: indifferent.

The genus **Caloneis** Cleve.

Caloneïs bacillum (Grun.) Cleve. Hustedt 1930, p. 236, fig. 360.
Plate III, fig. 17.
Scarce in A (4, 29, 9, 24), B (15, 19), C (28, 11), D (8, 38), and E (42).
Indifferent. Alkaliphilous.

— *boecheri* spec. nov. Fig. III: 19.
Valva elliptico-lanceolata, apicibus subacuminatis, 26 μ longa, 5 μ lata. Striae

18—19 in 10 μ, omnes convergentes, breves. Area axialis ab apicibus ad centralem aream versus latam, usque ad latera expansam latitudine valde crescens. Rhaphe recta vel subcurva; fissurae terminales ut leniter pori centrales utrinque ad idem latus deflexae.

Hab. in aqua dulci Groenlandiae occidentalis.

Very characteristic small *Caloneis* species, easily recognized by its broad axial area, the laterally spread central area, and the short convergent striae.

Scarce in A (4).

Caloneïs fasciata (Lagst.) Cleve fo. *acuta* Boye Petersen. BOYE PETERSEN 1928, p. 384, fig. 10.

Plate III, fig. 18. L: 20 μ, b: 3.3 μ, 20—22 striae in 10 μ. Plate IV, fig. 4. L: 18 μ, b: 4.2 μ, 20 striae in 10 μ.

Scarce in A (39, 4, 41).

The number of striae in the specimens pictured here is somewhat smaller (20—22 in 10 μ) than that stated by BOYE PETERSEN (23—25 in 10 .).

First found in moss in Iceland (BOYE PETERSEN 1928).

Halophobous ?. Acidophilous ?.

— *schumanniana* (Grun.) Cleve. HUSTEDT 1930, p. 239, fig. 369.

Rather widely distributed, but as a rule scarce in A (29), in B (31, 7), C (30, 28, 34, 11), and D (8, 25, 35, 38).

Indifferent. Alkaliphilous.

— *silicula* (Ehr.) Cleve. HUSTEDT 1930, p. 236, fig. 362.

Distribution almost as the preceding species. A (2, 32, 13), B (31, 7), C (30, 28), D (8, 25, 35, 38).

Indifferent. Alkaliphilous.

— — var. *alpina* Cleve. A. CLEVE 1895, p. 15, fig. 9. P. T. CLEVE 1894—95, I, p. 51.

Plate III, fig. 9. L: 43 μ, b: 6 μ. 20 striae in 10 μ.

Scarce in A (2, 3, 5) and D (8).

Syn.: *Navicula limosa* Lagerst. *Navicula silicula* Grun.

— — fo. *minutissima* Hustedt. FOGED 1951, p. 47, Pl. II, fig. 13.

Plate IV, fig. 5. L: 16.0 μ, b: 5.2 μ, 17—18 striae in 10 μ.

Scarce in A (5).

— — var. *truncatula* Grun. HUSTEDT 1930, p. 238, figs. 363—364.

Plate III, fig. 20. Plate IV, fig. 3.

As a rule scarce in A (2, 9, 24), B (17), C (34).

Indifferent. pH: indifferent.

The genus **Anomoeoneis** Pfitzer.

Anomoeoneis exilis (Kütz.) Cleve. HUSTEDT 1930, p. 264, fig. 429.

Plate III, fig. 8.

Rather common — scarce in A (12, 2, 3, 29, 5, 9, 24), rare in B (14).

Occurs here particularly in acid localities, whereas the species usually is found at somewhat higher pH (HUSTEDT 1938, 1944, KRASSKE 1949).

Hal. and pH: indifferent.

Syn.: *Navicula variabilis* Ross var. *capitata* Ross. Ross 1947, p. 196.

— — var. *lanceolata* A. Mayer. HUSTEDT 1930, p. 264. FOGED 1950, Pl. I, fig. 8.

Scarce — rare in A (2, 3, 29, 5, 9, 24), scarce in C (28).

Hal. and pH: indifferent.

Anomoeoneis serians (Bréb.) Cleve var. *brachysira* (Bréb.) Hustedt. HUSTEDT 1930, 264, fig. 427.
Dominant in A (36: 13.2 per cent.). Otherwise scarce or rare in A (12, 39, 4, 2) and B (37).
Halophobous. Acidophilous.

— *styriaca* (Grun.) Hustedt. HUSTEDT 1930, p. 265, fig. 432.
Plate III, fig. 16.
Rare in A (40).
Boreal form preferring alkaline water (HUSTEDT 1944, p. 107). KRASSKE, however, has found the species at pH 6.5—6.9 (1949, p. 16).
Probably hal. and pH: indifferent.
Syn.: *Navicula styriaca* Grun. in Ross 1947, p. 196.

— — var. *ventricosa* Hustedt. HUSTEDT 1930, p. 265.
Rare in A (39).
Ecology probably as the species.

— *zellensis* (Grun.) Cleve. HUSTEDT 1930, p. 264, fig. 430.
Rather common in A (5—2.2 per cent.). Otherwise not found in the material.
Boreal. Halophobous. Acidophilous.
Syn.: *Navicula zellensis* Grun. var. *typica* Ross in Ross 1947, p. 199, Pl. IX, fig. 9.

— — var. *linearis* Østrup. HUSTEDT 1930, p. 265. ØSTRUP 1910, p. 239, Pl. XIV, fig. 6.
Plate III, fig. 13.
Dominant in A (5: 17.4 per cent.). Rare in B (14, 7), and D (10, 8). Rare in A (21, 40).
Halophobous. Acidophilous.
Syn.: *Nav. zellensis* Grun. var. *linearis* (Østrup) Ross in Ross 1947, Pl. IX, fig. 8.

The genus **Navicula** Bory.

1. *Naviculae orthostichae* Cleve.

Navicula cuspidata Kütz. HUSTEDT 1930, p. 268, fig. 433.
Scarce in C (28).
Hal.: indifferent. Alkaliphilous.

— — var. *ambigua* (Ehr.) Cleve. HUSTEDT 1930, p. 268, fig. 434.
Rare in C (11) and D (35).
Hal.: indifferent. pH: alkaliphilous.

— — var. *heribaudi* Pereg. HUSTEDT 1930, p. 268, fig. 435.
Scarce in A (40) and D (35, 38).
Hal.: indifferent. pH: alkaliphilous.

— *halophila* (Grun.) Cleve. HUSTEDT 1930, p. 268, fig. 436.
Rare in A (22), scarce in B (15, 31, 7), common in A (29), C (30, 28, 11) and D (10, 8, 25, 35).
Mesohalobous. Alkaliphilous.
Plate V, fig. 6: L: 41 μ, b: 7.8 μ, 20 striae in 10 μ. Striae more convergent towards the end than usual in *N. halophila*, but otherwise in accordance with this species.

— *gregaria* Donk. HUSTEDT 1930, p. 269, fig. 437.
Plate V, fig. 5.
Scarce in E (42).
Halophilous. Alkaliphilous.

2. *Naviculae minusculae* Hustedt.

(This group includes CLEVE's three groups: *mesoleiae, minusculae,* and *entoleiae*).

Navicula bacilliformis Grun. HUSTEDT 1930, p. 237, fig. 446.
Widely distributed, but always scarce. A (2, 22, 21, 3, 20, 29, 40, 9, 24, 32), B (31, 37, 19, 7), C (30, 28), D (35, 38).
Hal.: indifferent. Alkaliphilous.

— *brekkaensis* Boye Petersen. BOYE PETERSEN 1928, I, p. 389, fig. 16.
Plate VI, fig. 4.
Rare in A (4).
Ecological conditions: ?

— *contenta* Grun. HUSTEDT 1930, p. 277, fig. 458.
Plate IV, fig. 11. Plate VI, fig. 13.
Rather common in A (4), scarce in A (39, 40), and rare in A (36).
Aerophilous moss-dweller, which is also often found on rocks overflowed by water.
Hal. and pH: indifferent.

— — fo. *biceps* Arnott. HUSTEDT 1930, p. 277, fig. 458 c.
Plate IV, fig. 12.
Common in A (41), scarce in A (39, 4, 22), rare in B (7).
Hal. and pH: indifferent.

— *festiva* Krasske (Syn.: *N. vitrea* (Østrup) Hustedt). HUSTEDT 1930, p. 289, fig. 489.
Common in B (7: 4.6 per cent.). Scarce in A (22, 40), rare in A (39, 2).
Aerophilous form particularly occurring in moist moss cushions.
Halophobous. Acidophilous.

— *fossalis* Krasske. A. SCHMIDT's Atl. T. 396, figs. 46—47.
Plate IV, fig. 26.
Rather common in A (4, 5).
Particularly found in *Sphagnum* cushions.
Halophobous. Acidophilous.

— *ivigtutensis* spec. nov. Fig. VI: 15, 16.
Valva elliptica, apicibus late rotundatis, 9—12 μ longa, 4—5 μ lata. Area axialis angusta, centralis valva dimidio ad quarta angustior. Striae 26—28 in 10 μ, radiantes.
Hab. in aqua dulci Groenlandiae occidentalis.
As regards form and number of striae this small delicately striated *Navicula* species reminds of the hypotheca of *Achnanthes marginatula*, which in one of the samples occurs together with it. As, however, it is easy to recognize *A. marginatula* by the presence of a rapheless, characteristic valve, and as the two corresponding valves of *A. ivigtutensis* are always alike each of them being provided with a raphe, I shall consider the latter an independent species.
Dominant in A (40—11.5 per cent.) and in B (7—15 per cent.). Rather common in A (22, 9).

— *jaernefeldtii* Hustedt. A. SMIDT's Atl. T. 404, figs. 6, 13.
Plate IV, fig. 27.
Rare in A (9, 24).
Boreal species. Hal.: indifferent. pH: acidophilous.

— *hassiaca* Krasske. HUSTEDT 1930, p. 279, fig. 462.
Plate IV, fig. 20.

Rare in A (2, 29).
Boreal form often occurring in moist moss. Halophobous. Acidophilous.

Navicula kotschyi Grun. P. T. Cleve 1894—95, I, p. 130. A. Schmidt's Atl. T. 370, figs. 31—32.
Plate VI, fig. 8.
Rare in B (14).
According to Hustedt 1937—39, I, p. 235, this species is a spring form preferably occurring in alkaline water (found in the pH area 5.5—7.7). It is particularly found in well aired biotopes. Also found on wet rocks. Hitherto known from Northern and Central Europe and Southeast Asia.
Pl. VI, fig. 8 has ends protracted somewhat farther than both Hustedt 1930, fig. 454, and Hustedt 1950, Pl. XXXVII, fig. 62; but it seems to constitute a natural continuation of these forms, of which the former has very slightly, the latter somewhat more protracted ends.
The species has hitherto been found very rarely, and some of the statements of findings must be considered doubtful as it can easily be mistaken for *N. mutica*. Hustedt 1950 (p. 400) has found it in plankton in a North German lake.
Also in Pearyland (Greenland) (Not publ.).

— *minima* (Grun.) var. *atomoides* (Grun.) Cleve. Hustedt 1930, p. 272, fig. 442.
Rare in A (36, 29).
Hal. and pH: indifferent.

— *mutica* Kütz. Hustedt 1930, p. 274, fig. 453 a.
Rather common in A (41), scarce in A (20), B (31, 17), and C (30).
Rare in B (15, 14) and E (42).
Extremely eurytopic form as regards halinity; by some authors considered to be halophilous. Often occurring aerophilously and in springs.
Hal.: indifferent (halophilous?). pH: indifferent.

— — var. *nivalis* (Ehr.) Hustedt. Hustedt 1930, p. 275, fig. 453 c.
Rare in A (41).
Hal. and pH: indifferent.

— *perpusilla* Grun. Hustedt 1930, p. 300, fig. 459.
Plate IV, fig. 7.
Absolutely dominant in A (4—70.8 per cent.), rather common in A (39,40) and rare in A (12, 5, 13) and B (17).
Aerophilous species particularly occurring in moss and on rocks overflowed by water.
Hal. and pH: indifferent.

— *rotaeana* (Rabh.) Grun. Hustedt 1930, p. 273, fig. 445.
Plate IV, figs. 8—10.
Common in A (4). Rare in A (22), rather common in B (14).
Mountainous form particularly found on wet rocks and in springs.
Hal. and pH: indifferent.

— *rotunda* Hustedt. Hustedt 1945, p. 916, Pl. XLI, fig. 29.
Rare in A (29).
Ecology: ?

— *seminulum* Grun. Hustedt 1930, p. 272, fig. 443.
Scarce in A (21).
Hal. and pH: indifferent.

— *subfossalis* Hustedt. Hustedt 1934, p. 383, figs. 14—15.
Plate IV, fig. 25.

Common in A (39: 4.2 per cent.). Rather common in A (4).
Mostly occurring in moss.
Hal. and pH: indifferent.

Navicula subrotundata Hustedt. HUSTEDT 1945, p. 917, Plate XLI, figs. 30—33.
Plate IV, fig. 18.
Rare in A (24).
Hal. and pH: indifferent.

— *variostriata* Krasske. HUSTEDT 1930, p. 273, fig. 447.
Plate IV, fig. 22.
Common in A (36), rare in A (12).
Mountainous form particularly found on mosses.
Hal.: indifferent. pH: acidophilous.

— *minuscula* Grun. HUSTEDT 1930, p. 288, fig. 483.
Plate IV, fig. 17.
Scarce in B (7).
Ecol. ?

— *soehrensis* Krasske var. *septentrionalis* Hustedt. HUSTEDT 1924, Pl. 17, fig. 3.
Plate IV, fig. 19.
Scarce in A (4).
Ecol. ?

3. *Naviculae bacillares* Cleve.

Navicula bacillum Ehr. HUSTEDT 1930, p. 280, fig. 465.
Rare in A (4).
Hal.: indifferent. pH: alkaliphilous.

— *pupula* Kütz. HUSTEDT 1930, p. 281, fig. 467 a.
Rare in A (2, 24).
Hal. and pH: indifferent.

— — var. *capitata* Hustedt. HUSTEDT 1930, p. 281, fig. 467 c.
Considerably more frequent than the species, but never common.
Scarce in A (2, 3, 18, 9, 24, 32), B (15, 31, 7), C (28, 34). Rare in D (8, 25).
Hal. and pH: indifferent.

— — var. *rectangularis* (Greg.) Grun. HUSTEDT 1930, p. 281, fig. 467 b.
Rare in A (2). Scarce in A (36) and B (7).
Hal. and pH: indifferent.

4. *Naviculae lineolatae* Cleve.

Navicula avenacea (Bréb.) Grun. HUSTEDT 1930, p. 297. P. T. CLEVE 1894—95, II, p. 15.
Plate V, fig. 3.
Rare in B (15, 31).
Mesohalobous. Alkaliphilous.

— *cancellata* Donk. PEREG. 1897—1908, p. 101, Pl. XIII, figs. 7—8.
Scarce in E (42).
Euhalobous.

— *cari* Ehr. HUSTEDT 1930, p. 299, fig. 512.
Plate V, fig. 4.
Rare in A (5).
Hal.: indifferent. pH: alkaliphilous.

— *cincta* (Ehr.) Kütz. HUSTEDT 1930, p. 298, fig. 510.
Plate V, figs. 8, 9.

Rare in A (20), B (31, 37, 7), C (28, 11), and D (8, 25, 38).
Halophilous. Alkaliphilous.

Navicula cincta var. ?. Plate VI, figs. 1—3.

— *clementis* Grun. A. SCHMIDT's Atl. T. 398, figs. 8—12.
Plate VI, fig. 11.
Rare in B (31) and C (30).
Often obviously aerophilous.
Hal.: indifferent. pH: alkaliphilous.

— *clementioides* Hustedt. HUSTEDT 1950, p. 348, Pl. XXXVII, figs. 59—61.
Scarce in A (24).
Ecol. ?

— *cryptocephala* Kütz. HUSTEDT 1930, p. 295, fig. 496.
Plate V, figs. 11, 13, 14.
Scarce in A (2, 22, 3, 5, 9, 24, 32, 13), rather common in B (15, 14, 7) and abundant in A (29), and in some C and D samples (30, 34, 33, 11, 10, 8, 35 — dominant in no. 35: 15 per cent.), and dominant in E (42: 10.4 per cent.).
Hal.: indifferent. pH: alkaliphilous.

— — var. *intermedia* Grun. HUSTEDT 1930, p. 295, fig. 497 b.
Rather common in A (29), and in C (28).
Hal.: indifferent. pH: alkaliphilous.

— *dicephala* (Ehr.) W. Smith. HUSTEDT 1930, p. 301, fig. 518.
Rare in A (2, 24).
Hal.: indifferent. pH: alkaliphilous.

— *digitoradiata* (Greg.) A. Schmidt. HUSTEDT 1930, p. 301, fig. 518.
Rare in A (22, 9, 24), scarce in D (8) and C (34), rare in E (42).
Mesohalobous. Alkaliphilous.

— *digitoradiata* (Greg.) A. Schmidt f. *minor* f. nov. Fig. V: 1, 2.
Valva minus quam 50 μ longa a typo differt, cui forma similis striisque in media parte radiantibus, brevioribus longioribusque alternatim, ad apices versus convergentibus, 12—16 in 10 μ.
Hab. in aqua plus minus subsalsa Groenlandiae occidentalis.
This rather common form of *N. digitoradiata* never reaches the minimum size given for the typical form. The striae—in accordance with the smaller size—are considerably denser than in the typical form (12—16 in 10 μ as against 9 striae in 10 μ in the species). Ecologically it is evidently closely related to the typical form, as it seems to have its optimum in alkaline and slightly saline water.
Rather common in A (29), B (37, 7), C (28, 34, 33, 11), D (25, 35), and E (42).

— *peregrina* (Ehr.) Kütz. HUSTEDT 1930, p. 300, fig. 516.
Rather common in B (37), scarce — rare in A (29) and in C (28), rare in D (38), and scarce in E (42).
Mesohalobous. Alkaliphilous.

— *pseudocryptocephala* spec. nov. Fig. VI: 12.
Valva elliptica, apicibus rostratis vel subcapitalis, 26—28 μ longa, 7—8 μ lata. Striae 16—17 in 10 μ, in media parte radiantes, ad apices versus parallelae. Area axialis angusta, costa tenui utrinque marginata. Area centralis rotundata, valva dimidio angustior. Rhaphe recta; pori centrales marginibus paulum incrassatis circumvallati, utrinque ad idem latus deflexi.
Hab. in aqua dulci Groenlandiae occidentalis.
As to form of the valve resembling *N. cryptocephala* very much, but deviating

from that species by having parallel striae towards the ends of the valve (*N. cryptocephala* has convergent striae towards the ends) and silicon ribs along the axial area.
Rare or rather common in A (29), B (15, 7), C (30, 28, 11) and D (10, 8, 25, 35).

Navicula radiosa Kütz. HUSTEDT 1930, p. 299, fig. 513.
Scarce — rare in A (4, 2, 3, 18, 29, 9, 24, 32), B (17, 7), and C (28).
Hal.: indifferent. pH: alkaliphilous.

— — var. *tenella* (Bréb.) Grun. HUSTEDT 1930, p. 299.
Rare in A (32).
Hal.: indifferent. pH: alkaliphilous.

— *rhynchocephala* Kütz. HUSTEDT 1930, p. 296, fig. 501.
Scarce in A (2), rare in B (7), scarce in C (34) and D (8).
Halophilous. Alkaliphilous.

— *rostellata* Kütz. Cleve Syn. II, p. 15. PEREGALLO 1897—1908, p. 95, Pl. XII, fig. 17.
Scarce in A (9).
Hal.: indifferent. pH: alkaliphilous.

— *salinarum* Grun. HUSTEDT 1930, p. 295, fig. 498.
Rather common in A (22), rather common — rare in B (37, 17, 7), scarce in D (10), rather common in D (35, 38), scarce in E (42).
Mesohalobous. Alkaliphilous.

— — fo. *minima* Kolbe.
Plate V, fig. 15, 16. Fig. 16: 15.6 μ, b: 5.2 μ, striae 22—23 in 10 μ.
Dominant in E (42: 21.0 per cent.).
Mesohalobous. Alkaliphilous.

— *simplex* Krasske. HUSTEDT 1930, p. 296, fig. 500.
Scarce in B (7).
Ecol. ?

— *viridula* Kütz. HUSTEDT 1930, p. 297, fig. 503.
Rather common in A (3, 9, 24, 32), rare in A (4), C (34), and D (8).
Hal.: indifferent. pH: alkaliphilous.

— — var. *slesvicensis* (Grun.) Cleve. HUSTEDT 1930, p. 297.
Scarce — rare in D (10, 25). Dominant in E (42: 9.4 per cent.).
Hal.: indifferent. pH: alkaliphilous.

— *vitabunda* Hustedt. HUSTEDT 1930, p. 302, fig. 523.
Rare in A (2).
Hal.: indifferent. pH: alkaliphilous.

— *vulpina* Kütz. HUSTEDT 1930, p. 297, fig. 504.
Rare in A (9) and B (7), scarce in C (28, 34).

5. *Naviculae punctatae* Cleve.

Navicula amphibola Cleve. HUSTEDT 1930, p. 309, fig. 554.
Plate VI, fig. 17.
Scarce in B (37), rare in A (29), and in C (30).
Subarctic species, often aerophilous.
Hal. and pH: indifferent.

— *humerosa* Bréb. HUSTEDT 1930, p. 311, fig. 559.
Rare in E (42).
Mesohalobous. Alkaliphilous.

Navicula pusilla W. Smith. HUSTEDT 1930, p. 311, fig. 558.
Scarce in A (13) and E (42).
Halophilous. Alkaliphilous.

6. *Naviculae heterostichae* Cleve.

Navicula cocconeiformis Gregory. HUSTEDT 1930, p. 290, fig. 493.
Scarce in A (12, 36, 39, 40), rare in B (14).
Halophobous. pH: indifferent.

— *pseudoscutiformis* Hustedt. HUSTEDT 1930, p. 291, fig. 495.
Scarce — rare in A (2, 21, 3, 18, 9, 24). Found in the acid samples only.
Hal. and pH: indifferent.

7. *Naviculae annulatae.*

Navicula lagerstedtii Cleve. A. SCHMIDT's Atl. T. 400, figs. 34—37.
Rare in A (40).
Hal. and pH: indifferent.

— — var. *palustris* Hustedt. HUSTEDT 1934, p. 385. A. SCHMIDT's Atl. T. 400, figs. 27—29, 33—37.
Plate IV, figs. 13—16.
Scarce in A (41), rare in A (2, 29, 40, 24), and in B (19).
Hal. and pH: indifferent.

8. *Naviculae decipientes.*

Navicula gibbula Cleve. CLEVE 1894—95, I, p. 140, Plate 5, fig. 17.
Plate VI, fig. 9. L: 32.5 μ, b: 8.5 μ. Striae: in the middle 20, towards the ends 23—24 in 10 μ.
Rare in A (22).
Halophobous. Acidophilous.

Syn.: *Nav. gibberula* Lagerst. Spitsb. D., p. 30, Pl. I, fig. 7a (1873).
Nav. terrestris Boye Petersen. BOYE PETERSEN 1915, p. 288, figs. 7—8.

— *inflata* Donkin. HUSTEDT 1930, p. 283, fig. 470.
Plate VI, fig. 14.
Scarce in A (2).
Ecology: ?

— *semen* Ehr. HUSTEDT 1930, p. 283, fig. 469.
Scarce in A (29) and B (15). Rare in A (32) and B (19).
Boreal species. Hal. and pH: indifferent.

— *protracta* Grun. HUSTEDT 1930, p. 284, fig. 472.
Rare in C (34).
Halophilous. Alkaliphilous.

— *protracta* Grun. HUSTEDT 1950, p. 401, Plate XXXVII, fig. 20.
Plate VI, fig. 10. L: 16.0 μ, b: 5.2 μ, about 22 striae in 10 μ. Elliptical with broadly rounded-off ends, as against the specimen in HUSTEDT 1930, fig. 472, which has linear valves with broadly prolonged ends.
Scarce in E (42).
Halophilous. Alkaliphilous.

— *subtilissima* Cleve. HUSTEDT 1930, p. 285, fig. 475.
Not rare in A (40), rare in A (39).
Subarctic species, which particularly occurs in acid water (HUSTEDT 1950, fig. 437).
Halophobous. Acidophilous.

Navicula rhombica Gregory. P. T. CLEVE 1894—95, I, p. 153, II, p. 141. PEREGALLO 1897—1908, p. 64, Plate VIII, fig. 10.
Rare in E (42).
Euhalobous.

10. *Naviculae lyratae* Cleve.

Navicula forcipata Grev. var. *suborbicularis* Grun. P. T. CLEVE 1894—95, II, p. 66.
Plate IV, fig. 21. L: 17.3 μ, b: 8.5 μ, 15 striae in 10 μ.
Scarce in E (42).
Euhalobous.

— *pygmaea* Kütz. HUSTEDT 1930, p. 299, fig. 513.
Rather common in E (42).
Mesohalobous. Alkaliphilous.

11. *Naviculae laevistriatae* Cleve.

Navicula elegans W. Smith. HUSTEDT 1930, p. 312, fig. 562.
Rare in E (42).
Euhalobous.

12. *Naviculae* ?

Navicula petersenii Hustedt. A. SCHMIDT's Atl. T. 402, figs. 1—7.
Plate VI, fig. 5. L: 30.0 μ, b: 8.4 μ. 14—15 striae in 10 μ.
Scarce in A (39).
Aerophilous, particularly on mosses.
Hal. and pH: indifferent.

— *petersenii* Hustedt. (?)
Plate VI, fig. 6. L: 35.8 μ, b: 8.0 μ. 14 striae in 10 μ. Scarce in A (39), where this form appears together with that in Plate VI, fig. 5. L: 30 μ, b: 8.4 μ. 14—15 striae in 10 μ.
That in Plate VI, fig. 6 seems to be identical with *Gomphonema angustatum* var. *lapponica* A. Cleve (1895, p. 21, Pl. I, fig. 21), whose raphe according to A. CLEVE's drawing also seems to be a *Navicula* raphe. The central striae, which in A. CLEVE's specimens are somewhat irregular, are regular in the West Greenland specimens, as shown in Plate VI, fig. 6.

— *torneensis* Cleve. P. T. CLEVE 1894—95, II, p. 44.
Plate IV, figs. 23—24.
Rare in A (39, 40).
Hal.: indifferent. pH: alkaliphilous.

— *tuscula* (Ehr.) Grun. HUSTEDT 1930, p. 308, fig. 552.
Rather common in C (28).
Hal.: indifferent. pH: alkaliphilous.

13. *Naviculae microstigmatae* Cleve.

Navicula plicata Donkin. HUSTEDT 1930, p. 186, fig. 478.
Scarce in E (42).
Euhalobous.

— *ignobilis* Krasske. KRASSKE 1938, fig. 11.
Plate VI, fig. 7.
Scarce in E (42).
Ecol. ?

The genus **Pinnularia** Ehr.

a. *Parallelistriatae.*

Pinnularia gracillima Greg. HUSTEDT 1924, p. 121, figs. 38—42.
Plate VII, figs. 1—2.
The most frequent *Pinnularia* species in the material.
Dominant in A (13: 81.2 per cent.), B (15: 33.8 per cent., 31: 11.0 per cent., 7: 15.2 per cent.). Otherwise in A (2, 22, 3, 20, 29, 5, 9, 24, 32), B (1, 37, 14, 19), C (30, 33, 11), and D (8, 25, 35).
Halophobous. pH: indifferent.

— *sublinearis* Grun. HUSTEDT 1930, p. 315, fig. 566. Plate VII, figs. 3—4. HUSTEDT 1942 a, p. 71, figs. 40—44.
Plate VII, fig. 3: Dim.: L: 16.3 μ, b: 3.3 μ, 22—23 striae in 10 μ.
Plate VII, fig. 4: Dim.: L: 18.2 μ, b: 3.3 μ, 22—24 striae in 10 μ.
Pinnularia sublinearis has a narrow linear axial area, and the striae are at right angles to the mid line, while *Caloneis bacillum* Mereschk. has an axial area which suddenly extends some distance below the poles. *Caloneis angustivalva* Boye Petersen (Dim.: L: 18.3 μ, b: 3.1 μ, 23 striae in 10 μ) like *P. sublinearis* has a narrow axial area, but, as distinct from *C. angustivalva*, it has striae radial in the middle and convergent towards the poles. The specimens pictured here, which are constant, must therefore, if anything, be referred to *P. sublinearis* Grun.
Scarce in A (7, 22).
Ecol.?

— *undulata* Greg. HUSTEDT 1930, p. 315, fig. 565. P. T. CLEVE 1891, p. 30, Pl. II, fig. 8.
Plate VII, fig. 8. Dim.: L: 24.7 μ, b: 5.2 μ, 22 striae in 10 μ.
Scarce — rare in A (12, 36, 9).
Hal.: indifferent. Acidophilous.
Syn.: *Pinnularia cleveana* Ross. Ross 1947, p. 202, Pl. IX, fig. 12.

— *molaris* Grun. HUSTEDT 1930, p. 316, fig. 568.
Plate VII, fig. 15. L: 40 μ, b: 5.8 μ, 16 striae in 10 μ. Plate VII, figs. 16, 17.
Cf. BOYE PETERSEN 1928, p. 406, fig. 26, and LUND 1945, p. 90.
Scarce in A (4).
Hal. and pH: indifferent.

b. *Capitatae.*

Pinnularia braunei Grun. var. *amphicephala* (A. Mayer) Hustedt. HUSTEDT 1930, p. 319, fig. 578.
Rather common in A (20), rare in A (24).
Halophobous. Acidophilous.

— *intermedia* Lagerst. BOYE PETERSEN 1928, p. 403, fig. 24a.
Plate VIII, figs. 5, 7—9.
Scarce in A (4, 3), and in B (15).
Hal. and pH: indifferent.

— *interrupta* W. Smith. HUSTEDT 1930, p. 317, fig. 573.
Scarce — rare in A (36, 2, 21, 18, 40, 9).
Hal.: indifferent. pH: acidophilous.

— — fo. *minutissima* Hustedt. HUSTEDT 1930, p. 317, fig. 574.
Plate VII, figs. 5—7, 11, 14.
Rare in A (36, 4, 2, 40, 9, 24, 32, 41), B (7), and D (8, 35).

Hal.: indifferent. pH: acidophilous.

Cf.: *Pinnularia biceps* Gregory fo. *petersenii* Ross. Ross 1947, p. 200, Pl. IX, fig. 11.

Pinnularia interrupta fo. *minor* Boye Petersen. BOYE PETERSEN 1928, p. 405, fig. 25.

Pinnularia krockii Grun. HUSTEDT 1930, p. 319, fig. 580.
Plate VII, fig. 19.
Rare in A (4).
Hal. and pH: indifferent.

— *mesolepta* (Ehr.) W. Smith. HUSTEDT 1930, p. 319, fig. 575 a.
Plate VII, fig. 12.
Widely distributed, but scarce or rare in many samples. A (12, 36, 2, 21, 3, 18, 29, 9, 24, 32), B (37, 7), C (28, 11).
Hal. and pH: indifferent.

— — fo. *angusta* Cleve. HUSTEDT 1930, p. 319, fig. 575 b.
Plate IX, fig. 1.
Rare in A (12, 36).
Hal. and pH: indifferent.

— *subcapitata* Greg. HUSTEDT 1930, p. 317, fig. 571.
Plate VII, fig. 13.
Rather common in many acid samples. A (12, 36, 4, 22, 21, 18, 40, 13).
Scarce — rare in B (17, 14), rare in D (35).
Hal. and pH: indifferent.

— — var. *hilseana* (Janisch) O. Müller. HUSTEDT 1930, p. 317, fig. 572.
Plate VII, fig. 9.
Scarce in A (22).
Ecol. ?

c. *Divergentes.*

Pinnularia boecheri spec. nov. Fig. IX: 7.

Valva lineari-lanceolata, lateribus parallelis vel subconvexis, apicibus late rotundeque acuminatis, 42 μ longa, 12—13 μ lata. Area axialis latior, latitudine ad medium versus paulum aucta. Centralis area fasciam transversalem latam, marginem valvae attingentem formans. Rhaphe recta; pori centrales leniter, ut abrupte fissurae terminales, utrinque ad idem latus deflexi. Striae radiantes, ad apicem versus tamen convergentes, ca. 10 in 10 μ.

Hab. in aqua subsalsa Groenlandiae occidentalis.

This species is particularly characteristic by the suddenly and sharply bent distal ends of the raphes. Undoubtedly a species which has its optimum in somewhat saline localities, as the same (or at any rate a closely related and very similar) species has been found in a dune lake in Thy, North Jutland (saline water) and in Åmosen in West Zealand, where it has no doubt been brought from elsewhere.
Scarce in E (42).

Pinnularia divergens W. Smith. HUSTEDT 1930, p. 323, fig. 589.
Scarce — rare in A (36, 39, 40).
Halophobous. Acidophilous.

— — var. *elliptica* Grun. P. T. CLEVE 1894—95, II, p. 79.
Scarce in A (39, 40) or rare in A (12, 36).
Halophobous. Acidophilous.

Pinnularia divergentissima Grun. HUSTEDT 1930, p. 320, fig. 581.
Found in acid samples only, and always scarce or rare. A (36, 4, 2, 21, 40).
Halophobous. Acidophilous.

— — var. *wulffii* Boye Petersen. BOYE PETERSEN 1924, p. 315, fig. 4.
Plate VII, fig. 10. L: 33 μ, b: 5.5 μ, 14 striae in 10 μ.
Scarce in A (4) or rare in A (3, 18).
Halophobous. Acidophilous.

— *microstauron* (Ehr.). Cleve. HUSTEDT 1930, p. 320, fig. 582.
Plate VIII, fig. 6.
Scarce — rare in some acid, neutral, and alkaline samples. A (12, 36, 39, 4, 2, 18, 20, 29, 9), B (7), C (11), D (38).
Hal. and pH: indifferent.

— — var. *brébissonii* (Kütz.) Hustedt. HUSTEDT 1930, p. 321, fig. 584.
Plate VII, fig. 18.
Occurrence of the variety nearly like that of the species. Scarce — rare in A (2, 3, 18), B (14), D (10, 35, 38), E (42).
Hal. and pH: indifferent.

— — — fo. *diminuta* Grun. HUSTEDT 1930, p. 322, fig. 585.
Common in A (20: 7.6 per cent.), scarce in A (2, 3).
Hal. and pH: indifferent.

d. *Distantes.*

Pinnularia balfouriana Greg. HUSTEDT 1930, p. 326, fig. 599.
Plate VIII, fig. 16.
Rare in A (5).
Hal.: indifferent. pH: acidophilous.

— *borealis* Ehr. HUSTEDT 1930, p. 326, fig. 597.
Plate VIII, figs. 11, 13—15.
Dominant in A (41: 20.8 per cent.). Widely distributed (usually scarce or rare) in most acid and neutral samples, rarer in the alkaline samples. A (36, 39, 4, 22, 21, 20, 40, 9, 24, 32), B (1, 15, 31, 37, 14, 19, 7), C (34, 11), D (35), E (42).
Often occurring as an aerophilous form.
Hal. and pH: indifferent.

— — var. *brevicostata* Hustedt. HUSTEDT 1930, p. 326, fig. 597.
Scarce or rare in A (4, 2, 29, 9, 24), scarce in B (1, 31, 19), rare in D (25).
Hal. and pH: indifferent.

— — fo. *ovalis* Boye Petersen. BOYE PETERSEN 1928, p. 402, fig. 23 b.
Plate VIII, fig. 10.
Rare in B (15).
Hal. and pH: indifferent.

— *karelica* Cleve. HUSTEDT 1930, p. 322, fig. 586.
Scarce in A (32), rare in A (29).
Hal. and pH: indifferent.

— *lata* (Bréb.) W. Smith. HUSTEDT 1930, p. 324, fig. 595.
Rare in A (4).
Halophobous. Acidophilous.

— — fo. *thuringiaca* (Rabh.) A. Mayer. HUSTEDT 1930, p. 326, fig. 596.
Rare in A (4, 40).
Halophobous. Acidophilous.

Pinnularia subsolaris Grun. HUSTEDT 1930, p. 322, fig. 588.
Scarce in A (12, 39, 4).
Hal. and pH: indifferent.

e. *Tabellariae.*

Pinnularia gibba Ehr. HUSTEDT 1930, p. 327, fig. 600.
Scarce or rare in A (36, 2, 21, 29, 40, 9, 24, 32).
Hal.: indifferent. pH: acidophilous.

— — var. *linearis* Hustedt. HUSTEDT 1930, p. 327, fig. 604.
Scarce in C (11).
Hal.: indifferent. pH: acidophilous.

— *parva* (Ehr.) Greg. var. *minuta* Østrup. BOYE PETERSEN 1928, p. 408, fig. 29b.
Plate VIII, figs. 1—4.
Rare in A (4, 3, 41, 13).
Hal.: indifferent. pH: acidophilous.

— *pulchra* Østrup. ØSTRUP 1895, p. 269, Pl. I, fig. 3.
Dominant in B (19). Scarce in A (29). Rare in A (9), B (1, 14, 7).
Hal. and pH: indifferent.

— *stomatophora* Grun. HUSTEDT 1930, p. 327, fig. 605.
Widely distributed and common in several acid samples. A (12, 36, 4, 2, 21, 3, 18, 20, 29, 5, 40, 24, 32), B (1, 15, 17), C (11).
Hal.: indifferent. pH: acidophilous.

— — var. *gibbosa* Hustedt. HUSTEDT 1944, p. 126, fig. 50.
Rare in A (5).
Hal.: indifferent. pH: acidophilous.

f. *Brevistriatae.*

Pinnularia nodosa Ehr. HUSTEDT 1930, p. 330, fig. 611.
Rare in A (2).
Hal.: indifferent. pH: acidophilous.

— — fo. *capitata* Cleve. BOYER 1916, p. 108, Pl. 30, fig. 19.
Plate IX, fig. 6. L: 42 μ, b: 7 μ, 11—12 striae in 10 μ.
Scarce in A (29).
Ecol.?

g. *Maiores.*

Pinnularia maior Kütz. HUSTEDT 1930, p. 331, fig. 614.
Rare in A (2, 24, 32).
Halophobous. Accidophilous.

h. *Complexae.*

Pinnularia gentilis (Donkin) Cleve. HUSTEDT 1930, p. 335, fig. 618.
Scarce or fairly rare in acid and neutral samples. A (36, 2, 22, 20, 9, 41), B (15, 37), rare in A (29).
Hal. and pH: indifferent.

— *nobilis* Ehr. HUSTEDT 1930, p. 337, fig. 619.
Scarce and no doubt secondary in E (42).
Hal. and pH: indifferent.

— *streptoraphe* Cleve. HUSTEDT 1930, p. 337, fig. 620.
Rare in B (1).
Hal.: indifferent. pH: acidophilous.

Pinnularia viridis (Nitzsch) Ehr. HUSTEDT 1930, p. 334, fig. 617 a.
Widely distributed, but most frequent in acid and neutral samples. Most frequent (5.6 per cent.) in no. 19. A (12, 36, 39, 4, 21, 9, 32, 13), B (39, 19), C (11), D (8, 25).
Hal. and pH: indifferent.

— — var. *sudetica* (Hilse) Hustedt. HUSTEDT 1930, p. 335, fig. 617 b.
Scarce in A (5).
Hal. and pH: indifferent.

— sp. Plate IX, fig. 2. L: 46 μ, b: 8 μ, 10 striae in 10 μ.
In B (15).

— sp. Plate IX, fig. 3. L: 58 μ, b: 8 μ, 9 striae in 10 μ.
Dominant in A (20—12.4 per cent.). Not rare in A (22) and in B (15, 31).

— sp. Plate IX, fig. 4. L: 58 μ, b: 8 μ, 14—15 striae in 10 μ.
Is somewhat reminiscent of *P. stomatophora* Grun. var. *gibbosa* Hustedt. In A (1).

Pinnularia obscura Krasske. KRASSKE 1932, p. 117, fig. 22.
Rare in A (4).
Hal. and pH: indifferent.

Pinnularia hustedtii Mölder. MÖLDER 1951, p. 27, Pl. III, fig. 1.
Plate IX, fig. 5. Dim. of the specimen in Plate IX, fig. 5: L: 66.5 μ, b: 11.0 μ, 8 striae in 10 μ. Unsymmetrical central area. As MÖLDER gives the following dim.: L: 70—100 μ, b: 10—15 μ, 8—11 striae in 10 μ, and unsymmetrical central area, there seems to be close agreement between the specimen from West Greenland pictured here and the Finnish specimen.
Dominant (18.6 per cent.) in A (22). Common in A (18). Scarce in A (2, 21, 3, 9, 24) and in C (39) rare.

The genus **Amphora** Ehr.

Amphora dubiosa Østrup. ØSTRUP 1918, p. 39, Pl. LV, fig. 39, ROSS 1947, Pl. XI, fig. 14.
Plate X, figs. 1—2.
Rather common in B (7) and C (34).
Ecology: ?

— *lineolata* Ehr. HUSTEDT 1930, p. 346, fig. 636.
Scarce in E (42).
Mesohalobous. Alkaliphilous.

— *normanni* Rabh. HUSTEDT 1930, p. 343, fig. 630.
Rather common in E (42: 4.2 per cent.).
Hal. and pH: indifferent.
This species often occurs as an aerophilous form and in places where the amount of salt must be assumed to be very fluctuating. Therefore it is sometimes stated to be halophilous like some other frequently aerophilous forms occurring in moss and similar places. Both BOYE PETERSEN (1943) and FOGED (1949) have found the species in the salt bog Langemose in East Funen.

— *exigua* Greg. P. T. CLEVE 1894—95, II, p. 123.
Scarce in B (7) and D (10).
Mesohalobous. Alkaliphilous.

— *obscura* Krasske. KRASSKE 1938, figs. 28—33.
Plate X, fig. 4: L: 18.8 μ, b: 3.0 μ, 26—28 striae in 10 μ. Plate X, fig. 5: L: 15.0 μ, b: 2.8 μ, 24—26 striae in 10 μ. Plate X, fig. 3 (both valves).

Not rare in B (7), C (11), and D (10).
Ecology: ?

Amphora ovalis Kütz. HUSTEDT 1930, p. 342, fig. 628.
Scarce or rare in A (24), B (7), C (28, 11), and D (25, 35, 38).
Hal.: indifferent. pH: alkaliphilous.

— — var. *libyca* Ehr. A. SCHMIDT's Atl. Pl. 26, figs. 102—111.
Rather common in many of the alkaline samples. Not rare in some of the acid samples. A (4, 2, 3, 18, 29, 9, 24, 32), B (31, 7), C (30, 28, 34, 11), D (10, 8, 25, 35, 38).
Hal. and pH: indifferent.

— — var. *pediculus* Kütz. HUSTEDT 1930, p. 343, fig. 629.
Rare in B (14).
Hal.: indifferent. pH: alkaliphilous.

— *triundulata* Ross. Ross 1947, p. 222, Pl. XI, fig. 13.
Plate X, fig. 6.
Scarce in B (7), rare in A (22, 32).
Ecology: ?
Syn.: *Amphora normanni* var. *undulata* Krasske. KRASSKE 1929, fig. 21.

— *veneta* Kütz. HUSTEDT 1930, p. 345, fig. 631.
Dominant in B (11: 8 per cent. in no. 7), C (28: 8.6 per cent.), and D (35: 10.0 per cent.). Otherwise more or less common in A (22, 9, 24, 41), B (15, 31, 17), C (30, 34, 11), and D (10, 8, 25, 38).
Halophilous. Alkaliphilous.

— sp.
Plate IX, fig. 8: L: 30 μ, b: 4.5 μ, about 22 striae in 10 μ. Rare in E (42).
Plate IX, fig. 9: L: 31 μ, b: 5.2 μ, about 20 striae in 10 μ. Rare in D (10).
Plate IX, fig. 10: L: 29 μ, b: 4.9 μ, about 17 striae in 10 μ. Rare in D (10).
Plate IX, fig. 11: L: 28 μ, b: 5.5 μ, about 22—24 striae in 10 μ. Rare in C (28).

The genus **Cymbella** Agardh.

Cymbella affinis Kütz. HUSTEDT 1930, p. 362, fig. 671.
Scarce in A (3) and C (28, 34).
Hal.: indifferent. pH: alkaliphilous.

— *angustata* (W. Smith) Cleve. HUSTEDT 1930, p. 351, fig. 639.
Plate X, fig. 10.
Scarce in A (5).
Boreal form. Probably hal. and pH: indifferent.

— *aspera* (Ehr.) Cleve. HUSTEDT 1930, p. 365, fig. 680.
Rare in A (2).
Hal.: indifferent. pH: alkaliphilous.

— *cesati* (Rabh.) Grun. HUSTEDT 1930, p. 351, fig. 638.
Scarce, but widely distributed in the acid samples, rare in neutral samples, and not found in alkaline samples. A (12, 36, 39, 2, 3, 18, 40, 9, 24), B (17, 14).
Boreal species. Hal. and pH: indifferent.

— *cistula* (Hempr.) Grun. var. *arctica* Lagerst. A. SCHMIDT's Atl. Pl. 10, fig. 12, Pl. 71, figs. 23—24.
Rare in A (3).
Boreal cold-water form. Hal. and pH: indifferent.

— — var. *maculata* (Kütz.) van Heurck. HUSTEDT 1930, p. 363, fig. 676 b.
Plate X, fig. 16 (small specimen).

Scarce in B (15, 31, 37, 7) and D (8, 38).
Hal. and pH: indifferent.

Cymbella delicatula Kütz. HUSTEDT 1930, p. 352, fig. 642.
Rare in B (14) and D (8).
Often found on rocks overflowed by water and in springs. Eurytopic as regards hal. and pH, but seems to prefer alkaline water (HUSTEDT 1944, p. 131).
Hal.: indifferent. pH: alkaliphilous.

— *gracilis* (Rabh.) Cleve. HUSTEDT 1930, p. 359, fig. 663.
Plate X, fig. 17.
Scarce in several acid samples: A (12, 36, 4, 2, 3). Dominant in A (40: 13.0 per cent.).
Hal. and pH: indifferent.

Cymbella groenlandica spec. nov. Fig. X: 7.
Valva asymmetrice lanceolata, margine dorsali magis, ventrali minus convexo, apicibus paulum protractis, rotundatis, 42 μ longa, 9 μ lata. Rhaphe recta; fissurae terminales ad latus dorsale versus deflexae. Area axialis lata, in medio non dilatata. Striae radiantes, manifesto punctatae, in media parte ca. 14 dorsales, 15—16 ventrales in 10 μ.
Hab. in aqua dulci Groenlandiae occidentalis.
Found only in sample A (5).

— *hauckii* van Heurck. (?). HUSTEDT 1930, p. 355, fig. 654.
Plate XI, fig. 15: L: 68 μ, b: 16.3 μ. In the centre of the valve on the dorsal side about 9 striae, on the ventral side about 11 striae in 10 μ, towards the ends denser.
Scarce A (12, 36, 18).
The species is by HUSTEDT 1945, p. 936, considered endemic to the eastern Mediterranean area. Therefore the form pictured is referred to this species with some hesitation.
Ecol.: ?

— *hebridica* (Greg.) Grun. HUSTEDT 1930, p. 359, fig. 662.
Scarce in A (12, 36, 21, 29, 24), rare in B (14).
Boreal species. Halophobous. Acidophilous.

— *heteropleura* Ehr. var. *minor* Cleve. A. SCHMIDT's Atl. Pl. 374, figs. 11—12.
Scarce in A (18) and B (19).
Boreal form. Halophobous. Acidophilous.

— *hybrida* Grun. HUSTEDT 1930, p. 357, fig. 652.
Scarce in B (17).
Ecology: ?

— *incerta* Grun. HUSTEDT 1930, p. 360, fig. 665.
Dominant in A (39: 34.4 per cent.). Widely distributed, but otherwise rather scarce in most acid samples. A (12, 36, 4, 2, 3, 20, 29, 40, 9), rare in C (30).
Boreal species. Halophobous. Acidophilous.

— *laevis* Naeg. (?). HUSTEDT 1930, p. 353, fig. 643.
Common in A (5: 9.8 per cent.).
Hal.: indifferent. pH: alkaliphilous.

— *latens* Krasske. KRASSKE 1937, p. 53. 1938, fig. 21.
Plate XI, fig. 14.
Scarce in A (3, 20, 29, 24), rare in B (14, 7).
Halophobous. Acidophilous.
Syn.: *Cymbella affinis* Kütz. var. *semicircularis* Lagerst. (1873).

C. ventricosa Ag. var. *semicircularis* (Lagerst.). Ross, 1947, p. 221, Pl. XI, fig. 12.

Cymbella leptoceros (Ehr.) Grun. HUSTEDT 1930, p. 353, fig. 645.
Plate XI, fig. 11.
Scarce in A (20).
Hal.: indifferent. pH: alkaliphilous.

— *microcephala* Grun. HUSTEDT 1930, p. 351, fig. 637.
Plate XI, figs. 2—4.
Scarce in acid and alkaline samples. A (3, 29, 5, 24, 9), B (31, 37), C (30, 28), and D (8).
Hal.: indifferent. pH: alkaliphilous.

— — var. *robusta* Hustedt. HUSTEDT 1938, Pl. XXV, figs. 14—15.
Plate XI, fig. 1.
Rare in A (9), rather common in A (29), B (31), and C (28).
Hal. and pH: indifferent.

— *naviculiformis* Auerswald. HUSTEDT 1930, p. 356, fig. 653.
Plate X, fig. 9.
Dominant in B (17: 12.8 per cent.). Scarce in the other samples: A (12, 36, 2, 21, 3, 29, 24, 32), B (14).
Hal. and pH: indifferent.

— *norvegica* Grun. HUSTEDT 1930, p. 359, fig. 664.
Plate XI, figs. 9, 10.
Scarce in A (12, 2, 5).
Boreal form. Hal. and pH: indifferent.

— *obtusa* Greg. HUSTEDT 1930, p. 361, fig. 667.
Plate XI, figs. 7—8.
Widely distributed in acid as well as alkaline samples, but always fairly scarce. A (2, 22, 3, 18, 29, 5, 9, 24, 32), B (15, 31, 37, 17, 7), C (30, 28, 33, 11), D (8). According to HUSTEDT 1944, p. 138, mainly distributed in alkaline water.
Hal.: indifferent. pH: alkaliphilous.

— — fo. *krasskei* fo. nov. KRASSKE 1943, p. 87, figs. 23—25.
Plate XI, figs. 5—6.
Rare in B (7, 14), scarce in C (34).
This short elliptical form, which seems to be very constant in boreal localities, in this West Greenland material appears in quite the same form as in Lapland. It must be considered justifiable to characterize it as a special forma, which therefore is named after KRASSKE, who was the first to picture it (1943, figs. 23—25).

— *parva* (W. Smith) Cleve. HUSTEDT 1930, p. 363, fig. 675.
Rare in A (29).
Hal.: indifferent. pH: alkaliphilous.

— *perpusilla* Cleve. HUSTEDT 1930, p. 361, fig. 666.
Scarce in A (12, 36, 3, 18), rare in B (14).
Halophobous. Acidophilous.

— *spuria* Cleve.?. P. T. CLEVE 1894—95, I, p. 166. A. SCHMIDT'S ATL. Pl. 377, fig. 11.
Plate XI, fig. 12: L: 55 μ, b: 15 μ, on the dorsal side 12—13, on the ventral side 14—15 striae in 10 μ in the middle.
The form pictured, which with some doubt is referred to *C. spuria* Cl., is rather common in several samples. The form can hardly belong to *C. cuspidata* as this species only has 9—10 striae in 10 μ in the middle. It also bears some resemblance to *C. Reinhardtii* Grun.

Rather common in A (39, 2, 22, 3, 20, 29, 40, 24), B (37, 17).
Hal. and pH: indifferent.

Cymbella stauroneiformis Lagerst. P. T. Cleve 1894—95, I, p. 165. A. Schmidt's Atl. Pl. 377, figs. 51—57.
Plate XI, fig. 13 and Plate X, fig. 8.
Scarce in B (37).
Ecology: ?

— *subaequalis* Grun. var. *oblonga* (Fontell) Ross. Ross 1947, p. 226, Pl. XI, fig. 10.
Scarce in A (5).
Ecology: ?

— *turgida* (Greg.) Cleve. Hustedt 1930, p. 358, fig. 660.
Common or scarce in many samples. A (39, 2, 21, 3, 18, 20, 29, 5, 24, 32, 41), B (1, 37, 17, 14, 7), C (33), D (10).
Hal. : indifferent. pH: indifferent (alkaliphilous?).

— *ventricosa* Kütz. Hustedt 1930, p. 359, fig. 661.
Plate X, figs. 14—15.
Widely distributed and often rather common in many samples, acid as well as alkaline ones. A (4, 2, 21, 3, 18, 20, 29, 9, 24, 32), B (37, 17, 14, 19, 7), C (28, 34, 11), D (8, 25, 38).
Hal. and pH: indifferent.

— *ventricosa* Kütz. var. *groenlandica* var. nov. Fig. X: 11, 12, 13.
A typo, cui forma et magnitudine similis, striis differt distantibus, 5—8 in 10 μ.
Hab. in aqua dulci Groenlandiae occidentalis.
Dominant in B (37: 23.0 per cent.). Particularly found in the acid samples and often together with the species. A (39, 2, 22, 18, 40, 9, 32), B (19, 7).
Hal. and pH: indifferent.
This variety, which is rather constant, is closely related to *C. ventricosa* as well as *C. turgida*. As the coarse punctuation of the striae (13—18 points in 10 μ, P. T. Cleve 1894—95, I, p. 168), which is a special characteristic of *C. turgida*, has not been observed in this form, it is referred to *C. ventricosa*, the punctuation of whose striae is much finer. By its very wide striation it deviates from the ordinary *C. ventricosa*, which has 12—18 striae in 10 μ.

The genus **Gomphonema** Agardh.

Gomphonema acuminatum Ehr. Hustedt 1930, p. 370, fig. 683.
Plate X, fig. 19.
Rare or scarce in A (2, 22, 29, 9, 24, 32), and in B (37, 7).
Hal.: indifferent. pH: alkaliphilous.

— — var. *brébissonii* (Kütz.) Cleve. Hustedt 1930, p. 370, fig. 685.
Plate X, fig. 20.
Commoner than the species in acid as well as alkaline samples. A (2, 3, 20, 29, 24, 32), B (1, 15, 31, 37, 7), C (30, 28, 34), D (38).
Hal.: indifferent. pH: alkaliphilous.

— — var. *coronata* (Ehr.) W. Smith. Hustedt 1930, p. 370, fig. 684.
Scarce in A (2).
Hal. and pH: indifferent.

— — var. *trigonocephala* (Ehr.) Grun. Hustedt 1930, p. 371, fig. 686.
Rare in A (32).
Hal. and pH: indifferent.

Gomphonema acuminatum var. *turris* (Ehr.) Cleve. HUSTEDT 1930, p. 372, fig. 686.
Plate XII, fig. 10.
Scarce in A (2).
Hal. and pH: indifferent.

— *angustatum* (Kütz.) Rabh. HUSTEDT 1930, p. 373, fig. 690.
Plate XII, fig. 1.
Dominant in B (17: 29.4 per cent.). Scarce in many acid and alkaline samples. A (12, 36, 39, 2, 22, 21, 18, 29, 5, 9, 24, 32), B (37, 7), C (34).
Hal.: indifferent. pH: alkaliphilous.

— — var. *linearis* Hustedt. HUSTEDT 1930, p. 373, fig. 672.
Plate XII, fig. 8.
Scarce or rare in A (12, 36).
Hal.: indifferent. pH: alkaliphilous.
Note. In the specimen pictured the isolated point in the central area was not observed.

— — var. *producta* Grun. HUSTEDT 1930, p. 373, fig. 693.
Plate XII, figs. 2—3.
Dominant in B (19: 30.6 per cent.) and C (11: 24.8 per cent.).
Otherwise scarce in acid and alkaline samples, although most frequent in alkaline-neutral samples. A (36, 2, 22, 9, 32), B (15, 31, 17, 7,), C (28), D (10, 8, 25).
Hal.: indifferent. pH: alkaliphilous.

— — var. *sarcophagus* (Greg.) Grun. HUSTEDT 1930, p. 373, fig. 691.
Plate XII, fig. 7.
Scarce in A (32), rare in A (29) and B (7).
Hal.: indifferent. pH: ?.

— — fo. *undulata* Grun. HUSTEDT 1930, p. 373, fig. 694.
Plate XII, figs. 4—6.
Rare or scarce in C (30), and in D (10), common in C (11: 8.4 per cent.).
Hal. and pH: indifferent.

— *augur* Ehr. HUSTEDT 1930, p. 372, fig. 688.
Rare in A (32).
Hal.: indifferent. pH: alkaliphilous.

— *boreale* Østrup var. *minor* var. nov. Fig. XII: 16.
A typo, cui forma similis, longitudine differt modo 16—17 μ et latitudine ca. 2 μ. Striae 16 in 10 μ. Area centralis asymmetrica.
Hab. in aqua subdulci Groenlandiae occidentalis.
Apart from the small size of the frustules and the rather small striae, this variety reminds very much of *G. boreale*, from which, however, it also deviates by having an asymmetrical central area.
Scarce in E (42).
Mesohalobous. Alkaliphilous.

— *constrictum* Ehr. HUSTEDT 1930, p. 377, fig. 714.
Scarce in A (2, 3), B (37, 7), and rare in A (29).
Hal.: indifferent. pH: alkaliphilous.

— — var. *capitata* (Ehr.) Cleve. HUSTEDT 1930, p. 377, fig. 715.
Rare in A (29).
Hal. and pH: indifferent.

— *gracile* Ehr. HUSTEDT 1930, p. 376, fig. 702.
Scarce — rare in A (2, 3), scarce in B (14, 7).
Hal.: indifferent. pH: alkaliphilous.

Gomphonema lagerheimi A. Cleve. HUSTEDT 1942b, p. 146, figs. 78—82.
Rather widely distributed in the material, but as a rule scarce or rare. A (2, 22, 3, 29, 40, 24, 32), B (15, 37, 7), and D (8, 25).
Boreal species. Hal. and pH: indifferent.

— *lanceolatum* Grun. HUSTEDT 1930, p. 376, fig. 700.
Rare in B (7) and C (33).
Hal.: indifferent. pH: alkaliphilous.

— *longiceps* Ehr. Hustedt 1930, p. 375, fig. 704.
Rare in A (29).
Hal.: indifferent. pH: alkaliphilous.

— — var. *subclavata* Grun. HUSTEDT 1930, p. 375, fig. 705.
Dominant in B (19: 12.0 per cent.). Scarce in A (3, 18), rare in B (15).
Hal. and pH: indifferent.

— *parvulum* Kütz. HUSTEDT 1930, p. 372, fig. 713a.
Rare or scarce in A (36, 2, 22, 24).
Hal.: indifferent. pH: indifferent (alkaliphilous?).

— — var. *micropus* (Kütz.) Cleve. HUSTEDT 1930, p. 373, fig. 713c.
Plate X, fig. 18.
Rare in B (17, 7).
Hal. and pH: indifferent.

— *subtile* Ehr. var. *sagitta* (Schum.) Cleve. HUSTEDT 1930, p. 377, fig. 710.
Plate XII, fig. 9.
Scarce in A (29).
Hal.: indifferent. pH: ?

b. Epithemiaceae.

The genus **Denticula** Kütz.

Denticula tenuis Kütz. HUSTEDT 1930, p. 381, fig. 723.
Plate XIII, fig. 24.
Scarce in A (5) and E (42). In the latter place secondary.
Often found in springs.
Hal.: indifferent. pH: alkaliphilous.

— — var. *crassula* (Naegeli) Hustedt. HUSTEDT 1930, p. 381, fig. 724.
Rare in A (9, 24), B (14), scarce in A (29), rare in C (11).
Hal.: indifferent. pH: alkaliphilous.

— — var. *frigida* Kütz. van HEURCK 1896, Pl. 11, fig. 463.
Dominant in C (34: 66.0 per cent.), in D (35: 8 per cent.), scarce in C (33).
Hal.: indifferent. pH: alkaliphilous.
This variety is often difficult or impossible to distinguish from the species, but as the form occurring here is in close agreement with van HEURCK's drawing it has been maintained.

The genus **Epithemia** Bréb.

Epithemia argus Kütz. HUSTEDT 1930, p. 383, fig. 727a.
Rare in A (36), scarce in B (15), common in B (31: 7.4 per cent.), common — scarce in A (29), C (30), and D (8, 25).
Hal.: indifferent. pH: alkaliphilous.

Epithemia sorex Kütz. HUSTEDT 1930, p. 388, fig. 736.
Rare in A (4, 2, 29), scarce in C (28), rare in B (7).
Hal.: indifferent. pH: alkaliphilous.

— — var. *gracilis* Hustedt. HUSTEDT 1930, p. 388, fig. 737.
Scarce in A (29) and D (35).
Hal.: indifferent. pH: alkaliphilous.

— — var. *lapponica* Hustedt. HUSTEDT 1944, p. 149, figs. 83—84.
Rare in A (36, 29) and C (28).
Boreal form. Ecology: ?

— *turgida* (Ehr.) Kütz. HUSTEDT 1930, p. 387, fig. 733.
Rare or scarce in A (12), B (7), C (11), D (8, 35, 38), and E (42).
Hal.: indifferent. pH: alkaliphilous.

— — var. *granulata* (Ehr.) Grun. HUSTEDT 1930, p. 387, fig. 734.
Rare in D (25).
Hal.: indifferent. pH: alkaliphilous.

— *zebra* (Ehr.) Kütz. HUSTEDT 1930, p. 384, fig. 729.
Scarce in C (28), rare in D (8, 38).
Hal.: indifferent. pH: alkaliphilous.

— — var. *saxonica* (Kütz.) Grun. HUSTEDT 1930, p. 385, fig. 730.
The commonest *Epithemia* form in the material; most frequent in neutral-alkaline samples. A (36, 22, 29, 9, 24), B (31, 37, 17, 7), C (30 (11.0 per cent.), 28, 34, 33), D (8, 25, 35, 38).
Hal.: indifferent. pH: alkaliphilous.

The genus **Rhopalodia** O. Müller.

Rhopalodia gibba (Ehr.) O. Müller. HUSTEDT 1930, p. 390, fig. 740.
Widely distributed and rather common, particularly in neutral and alkaline samples. A (12, 2, 22, 20, 29, 24), B (15, 31, 7), C (30, 34, 11), D (8, 25).
Hal.: indifferent. pH: alkaliphilous.

— *musculus* (Kütz.) O. Müller. HUSTEDT 1930, p. 392, fig. 745.
Rare in A (9). Scarce in E (42).
Mesohalobous. Alkaliphilous.

c. Nitzschiaceae.

The genus **Hantzschia** Grun.

Hantzschia amphioxys (Ehr.) Grun. HUSTEDT 1930, p. 374, fig. 747.
Scarce or rare in A (4, 41, 13), B (37, 17, 19), and C (11).
Characteristic aerophilous species. According to J. W. G. LUND 1945, p. 96: "The most ubiquitous of soil diatoms and recorded from soils all over the world. Most common and abundant on alkaline soils but present from pH 5 to 8.2." HUSTEDT (1938—39, p. 461) considers it to have its optimum in watery biotopes.
Hal.: indifferent. pH: alkaliphilous.

— — fo. *capitata* O. Müller. HUSTEDT 1930, p. 374, fig. 748.
Rather common in B (37).
Hal.: indifferent. pH: alkaliphilous.

— — var. *maior* Grun. HUSTEDT 1930, p. 374, fig. 749.
Widely distributed and rather common especially in acid and neutral samples. A (4, 22, 18, 20, 29, 9, 24, 32, 13), B (15, 31, 37, 14, 19), C (30, 11), D (35, 38).
Hal.: indifferent. pH: alkaliphilous ?.

The genus **Nitzschia** Hassall.

a. *Tryblionellae* (W. Smith, Grunow) Hustedt emend.

Nitzschia angustata (W. Smith) Grun. HUSTEDT 1930, p. 414, fig. 793.
Rare in A (5).
Hal.: indifferent. pH: alkaliphilous.

— *apiculata* (Greg.) Grun. HUSTEDT 1930, p. 401, fig. 765.
Rare in C (33).
Mesohalobous. Alkaliphilous.

— *tryblionella* Hantzsch. var. *debilis* (Arnott) A. Mayer. HUSTEDT 1930, p. 400, fig. 759.
Rare in D (8), scarce in D (35).

b. *Dubiae* Grunow.

Nitzschia commutata Grun. HUSTEDT 1930, p. 405, fig. 774.
Scarce — rare in neutral and alkaline samples. Not found in acid samples. B (15, 31, 17), C (34, 11), D (10, 8, 25).
Halophilous. Alkaliphilous.

— *dubia* W. Smith. HUSTEDT 1930, p. 403, fig. 770.
Rather common in B (15, 37), common in C (34: 9.2 per cent.) and D (35, 38).
Halophilous. Alkaliphilous.

— *stagnorum* Rabh. HUSTEDT 1930, p. 405, fig. 773.
Scarce in A (18) and C (28), rare in D (38).
Hal.: indifferent. pH: alkaliphilous.

c. *Grunowiae* (Rabh.) Grunow.

Nitzschia denticula Grun. HUSTEDT 1930, p. 407, fig. 780.
Dominant in A (29: 8.4 per cent.), B (31: 21.0 per cent.), C (30: 32.6 per cent., 28: 10.4 per cent.), D (8: 9.8 per cent.).
Scarce — rare in B (1, 15, 37, 7). Rather common in D (25), scarce — rare in C (33) and D (35, 38).
Typically euryhaline. Hal.: indifferent. pH: alkaliphilous.

— *palustris* Hustedt. HUSTEDT 1934, p. 396, figs. 17—19.
Plate XII, figs. 13—14.
Rare in A (4).
Probably aerophilous. Hal. and pH: indifferent.

d. *Lineares* (Grun.) Hustedt emend.

Nitzschia linearis W. Smith. HUSTEDT 1930, p. 409, fig. 784.
Rare or scarce in A (29, 32), B (15, 31), and C (30).
Hal.: indifferent. pH: alkaliphilous.

— *vitrea* Normann. HUSTEDT 1930, p. 411, fig. 787.
Scarce in D (8, 25).
Mesohalobous. Alkaliphilous.

e. *Lanceolatae* Grunow.

Descriptions and drawings by various authors of the small forms within this group overlap in a confusing way so that a clear demarcation of species is at present considered impossible here. This particularly applies to the species *N. palea, kützingiana, fonticola, romana, communis, frustulum, perminuta, subinflata, hantzschiana,*

and some others. Many of the species seem to have a very wide range of variation, and when several of them occur in the same sample, a distinction will often be difficult or impossible. In what follows it has been tried to refer them to form groups by means of the form of the valves and the number of keel points and striae. For orientation reference is made to the drawings.

Nitzschia amphibia Grun. HUSTEDT 1930, p. 414, fig. 793.
Widely distributed in acid as well as neutral and alkaline samples. Commonest in the alkaline samples. A (22, 20, 29, 9, 24, 13), B (15, 31, 7), C (30, 11), D (8, 25, 35, 38).
Extremely eurytopic as regards halinity as well as temperature and pH.
Hal.: indifferent. pH: alkaliphilous.

— — var. *thermalis* Boye Petersen. BOYE PETERSEN 1930, p. 51, fig. 9.
Plate XIII, figs. 21—23.
Dominant in B (7: 13.0 per cent.). Scarce in A (22, 13), B (17), C (28, 34, 33).
The specimens pictured, which undoubtedly must be referred to *N. amphibia*, show close agreement with var. *thermalis*, from which they only deviate by their somewhat smaller breadth. BOYE PETERSEN has found this variety in hot springs (35 and 44) in Pamir.
Ecol.: ?

— *capitellata* Hustedt. HUSTEDT 1930, p. 414, fig. 792.
Scarce in B (15).
Halophilous?. Alkaliphilous.

— *fonticola* Grun. HUSTEDT 1930, p. 415, fig. 800.
Rare in A (24).
Hal.: indifferent. pH: alkaliphilous.

— *frustulum* (Kütz.) Grun. HUSTEDT 1930, p. 414, fig. 795.
Plate XIII, fig. 13.
Dominant in A (40: 13.4 per cent.) and D (35: 16.4 per cent.).
Rather common in several samples. A (39, 22), B (37, 7), C (34, 33), D (38).
Hal.: indifferent. pH: alkaliphilous. Is sometimes considered halophilous. At any rate it is rather euryhaline.

— — var. *perpusilla* (Rabh.) Grun. HUSTEDT 1930, p. 415.
Plate XIII, figs. 4—6.
Found only in acid samples, in which it is rather common. A (12, 36: 10.6 per cent., 2, 3).
Hal. and pH: indifferent.

— — var. *subsalina* Hustedt. HUSTEDT 1930, p. 415, fig. 796.
Plate XIII, fig. 8.
Scarce in A (3).
Halophilous. Alkaliphilous.

— *gracilis* Hantzsch. HUSTEDT 1930, p. 416, fig. 794.
Rather widely distributed, most common in acid samples. A (12, 36, 2, 22, 18, 29, 9, 24, 32), B (31, 14, 7), C (30, 28).
Hal. and pH: indifferent.

— *kützingiana* Hilse. HUSTEDT 1930, p. 416, fig. 802.
Plate XIII, fig. 19.
Scarce in A (9), rare in B (15).
Hal.: indifferent. pH: alkaliphilous.

— *perminuta* Grun. HUSTEDT 1930, p. 415.
Plate XIII, fig. 9.

Dominant in some acid samples: A (3: 16.2 per cent., 18: 14.2 per cent., 20: 26.0 per cent., 41: 64.6 per cent.), B (19: 28.6 per cent.). Otherwise common — scarce in acid as well as neutral and alkaline samples. A (4, 21, 29, 5, 32), B (1, 31), C (30, 28), D (8).
Eurytopic. Hal. and pH: indifferent.

Nitzschia palea (Kütz.) W. Smith. HUSTEDT 1930, p. 416, fig. 801.
Plate XIII, figs. 17—18.
Found in acid as well as neutral and alkaline samples. In several samples common — rather common. A (21, 9, 24), B (15, 17, 19), C (28, 33), D (10, 8, 25).

— *romana* Grun. HUSTEDT 1930, p. 415, fig. 799.
Plate XIII, figs. 1—3, 7.
Rather common in several acid, neutral, and alkaline samples. A (2, 13, 9), B (15, 14), C (11), D (10).
Hal.: indifferent. pH: alkaliphilous.

f. *Obtusa* (Grun.) Hustedt emend.

Nitzschia ignorata Krasske. HUSTEDT 1930, p. 422, fig. 819.
Plate XII, fig. 11.
Scarce in A (18), rare in A (29) and B (17, 19), scarce in E (42).
Halophilous. Alkaliphilous.

— *obtusa* W. Smith. HUSTEDT 1930, p. 422, fig. 817a.
Plate XIII, fig. 16.
Rare in A (24), and B (1), presumably secondary.
Mesohalobous. Alkaliphilous.

— sp.
Plate XIII, fig. 10: L: 28 μ, b: 2.6 μ. 10—11 keel-points and about 30 striae in 10 μ.
Scarce in A (29).

— sp.
Plate XII, fig. 12: L: 48 μ, b: 5 μ. 14—15 keel-points in 10 μ. Striae not visible.
Rare in A (2).

— sp.
Plate XII, fig. 15: L: 29 μ, b: 4 μ. 9 keel-points and 30—32 striae in 10 μ.
Scarce in E (42).

— sp.
Plate XII, fig. 17: L: 72 μ, b: 1.5 μ. 22—24 keel-points in 10 μ.
Striae not visible.
Not rare in B (15).

— sp.
Plate XIII, fig. 14: L: 43 μ, b: 2.6 μ; about 16 keel-points in 10 μ. Striae not visible.
Scarce in A (12).

— sp.
Plate XIII, fig. 15: L: 78 μ, b: 4 μ; about 12 keel-points in 10 μ. Striae not visible.
Scarce in B (15).

d. Surirellaceae.

The genus **Surirella** Turpin.

Surirella delicatissima Lewis. HUSTEDT 1930, p. 436, figs. 846—47.
Rare in A (36).
Hal. and pH: indifferent.

— *Lagerheimii* A. Cleve fo. *capitata* fo. nov. Fig. XII: 18.
A typo differt apicibus paulum protractis, subcapitatis. Hab. in aqua dulci Groenlandiae occidentalis.
Rare in B (14).

— *linearis* W. Smith var. *constricta* (Ehr.) Grun. HUSTEDT 1930, p. 434, fig. 839.
Rare in A (24).
Hal.: indifferent. pH: alkaliphilous.

— *ovalis* Bréb. HUSTEDT 1930, p. 441, figs. 860—61.
Rare in C (33).
Mesohalobous. Alkaliphilous.

— *robusta* Ehr. var. *splendida* (Ehr.) van Heurck fo. *punctata* Hustedt. HUSTEDT 1930, p. 437.
Rare in B (14).
Hal. and pH: indifferent.

In the present material—apart from Sample 42, which is of a completely deviating, marine character—have been observed in all

30 genera
271 species
367 forms.

To Table 4:

In Table 4 an alphabetical flora list containing all the diatoms found in the material (except no. 42) is given.

The figures above the list are the nos. of the samples in the same order as followed everywhere in the article.

In the survey the figures indicate the percentage of 500 valves counted in the sample concerned.

+ indicate, that the species is not found during the count but during the further analysis.

× indicate, that the species is not found in the slide counted but in another slide of the same sample.

Table 4.

	12	36	39	4	2	22	21	3	18	20	29	5	40	9	24
Achnanthes clevei Grun.	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— coarctata Bréb. var. elliptica Krasske	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— conspicua A. Mayer	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— depressa (Cleve) Hustedt	..	..	..	..	+	..	..	..	..	..	..	..	..	..	+
— flexella (Kütz.) Brun	..	..	..	..	..	..	..	..	..	..	..	2.2	..	..	+
— — var. alpestris Brun	..	..	..	..	0.2	..	..	+	..	..	+	+	..	..	0.4
— lapponica Hustedt	..	..	..	..	..	..	..	..	..	..	..	1.2	..	..	..
— laterostrata Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— linearis W. Smith & var. pusilla Grun.	..	..	..	..	9.8	..	0.6	11.0	3.4	0.4	18.6	..	..	18.2	17.0
— marginatula Grun.	..	..	..	..	+	..	..	..	..	..	..	..	3.4	..	..
— microcephala Kütz.	0.6	1.0	..	..	1.8	1.6	..	10.4	0.4	0.4	8.4	4.0	..	2.2	1.6
— minutissima Kütz.	..	0.4	..	+	1.0	..	..	12.4	0.8	0.2	6.0	1.2	..	20.4	13.4
— petersenii Hustedt	..	..	..	..	+	0.2	..	5.0	..	..	+	..	..	..	..
— pygmaea (Schum.) Cleve	..	..	..	1.0	..	..	..	..	..	..	..	..	..	..	..
Amphora dubiosa Østrup	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— exigua Greg.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— obscura Krasske	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— ovalis Kütz.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+
— — var. libyca (Ehr.) Cleve	..	..	..	+	0.2	..	..	+	0.2	..	+	..	..	0.4	0.6
— — var. pediculus Kütz.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— triundulata Ross	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..
— veneta Kütz.	..	..	..	..	..	3.0	..	..	..	..	..	..	..	0.4	+
Anomoeoneis exilis (Kütz.) Cleve	0.2	..	..	..	+	..	..	0.2	..	..	1.0	3.6	..	0.6	0.4
— — var. lanceolata A. Mayer	..	..	..	..	0.2	..	..	0.4	..	..	0.8	1.0	..	+	+
— serians (Bréb.) Cleve var. brachysira (Bréb.) Hustedt	0.6	13.2	+	+	+	..	..	..	..	..	..	..	..	..	..
— styriaca (Grun.) Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..
— — var. ventricosa Hustedt	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..
— zellensis (Grun.) Cleve	..	..	..	..	..	..	..	..	..	..	..	2.2	..	..	..
— var. linearis Østrup	..	..	..	..	..	..	+	..	..	..	..	17.4	+	..	..
Caloneis bacillum (Grun.) Cl.	..	..	..	2.0	..	..	..	..	..	..	+	..	..	+	0.2
— fasciata (Lagerst.) Cleve fo. acuta Boye Petersen	..	..	0.2	0.4	..	..	..	..	..	..	..	..	..	..	..
— boecheri Foged	..	..	..	0.6	..	..	..	..	..	..	..	..	..	..	..
— schumanniana (Grun.) Cleve	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— silicula (Ehr.) Cleve	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..
— fo. minutissima Hustedt	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..
— — var. truncatula Grun.	..	..	..	..	+	..	..	..	..	..	..	..	..	+	0.2
— — var. alpina Cleve	..	..	..	..	..	..	..	..	..	..	..	3.2	..	..	..
Ceratoneis arcus Kütz.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— var. linearis Holmboe	..	+	..	..	..	..	..	..	..	+	..	..	..	..	..
Cocconeis pediculus Ehr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— placentula Ehr.	..	..	+	..	0.2	+	..	..	..	..	..	..	..	3.4	2.6
— — var. lineata (Ehr.) Cl.	..	..	..	..	..	..	..	..	..	..	1.4	..	..	..	..
— scutellum Ehr.	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..

32	41	13	1	15	31	37	17	14	19	7	30	28	34	33	11	10	8	25	35	38
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	1.6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	+	..	..	..	..	..	..	+	..	..	..	..	..
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..	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..
40.0	..	..	..	1.2	..	..	..	0.4	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1.2	..	..	..	5.0	3.8	..	..	+	..	4.6	5.0	0.8	0.4	×	..	..	2.4	2.4	0.8	0.8
2.2	+	..	..	4.0	2.0	0.6	0.4	..	..	2.0	0.8	8.0	..	..	0.2	1.6	3.6	1.2	..	..
1.2	..	..	54.6	..	..	..	0.8	..	..	..	..	..	..	..	0.4	..	+	..	..	4.4
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	1.6	..	..	1.8	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	+	..	..	..	..
..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	0.2	+	..	..	..	..
..	..	..	..	..	..	..	..	..	..	+	..	0.4	..	..	+	..	..	+	+	0.4
+	..	..	..	..	0.8	..	..	..	..	+	1.8	1.4	0.2	..	+	+	0.4	0.2	0.8	1.8
..	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..
+	..	..	..	..	..	..	..	..	..	1.2	..	..	..	..	..	..	..	..	..	..
..	1.6	..	..	0.2	2.8	..	+	..	..	11.8	2.4	8.6	3.4	..	0.6	0.2	2.2	1.2	10.0	0.4
..	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..	..	..	..
..	..	..	..	..	..	0.2	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	+	..	×	..	..	..	..	..	+	+	..	..	..
..	..	..	..	0.2	..	..	..	..	0.2	..	..	+	..	..	+	..	+	..	..	0.2
..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	0.2	..	..	..	..	+	0.4	0.2	1.6	..	+	..	+	+	0.4	0.4
+	..	0.2	..	..	+	..	..	..	..	+	0.4	0.4	..	..	..	..	+	+	+	0.4
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	+	..	..	..	..	..	+	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	16.0	..	..	..	..	+	..	..	..	..	..	..	..
+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..
0.2	..	..	+	..	..	0.2	..	..	..	+	..	12.8	+	..	+	..	+	..	0.8	0.6
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Table 4

	12	36	39	4	2	22	21	3	18	20	29	5	40	9	24
Cocconeis scutellum var. parva Grun.	..	..	0.2	..	..	..	..	..	..	..	..	..	..	..	..
Cyclotella antiqua W. Smith	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..
— comta (Ehr.) Kütz.	..	..	..	..	..	0.4	..	..	..	..	..	..	..	+	+
— — var. oligactis (Ehr.) Gr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— kützingiana Thwaites var. radiosa Fricke	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..
Cymbella affinis Kütz.	..	..	..	..	..	..	..	1.8	..	..	..	..	..	..	..
— angustata (W. Smith) Cleve	..	..	..	..	..	..	..	..	..	..	..	0.2	..	..	..
— aspera (Ehr.) Cleve	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..
— cesati (Rabh.) Grun.	1.4	1.2	+	..	0.6	..	..	2.2	0.4	..	..	..	+	0.2	0.2
— cistula (Hemp.) Grun. var. maculata (Kütz.) v. H.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— — var. arctica Lagerst.	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..
— delicatula Kütz.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— groenlandica Foged	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..
— gracilis (Rabh.) Cleve	0.4	2.4	..	0.2	0.4	..	..	0.2	..	..	..	..	13.0	..	..
— hauckii van Heurck	+	+	..	..	..	..	..	..	1.4	..	..	..	..	..	..
— hebridica (Greg.) Grun.	0.2	0.8	..	..	..	..	0.2	..	..	..	+	..	..	..	0.2
— heteropleura (Ehr.) var. minor Cleve	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..	..
— hybridica Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— incerta Grun.	0.2	0.2	34.4	+	+	..	..	0.2	..	0.2	+	..	1.0	0.2	..
— laevis Naegeli	..	..	..	..	..	..	..	..	..	..	..	9.8	..	..	..
— latens Krasske	..	..	..	..	..	..	..	1.4	..	+	+	..	..	..	0.4
— leptoceros (Ehr.) Grun.	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..
— microcephala Grun.	..	..	..	..	..	..	..	0.2	..	..	1.6	+	..	0.4	0.4
— — var. robusta Hustedt	..	..	..	..	..	..	..	..	..	..	1.2	..	..	+	..
— naviculiformis Auerswald	0.4	0.8	..	..	+	..	+	0.2	..	..	+	..	..	..	0.2
— — fo.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— norvegica Grun.	+	..	..	..	+	..	..	..	..	..	..	0.4	..	..	..
— obtusa Gregory	..	..	..	..	+	+	..	+	0.4	..	0.4	1.0	..	0.4	0.2
— — fo. Krasske Foged	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— parva (W. Smith) Cleve	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— perpusilla Cleve	+	1.2	..	..	..	..	..	0.2	0.4	..	..	..	..	..	..
— spuria Cleve	..	..	+	..	0.2	4.0	..	+	..	5.4	+	..	0.6	..	+
— stauroneiformis Lagerst.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— subaequalis Grun. var. oblongella (Fontell) Ross	..	..	..	..	..	..	..	..	..	..	..	0.4	..	..	..
— turgida (Gregory) Cleve	..	..	+	..	0.2	..	+	0.2	4.6	1.0	0.6	0.6	..	..	0.2
— ventricosa Kütz.	..	..	..	+	0.8	..	+	3.2	0.8	0.6	0.4	..	..	2.8	3.0
— — var. groenlandica Foged	..	..	2.2	..	+	3.4	..	..	+	..	..	..	1.4	0.4	..
Denticula tenuis Kütz.	..	..	..	..	..	..	..	..	..	..	..	1.4	..	..	..
— — var. crassula (Naegeli) Hustedt	..	..	..	..	..	..	..	..	..	..	0.2	..	..	+	+
— — var. frigida Kütz.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— — fo.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

(continued).

32	41	13	1	15	31	37	17	14	19	7	30	28	34	33	11	10	8	25	35	38
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	..	..	..	..	1.2	1.4	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	+	+	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	0.2	0.2	1.0	..	..	..	0.8	..	..	..	..	..	..	0.6	..	..	+
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	0.2	..	..	..	..	..	..	..	..	+	..	..	..
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..	..	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	+	0.4	..	..	..	..	0.2	+	..	..	..	..	+	..	..	..
..	..	..	..	..	1.2	..	..	..	..	..	..	1.4	..	..	..	..	..	..	..	..
+	..	..	..	..	..	..	12.8	0.2	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	0.6	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.2	..	..	..	0.2	0.2	3.0	0.2	..	..	0.6	0.6	0.8	..	×	+	..	+	..	..	..
..	..	..	..	..	..	..	..	0.6	..	×	..	..	2.0	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	+	0.2	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	0.8	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.2	+	..	+	..	..	0.6	0.4	0.2	..	+	..	..	..	×	..	+	..	..	..	..
1.8	..	..	..	..	..	1.4	3.0	1.0	0.2	0.4	..	0.6	1.6	..	+	..	+	0.2	..	+
0.2	..	..	..	..	..	23.0	..	..	+	+	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	+	..	..	..	..	..	..	+	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	66.0	×	..	..	..	..	8.0	..
..	..	..	..	..	..	..	..	..	..	..	..	..	0.6	..	..	..	..	..	1.4	..

Table 4

	12	36	39	4	2	22	21	3	18	20	29	5	40	9	24
Diatoma elongatum Agardh ...	..	..	..	..	0.6	+	..	..	..	0.2	..	..	..	..	..
— — var. tenuis Agardh.....	0.2	..	0.2	..	..	..	..	2.6	2.0	..	2.0	..	..	1.8	0.2
Diatomella balfouriana Grev. ..	..	..	..	..	..	..	..	..	..	..	..	0.2	..	..	..
Diploneis elliptica (Kütz.) Cleve	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— ovalis (Hilse) Cleve.....	+	..	..	..	..	0.8	..	..	..	..	+	..	..	+	0.2
— peterseni Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+
Epithemia argus Kütz.	..	+	..	..	..	..	..	..	..	..	0.4	..	..	..	..
— sorex Kütz.....	..	..	..	+	+	..	..	..	..	..	1.4	..	..	..	..
— — var. gracilis Hustedt...	..	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..
— — var. lapponica Hustedt.	..	+	..	..	..	..	..	..	..	..	1.0	..	..	..	..
— turgida (Ehr.) Kütz.....	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— — var. granulata (Ehr.) Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— zebra (Ehr.) Kütz.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— —var.saxonica(Kütz.)Grun.	..	+	..	..	..	+	..	..	..	..	1.2	..	..	+	0.2
Eunotia alpina (Naeg.) Hust...	3.4	19.4	0.6	..	1.4	3.2	0.4	1.0	2.4	2.0	..	..	0.6	0.6	1.8
— arcus Ehr.....	..	..	..	..	..	..	..	..	..	..	1.0	0.2	+	..	..
— bigibba Kütz.....	+	0.4	1.2	..	×	..	..	..	..	..	..	+	..	..	..
— bidentula W. Smith.....	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..
— crista-galli Cleve	..	+	..	0.4	..	..	..	..	..	..	..	..	..	..	..
— denticulata (Bréb.) Rabh. .	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— diodon Ehr.	0.2	..	..	+	..	..	..	..	..	..	0.4	0.2	6.8	..	0.4
— elegans Østrup.....	..	..	..	..	+	..	..	..	..	..	..	..	..	..	+
— exigua (Bréb.) Grun.	..	1.0	0.2	0.2	+	2.2	2.0	..	0.8	3.8	..	+	0.2	0.4	..
— fallax A. Cleve	..	..	1.0	..	..	..	..	..	..	..	..	..	0.6	..	..
— flexuosa (Bréb.) Kütz.	+	+	..	..	1.6	..	0.2	..	..	..	..	..	..	..	..
— gracilis (Ehr.) Rabh.).....	..	..	..	..	+	..	..	..	..	..	..	..	..	0.2	..
— lapponica Grun.....	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— lunaris (Ehr.) Grun.	11.0	0.6	..	..	0.8	5.8	+	0.6	1.2	1.8	1.4	..	0.2	1.6	0.2
— — var. capitata Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— — var. subarcuata (Naeg.) Grun.	..	..	..	..	1.2	2.2	0.6	0.2	2.6	0.4	..	..	..	4.0	2.6
— monodon Ehr.	..	+	+	+	1.4	..	0.4	+	2.2	..	..	..	0.6	..	..
— — var. bidens (Greg.) W. Sm.	..	..	1.0	..	..	..	..	..	..	..	..	0.2	..	..	..
— — var. maior (W. Sm.) Hustedt	..	..	..	..	0.2	..	..	..	..	..	..	..	..	..	..
— papilio (Grun.) Hustedt ...	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..
— parallela Ehr.....	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— pectinalis (Kütz.) Rabh. ..	..	..	..	..	..	..	..	2.0	0.2	..	..	..	..	..	..
— — var. minor (Kütz.) Rabh.	..	..	..	..	2.4	..	1.0	..	3.0	..	0.2	..	..	1.2	3.2
— — — fo. impressa Ehr....	..	..	..	+	1.4	..	0.4	1.0	..	..	0.2	..	..	0.8	2.6
— — — fo. intermedia Krasske	..	..	..	..	3.0	..	..	..	1.0	..	..	..	..	..	..
— praerupta Ehr.....	+	0.8	19.0	+	+	..	..	..	0.2	..	+	0.6	0.2	+	+
— — var. bidens Grun.	..	+	7.6	..	..	..	..	..	..	..	..	..	0.2	..	..
— — var. inflata Grun.	..	0.2	+	..	+	..	..	..	..	..	..	..	+	..	..
— — var. muscicola Petersen	..	..	0.6	2.4	..	..	..	..	..	..	..	..	..	..	..

(continued).

32	41	13	1	15	31	37	17	14	19	7	30	28	34	33	11	10	8	25	35	38
..	..	..	34.6	18.6	6.4	..	..	0.6	..	0.4	..	..	..	×	..	..	..	1.4	1.0	70.0
2.6	..	..	..	1.8	..	0.6	30.6	1.4	..	..	1.8	1.2	..	..	25.6	27.2	2.0	..	..	1.6
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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+	..	..	..	..	..	..	+	..	..	2.8	..	..	..	..	+	..	+	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	0.8	7.4	..	..	..	..	..	5.2	..	..	..	..	..	3.6	+	..	..
..	..	..	..	..	..	..	..	..	..	+	..	0.2	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0.2	..
..	..	..	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..	+	..	0.8	..	+	0.6
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..
..	..	..	..	..	..	..	..	..	..	..	..	0.4	..	..	..	..	0.4	..	..	+
..	..	..	..	..	3.6	+	+	..	..	×	11.0	0.6	0.6	×	..	..	5.8	1.6	0.2	0.6
+	..	1.2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..
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2.2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	0.6	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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1.6	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..
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0.2	..	+	2.0	..	0.2	..	+	0.2	1.2	+	..	..	..	×	+	..	..	..	..	..
..	..	..	0.4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.2	..	..	..	..	..	+	..	..	0.4	..	..	..	..	..	+	..	..	..	..	..
0.4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	0.4	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.4	..	..	..	..	0.2	..	+	..	..	..	..	+	..	..	..	..	..	..	..	..
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Table 4

	12	36	39	4	2	22	21	3	18	20	29	5	40	9	24
Eunotia polydentula Brun	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— polyglyphis Grun.	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— rhomboidea Hustedt	0.2	0.4	..	..	2.0	..	2.6	..	..	..	..	..	..	..	..
— rhynchocephala Hustedt	..	×	..	..	..	..	..	..	..	..	..	..	..	..	..
— septentrionalis Østrup	+	+	..	..	0.6	..	+	..	..	..	..	..	..	..	..
— sudetica (O. Müller) Hust.	..	..	..	..	..	..	..	..	..	0.6	..	..	..	..	..
— tenella (Grun.) Hustedt	0.2	2.6	5.4	1.8	..	20.8	..	+	0.8	0.2	+	..	2.4	+	2.8
— triodon Ehr.	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
Fragilaria brevistriata Grun.	..	..	..	..	..	..	..	..	..	..	..	..	4.4	..	..
— capitellata (Grun.) Boye Petersen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— — var. peterseni Foged	..	..	..	..	0.2	..	..	..	..	..	..	..	..	1.4	1.4
— capucina Desmazières	..	..	..	..	6.2	0.4	..	8.4	7.6	3.2	5.0	..	..	3.8	0.4
— — var. lanceolata Grun.	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..
— constricta Grun.	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— construens (Ehr.) Grun.	..	..	..	..	0.2	..	..	..	..	..	..	..	..	..	..
— crotonensis Kitton	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— laevissima Cleve (?)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— lapponica Grun.	..	..	..	0.4	..	..	..	..	..	..	..	..	..	..	..
— pinnata Ehr.	..	..	..	..	..	..	..	..	0.2	..	0.4	..	..	1.2	2.2
— vaucheriae (Kütz.) Boye Petersen	..	..	..	..	1.8	+	..	0.4	..	..	4.4	0.2	..	..	..
— virescens Ralfs	3.0	9.0	..	1.0	×	..	..	..	..	..	..	..	..	0.2	0.2
— — var. elliptica Hustedt	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..
Frustulia rhomboides (Ehr.) de Toni var. saxonica (Ehr.) de Toni	0.6	1.6	6.6	+	..	..	..	..	..	..	..	..	0.6	..	..
— — fo. capitata A. Mayer	+	..	2.4	..	×	..	..	..	..	..	..	..	..	..	..
— vulgaris Thwaites	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..
Gomphonema acuminatum Ehr.	..	..	..	..	×	0.2	..	..	..	..	+	..	..	1.2	+
— — var. brébissonii (Kütz.) Cleve	..	..	..	..	1.2	..	..	0.6	..	0.8	2.6	..	..	..	1.6
— — var. coronata (Ehr.) W. Sm.	..	..	..	..	0.2	..	..	..	..	..	..	..	..	..	..
— acuminatum var. trigonocephala (Ehr.) Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— — var. turris (Ehr.) Cleve	..	..	..	..	0.6	..	..	..	..	..	..	..	..	..	..
— angustatum (Kütz.) Rabh.	1.0	0.4	+	..	0.2	0.4	0.2	..	0.2	..	1.0	0.2	..	0.6	1.0
— — var. linearis (Kütz.) Cl.	+	0.2	..	..	..	..	..	..	..	..	..	..	..	..	..
— — var. producta Grun.	..	0.2	..	..	0.2	0.2	..	..	..	..	..	..	..	0.8	..
— — var. sarcophagus (Greg.) Grun.	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— — var. undulata Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— augur Ehr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— constrictum Ehr.	..	..	..	..	0.2	..	..	0.2	..	..	+	..	..	..	..
— — var. capitata (Ehr.) Cl.	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— gracile Ehr.	..	..	..	..	0.4	..	..	+	..	..	..	..	..	..	..

(continued).

32	41	13	1	15	31	37	17	14	19	7	30	28	34	33	11	10	8	25	35	38
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..	..	..	..	..	..
0.4	..	..	..	..	..	0.8	0.2	..	+	5.8	..	0.2	..	×	..	..	0.2	..	..	..
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..	0.2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.2	..	..	..	..	..	..	..	8.0	..	..	..	..	..	..	..	..	..	..	..	..
1.4	..	0.4	..	2.2	..	4.0	1.6	13.6	..	0.4	..	17.6	..	..	28.0	0.4	..	..	..	..
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..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	0.8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	+	..	..	..	..	..	..	..	..	0.4	..	..	..	..	..	..	..	..
0.8	..	..	..	..	+	..	4.0	28.0	..	0.2	0.8	1.4	..	×	..	..	5.0	1.4	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
+	..	..	..	..	..	+	..	..	..	0.4	..	..	..	..	..	..	..	..	..	..
2.8	..	..	+	2.0	5.4	1.0	..	..	..	0.8	1.4	+	0.2	..	..	..	..	..	..	+
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.6	..	..	..	..	..	2.0	29.4	..	..	0.8	..	..	0.2	..	1.4	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.8	..	..	..	2.2	0.2	..	0.6	..	30.6	+	..	0.2	..	..	24.8	0.2	+	0.2	..	..
0.2	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	1.0	..	..	..	8.4	+	..	..	..	..
+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	0.2	..	..	..	0.2	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	0.2	..	0.4	..	..	..	..	..	..	..	..	..	..

Table 4

	12	36	39	4	2	22	21	3	18	20	29	5	40	9	24
Gomphonema lagerheimii A. Cl.	..	..	..	..	+	4.8	..	0.4	..	..	+	..	1.0	..	0.2
— lanceolatum Ehr.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— longiceps Ehr.	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— — var. subclavata Grun.	..	..	..	..	..	..	..	0.6	0.6	..	..	..	..	..	..
— parvulum Kütz.	..	+	..	..	×	+	..	..	..	..	..	..	..	..	0.6
— — var. micropus (Kütz.) Cl.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— subtile Ehr. var. sagitta (Schum.) Cleve	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
Hantzschia amphioxys (Ehr.) Grun.	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— — fo. capitata O. Müller	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— — var. maior Grun.	..	..	..	0.2	..	0.6	..	..	0.2	4.0	+	..	..	+	0.2
— — var. vivax (Hantzsch) Grun.	..	..	..	..	..	..	..	..	..	..	..	..	0.8	..	..
Mastogloia braunei Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— crucicula (Grun.) Cleve	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Melosira distans (Ehr.) Kütz.	1.0	2.6	..	+	..	..	..	..	..	..	..	..	..	..	..
— — var. lirata (Ehr.) Bethge	..	..	..	..	..	..	3.4	..	..	..	..	..	..	..	..
— — var.	..	..	..	..	..	..	..	..	..	..	..	..	12.6	..	..
— italica (Ehr.) Kütz. subsp. subarctica O. Müller	..	..	..	..	..	0.4	..	..	..	..	..	..	..	..	..
— nummuloides (Dillw.) Ag.	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..
— pfaffiana (Reinsch) Grun.	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..
— roeseana Rabh.	..	..	..	0.8	..	..	..	..	..	..	..	..	..	..	..
— sulcata (Ehr.) Kütz.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Meridion circulare Agardh	+	..	..	..	..	..	..	..	..	..	+	..	..	+	..
— — var. constricta (Ralfs) van Heurck	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..
Navicula amphibola Cleve	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— avenacea (Bréb.) Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— bacilliformis Grun.	..	..	..	..	0.2	0.2	+	0.4	..	+	0.2	..	+	0.4	0.4
— bacillum Ehr.	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— brekkaensis Boye Petersen	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— bryophila Boye Petersen	..	..	..	..	..	..	..	..	..	..	..	0.8	..	0.2	..
— cari Ehr.	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..
— cincta (Ehr.) Kütz.	..	..	..	..	..	..	..	..	..	+	..	..	..	..	..
— cincta? Pl. VI figs. 1—3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— clementioides Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0.2
— clementis Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— cocconeiformis Gregory	0.4	1.2	0.2	..	..	..	..	..	..	..	..	..	1.0	..	..
— contenta Grun.	..	+	0.4	2.8	..	..	..	..	..	..	..	..	1.0	..	..
— — var. biceps Arnott	..	..	0.2	0.2	..	0.2	..	..	..	..	..	..	..	..	..
— cryptocephala Kütz.	..	..	..	..	0.2	0.4	..	0.6	..	..	0.6	+	..	0.6	1.8
— — var. intermedia Grun.	..	..	..	..	..	..	..	..	..	..	1.0	..	..	..	..
— cuspidata Kütz.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— — var. ambigua (Ehr.) Cl.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— — var. heribaudi Pereg.	..	..	..	..	..	..	..	..	..	..	..	..	0.8	..	..

(continued).

32	41	13	1	15	31	37	17	14	19	7	30	28	34	33	11	10	8	25	35	38
+	..	..	..	0.6	..	2.4	..	..	..	+	..	..	..	..	..	..	0.4	+	..	..
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..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	2.0	0.6	..	..	..	+	+	..	0.2	..	..	..	..	..	0.4	..	..	..	..	..
..	..	..	..	..	..	2.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.2	..	4.6	..	1.6	0.4	3.6	..	+	2.0	..	0.2	..	..	..	+	..	0.4	..	0.2	+
..	..	+	..	+	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
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..	0.6	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	0.2	..	..	..	..	+	..	..	..	..	..	..	..	..	..
..	..	..	..	+	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.2	..	..	..	..	1.2	0.4	..	..	+	0.2	1.0	0.2	..	..	..	..	..	..	+	0.2
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	..	..	2.4	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	0.6	16.6	..	..	..	0.8	..	0.4	..	..	0.4	..	..	0.2	..	0.6
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	+	..	10.2	0.8
..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	2.8	..	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..
0.2	..	+	..	1.8	2.0	..	..	1.2	..	1.2	7.8	..	0.4	×	0.4	+	4.4	..	15.0	..
..	..	..	..	..	..	..	..	..	..	..	..	1.8	..	..	..	..	..	..	..	..
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Table 4

	12	36	39	4	2	22	21	3	18	20	29	5	40	9	24
Navicula dicephala (Ehr.) W. Sm.	..	..	..	..	×	..	..	..	..	..	..	..	..	..	+
— digitoradiata (Greg.) A. Schmidt	..	..	..	..	..	+	..	..	..	..	..	..	..	+	+
— — fo. minor Foged	..	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..
— festiva Krasske	..	..	+	..	+	0.4	..	..	..	..	..	..	0.2	..	..
— fossalis Krasske	..	..	..	1.2	..	..	..	..	..	..	..	0.8	..	..	..
— gibbula Cleve	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..
— halophila (Grun.) Cleve	..	..	..	..	..	+	..	..	..	..	+	..	..	..	..
— hassiaca Krasske	..	..	..	..	×	..	..	..	..	..	+	..	..	..	..
— hungarica Grun. var. capitata (Ehr.) Cl.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— importuna Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— inflata Donkin	..	..	..	..	×	..	..	..	..	..	..	..	..	..	..
— ivigtutensis Foged	..	1.6	..	..	..	3.6	..	..	..	..	..	..	11.0	0.2	..
— järnefeldtii Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+
— kotschyi Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— lagerstedtii Cleve	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..
— — var. palustris Hustedt	..	..	..	..	+	..	..	..	..	..	+	..	+	..	+
— minima Grun. var. atomoides (Grun.) Cleve	..	+	..	..	..	..	..	..	..	..	+	..	..	..	..
— minuscula Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— mutica Kütz.	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..
— — var. nivalis (Ehr.) Hust.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— peregrina (Ehr.) Kütz.	..	..	..	..	..	..	..	..	..	..	0.8	..	..	..	..
— perpusilla Grun.	..	..	1.6	70.8	×	..	..	..	..	..	..	+	0.6	..	..
— peterseni Hustedt	..	..	0.4	..	..	..	..	..	..	..	..	..	..	..	..
— protracta Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— pseudoscutiformis Hustedt	..	..	..	..	+	..	+	+	0.4	..	..	..	..	0.2	0.2
— pseudocryptocephala Foged	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— pupula W. Smith	..	..	..	..	+	..	..	..	..	..	..	..	..	..	+
— — var. capitata Hustedt	..	..	..	..	+	..	..	0.2	0.2	..	..	..	..	0.2	0.2
— — var. rectangularis (Greg.) Grun.	..	0.2	..	..	+	..	..	..	..	..	..	..	..	..	..
— pusilla W. Smith	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— radiosa Kütz.	..	..	..	+	0.2	..	..	+	0.2	..	0.8	..	..	0.4	0.8
— — var. tenella (Bréb.) Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— rhynchocephala Kütz.	..	..	..	..	0.2	..	..	..	..	..	..	..	..	..	..
— rostellata Kütz.	..	..	..	..	..	..	..	..	..	..	..	..	..	0.4	..
— rotaeana (Rabh.) Grun.	..	..	..	6.8	..	+	..	..	..	..	..	..	..	..	..
— rotunda Hustedt	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— salinarum Grun.	..	..	..	..	..	0.4	..	..	..	..	..	..	..	..	..
— semen Ehr.	..	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..
— seminulum Grun.	..	..	..	..	..	..	0.4	..	..	..	..	..	..	..	..
— simplex Krasske	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— subfossalis Hustedt	..	..	4.2	0.6	..	..	..	..	..	..	..	..	..	..	..
— subrotundata Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+
— subtilissima Cleve	..	..	+	..	..	..	..	..	..	..	..	..	1.8	..	..

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32	41	13	1	15	31	37	17	14	19	7	30	28	34	33	11	10	8	25	35	38
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	+	..	..	..	..	..	..	..	1.0	..	..	..	0.8	..	..	..
..	..	..	..	..	..	1.2	..	..	..	0.8	..	4.8	3.6	×	0.6	..	..	0.2	12.0	..
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..	..	..	..	0.8	6.0	..	..	..	..	0.2	9.6	3.2	..	..	3.8	4.8	2.8	1.2	8.2	3.8
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0.2	..	..	..	+	0.8	..	..	..	..	0.2	..	0.6	+	..	..	..	0.2	+	..	..
..	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..	..	..	..	..	..
..	..	0.2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.2	..	..	..	..	..	..	0.4	..	..	0.2	..	0.2	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	0.2	+	..	..	0.6	..	..	..	..	..	1.0	..	..	0.2	2.8
+	..	..	..	0.2	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
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Table 4

	12	36	39	4	2	22	21	3	18	20	29	5	40	9	24
Navicula soehrensis Krasske var. septentrionalis Hustedt	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— torneensis Cleve	..	..	+	..	..	..	..	..	..	..	..	..	+	..	..
— tuscula (Ehr.) Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— variostriata Krasske	+	2.4	..	..	..	..	..	..	..	..	..	..	..	..	..
— viridula Kütz.	..	..	..	+	..	..	..	0.4	..	..	..	..	..	0.8	1.2
— — var. slesvicensis (Grun.) Cleve	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— vitabunda Hustedt	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..
— vulpina Kütz.	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..
Neidium affine (Ehr.) Cleve	+	+	..	..	..	..	..	..	..	..	..	..	..	..	..
— — var. amphirhynchus (Ehr.) Cleve	..	0.2	..	..	+	..	..	..	0.4	..	..	..	..	..	..
— affine var. capitata Mölder	..	..	..	..	×	..	..	..	..	7.2	..	..	..	..	+
— — var. longiceps (Greg.) Cl.	..	..	..	..	..	..	+	..	..	..	..	..	..	0.2	0.2
— — fo. undulata Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..
— bisulcatum (Lagerst.) Cleve	..	..	..	+	0.6	0.4	0.2	..	..	..	..	..	0.4	2.0	2.4
— iridis (Ehr.) Cleve	..	..	..	..	+	..	..	..	..	..	+	..	..	+	..
— — var. ampliata (Ehr.) Cl.	..	..	..	..	0.2	..	..	+	0.4	..	+	..	..	+	0.2
— sp.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nitzschia amphibia Grun.	..	..	..	..	..	0.4	..	..	..	0.2	0.4	..	..	0.2	+
— — var. thermalis Petersen	..	..	..	..	..	1.2	..	..	..	..	..	..	..	..	..
— angustata (W. Smith) Grun.	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..
— apiculata (Greg.) Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— capitellata Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— commutata Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— denticula Grun.	..	..	..	..	..	..	..	..	..	..	8.4	..	..	..	..
— dubia W. Smith	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— fonticola Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+
— frustulum (Kütz.) Grun.	..	..	0.4	..	..	0.6	..	..	..	..	..	..	13.4	..	..
— — var. perpusilla (Rabh.) Grun.	3.2	10.6	..	..	2.0	..	..	2.4	..	..	..	..	..	..	..
— gracilis Hantzsch.	0.8	4.4	..	..	0.4	0.2	..	..	2.4	..	0.6	..	..	0.2	4.6
— ignorata Krasske	..	..	..	..	..	..	..	..	0.4	..	+	..	..	..	..
— kützingiana Hilse	..	..	..	..	..	..	..	..	..	..	..	..	..	0.8	..
— linearis W. Smith	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— obtusa W. Smith	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+
— palea (Kütz.) W. Smith	..	..	..	..	..	..	0.8	..	..	..	..	..	..	7.2	4.4
— palustris Hustedt	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— perminuta Grun.	..	..	..	0.4	..	..	1.6	16.2	14.2	26.0	8.6	0.2	..	..	..
— romana Grun.	..	..	..	..	2.4	..	..	..	..	..	..	..	..	1.8	..
— stagnorum Rabh.	..	..	..	..	..	..	..	..	0.8	..	..	..	..	..	..
— tryblionella Hantzsch var. debilis (Arnott) A. Mayer	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— vitrea Norman	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pinnularia balfouriana Grun.	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..

(continued).

32	41	13	1	15	31	37	17	14	19	7	30	28	34	33	11	10	8	25	35	38
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	..	..	+	..	1.4	1.2	..	..	..	..	..	..	..
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..	..	2.2	..	2.0	0.2	..	..	..	..	1.2	+	..	..	..	0.4	..	5.0	1.4	6.8	0.8
..	..	1.0	..	..	..	..	0.4	..	..	13.0	..	0.8	+	×	..	..	..	..	..	..
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..	..	..	..	0.8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	+	0.2	..	0.6	..	..	..	..	..	1.2	..	+	+	0.2	+	..	..
..	..	..	+	1.2	21.0	4.8	..	..	..	+	32.6	10.4	..	×	..	..	9.8	2.0	0.4	0.4
..	..	..	..	0.2	..	1.4	..	..	..	..	..	..	9.2	..	..	..	..	..	4.4	2.0
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	1.6	..	..	..	5.4	..	..	1.0	×	..	..	..	..	16.4	1.6
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.6	..	..	..	..	0.2	..	..	0.2	..	+	1.4	2.6	..	..	..	..	..	..	..	..
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..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
×	..	..	..	0.2	0.2	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..
..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	+	..	..	0.6	..	1.2	..	..	0.8	..	×	..	0.2	0.4	0.2	..	..
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7.8	62.6	..	5.2	..	0.8	..	..	..	28.6	..	0.2	6.0	..	..	..	..	0.2	..	..	..
..	..	1.4	..	1.6	..	..	..	0.4	..	..	..	..	..	..	2.0	0.6	..	..	..	..
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Table 4

	12	36	39	4	2	22	21	3	18	20	29	5	40	9	24
Pinnularia borealis Ehr.	..	+	+	0.6	..	0.2	+	..	..	+	..	..	7.0	0.6	0.2
— — var. brevicostata Hust.	..	..	..	+	+	..	..	..	..	..	+	..	..	+	0.2
— — fo. ovalis Boye Petersen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— braunei Grun. var. amphicephala (A. Mayer) Hustedt	..	..	..	..	..	..	..	..	..	1.6	..	..	..	..	+
— brevicostata Cleve	..	..	..	..	..	..	..	..	1.0	..	..	..	..	..	..
— divergens W. Smith	..	+	1,0	..	..	..	..	..	..	..	..	..	+	..	..
— — var. elliptica Grun.	+	+	0.4	..	..	..	..	..	..	..	..	..	0.6	..	..
— divergentissima Grun.	..	+	..	+	×	..	0.8	..	..	..	..	..	0.2	..	..
— — var. wulffii Boye Petersen	..	..	..	0.4	..	..	..	+	+	..	..	..	..	..	..
— gentilis (Donkin) Cleve	..	0.2	..	..	0.2	1.6	..	..	..	1.6	+	..	..	+	..
— gibba Ehr.	..	0.2	..	..	0.4	..	+	..	..	..	+	..	0.4	+	0.2
— — var. linearis Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— gracillima Gregory	..	..	..	+	1.0	2.2	..	0.2	..	2.0	0.6	+	..	0.2	0.2
— hustedtii Mölder	..	..	..	..	0.4	18.6	..	0.2	4.8	..	..	..	..	..	+
— intermedia Lagerst.	..	..	..	0.4	..	..	..	0.4	..	..	..	..	..	..	..
— interrupta W. Smith	..	+	..	..	+	..	0.2	..	0.8	..	..	..	+	0.4	..
— — fo. minutissima Hustedt	..	0.2	..	+	+	..	..	..	..	..	..	..	1.0	+	0.4
— karelica Cleve	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— krockii Grun.	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— lata (Bréb.) W. Smith	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— — fo. thuringiaca (Rabh.) A. Mayer	..	..	..	+	..	..	..	..	..	..	..	..	+	..	..
— maior Kütz.	..	..	..	..	×	..	..	..	..	..	..	..	..	..	+
— mesolepta (Ehr.) W. Smith	+	+	..	..	+	..	0.4	0.2	+	..	0.2	..	..	+	0.2
— — fo. angusta Cleve	+	+	0.2	..	..	..	..	..	..	..	..	..	..	..	..
— microstauron (Ehr.) Cleve.	+	0.6	+	1.6	+	..	..	..	0.6	2.0	+	..	..	+	..
— — var. brébissonii (Kütz.) Hustedt	..	..	..	..	+	..	..	+	2.4	..	..	..	..	..	..
— — fo. diminuta Grun.	..	..	..	..	0.2	..	..	0.2	..	7.6	..	..	..	..	..
— molaris Grun.	..	..	..	..	+	..	..	..	..	..	..	..	0.2	..	..
— nodosa Ehr. fo. capitata Cleve	..	..	..	..	+	..	..	..	..	..	+	..	..	..	..
— obscura Krasske	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..
— parva (Ehr.) Cleve var. minuta Østrup	..	..	..	+	..	..	..	+	..	..	..	..	..	..	..
— pulchra Østrup	..	..	..	..	..	..	..	..	..	..	0.4	..	..	+	..
— stomatophora Grun.	+	0.2	..	+	+	..	1.0	+	1.8	5.8	+	+	+	..	+
— — var. gibbosa Hustedt	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..
— streptoraphe Cleve	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— subcapitata Gregory	0.6	0.8	..	0.4	..	0.8	1.4	..	0.2	..	..	..	0.6	..	..
— — var. hilseana (Janisch) O. Müller	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..
— sublinearis Grun.	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..
— subsolaris Grun.	+	..	0.8	+	..	..	..	..	..	..	..	..	..	..	..
— undulata Gregory	..	+	..	..	..	..	..	..	..	..	..	..	..	0.2	..
— viridis (Nitzsch) Ehr.	+	0.4	0.4	+	..	..	1.4	..	..	..	..	..	..	0.2	..
— — var. sudetica (Hilse) Hust.	..	..	..	..	..	..	..	..	..	..	..	0.4	..	..	..

(continued).

32	41	13	1	15	31	37	17	14	19	7	30	28	34	33	11	10	8	25	35	38
0.2	20.8	..	+	0.2	0.2	+	..	+	0.8	+	..	..	0.2	..	+	..	..	..	+	..
..	..	..	0.4	..	0.2	..	..	..	2.0	..	..	..	..	..	..	..	..	+	..	..
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3.6	..	81.2	0.8	33.8	11.0	1.0	..	0.2	0.6	15.2	1.8	..	..	×	0.2	..	3.2	0.4	+	..
0.2	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..
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..	..	..	+	..	..	..	..	+	13.4	×	..	..	..	..	..	..	..	..	..	..
1.2	..	..	0.2	+	..	..	+	..	..	..	..	..	..	..	+	..	..	..	..	..
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..	..	0.2	..	..	..	..	+	+	..	..	..	..	..	..	..	..	..	..	+	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
+	..	+	..	..	+	..	..	..	5.6	..	..	..	..	..	+	..	+	+	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Table 1

	12	36	39	4	2	22	21	3	18	20	29	5	40	9	24
Pinnularia sp. Plate IX, fig. 2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— sp. Plate IX, fig. 3	..	..	..	..	..	1.6	..	..	..	12.4	..	..	..	..	..
— sp. Plate IX, fig. 4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rhopalodia gibba (Ehr.) O. Müll.	+	..	..	..	+	+	..	..	..	0.2	0.2	..	..	..	+
— musculus (Kütz.) O. Müller	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..
Stauroneis agrestis Boye Petersen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— anceps Ehr.	+	0.2	..	..	0.2	+	..	0.2	0.8	..	..	..	1.6	0.2	+
— — fo. gracilis (Ehr.) Cleve	..	..	0.4	+	..	..	..	..	..	..	..	..	3.0	..	..
— — fo. linearis (Ehr.) Cleve	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..
— legumen Ehr.	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..
— obtusa Lagerst.	..	..	..	..	..	..	..	..	..	..	..	0.2	0.8	..	..
— parvula Grun.	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..
— — var. prominula Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+
— phoenicenteron Ehr.	0.4	0.4	+	..	+	10.4	+	..	2.0	2.2	+	..	0.8	+	0.4
— smithii Grun.	..	..	..	..	+	..	..	..	..	..	..	..	..	..	+
— — var. incisa Pant.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+
Stephanodiscus astraea (Ehr.) Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Surirella delicatissima Lewis	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..
— linearis W. Smith var. constricta (Ehr.) Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	+
— ovalis Bréb.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— robusta Ehr. var. splendida (Ehr.) v. Heurck fo. punctata Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— lagerheimii A. Cleve fo. capitata Foged	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Synedra acus Kütz.	..	..	..	..	..	..	..	..	..	..	+	..	..	..	0.4
— — var. radians (Kütz.) Hustedt	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— amphicephala Kütz.	..	..	..	..	..	..	..	..	0.6	..	..	..	..	..	..
— formosa Hantzsch	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— montana Krasske	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
— pulchella Kütz.	+	..	..	..	..	0.6	..	..	..	0.2	..	..	..	0.4	..
— rumpens Kütz.	..	..	..	..	..	..	5.0	..	4.4	..	3.2	..	..	2.0	3.6
— — var. fragilarioides Grun.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
— tabulata (Ag.) Kütz.	..	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..
— tenera W. Smith	..	..	..	..	5.0	..	..	..	..	..	..	0.6	..	0.4	..
— ulna (Nitzsch) Ehr.	..	+	..	..	..	..	..	..	0.2	..	0.2	0.2	..	+	+
— — var. abiskoensis (Hustedt) Foged	..	..	..	..	..	..	..	..	..	..	..	0.2	..	..	..
— — var. aequalis (Kütz.) Hustedt	..	..	..	..	0.2	..	..	..	..	..	..	..	..	..	..
Tabellaria fenestrata (Lyngbye) Kütz.	..	..	..	..	×	..	..	+	4.0	..	1.0	..	..	..	..
— — var. intermedia Grun.	2.6	1.2	..	..	10.0	+	23.6	2.6	..	1.2	5.6	21.4	..	0.8	1.4
— flocculosa (Roth) Kütz.	67.2	14.4	4.0	0.2	31.8	0.2	47.2	8.6	18.6	2.2	1.0	22.0	3.0	7.0	11.0

(continued).

32	41	13	1	15	31	37	17	14	19	7	30	28	34	33	11	10	8	25	35	38
..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	3.0	0.2	..	..	..	..	..	0.6	..	..	..	..	..	..	..	..	..
..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	1.8	6.2	..	..	..	..	0.4	1.8	..	+	..	+	..	3.4	1.2	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	0.8	..	..	..	..	..	..	..	..	..	..
0.2	0.6	..	..	..	..	0.4	0.4	+	..	..	..	..	..	..	..	..	..	..	..	..
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..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	1.2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	0.2	..	..	..	..	..	..	..	..	0.2	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
0.2	..	..	+	0.8	1.0	2.2	0.6	0.4	1.0	+	2.6	..	..	×	+	..	0.2	+	..	..
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..	..	..	..	..	..	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	8.6	..	..	..	..	..	..	2.2	..	..	..	..	..	..	..	..	..
..	..	..	..	..	4.4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0.2	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	+	..	..	..	..	..	0.2	×	0.6	63.4	38.2	80.4	..	+
..	..	..	..	..	1.6	..	..	13.6	..	..	1.2	3.0	0.8	..	..	..	2.4	1.6	..	..
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..	..	..	..	..	..	..	..	..	..	..	..	..	..	×	..	..	..	..	..	..
..	..	..	..	..	..	..	0.4	..	..	..	..	..	..	..	..	..	..	..	..	..
+	..	..	..	1.2	..	0.4	+	..	..	+	2.0	..	0.4	×	..	..	0.2	0.2	..	..
0.2	..	..	..	+	0.8	..	..	..	..	..	1.4	..	..	..	..	..	..	..	..	..
..	..	..	..	..	5.2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
+	..	0.8	..	..	..	..	..	+	..	..	..	..	..	..	0.2	..	..	..	..	..
18.2	..	..	..	..	..	2.0	0.4	..	..	1.0	..	..	..	×	..	..	..	..	+	+
3.0	..	3.2	1.8	+	0.2	..	0.4	20.2	..	0.2	..	+	..	×	+	+	..	..	+	+

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Færdig fra trykkeriet den 15. oktober 1953.

PLATES

Plate I.

(Ca. 1500 ×).

1. *Diatoma elongatum* Ag. var. *tenuis* (Ag.) Kütz.
2, 3. — — var. *minor* Grun.
4, 5. *Fragilaria* sp.
6, 7. — *vaucheriae* Boye Petersen.
8. — sp.
10, 11. — *pinnata* Ehr.
9, 12. — *vaucheriae* Boye Petersen.?.
13. — *virescens* Ralfs var. *elliptica* Hustedt.
14. 15. — *capitellata* (Grun.) Boye Petersen var. *peterseni* Foged.
16. — *capucina* Desmaz. var. *lanceolata* Grun.
17. — *capucina* Desmaz.
18, 20. *Eunotia arcus* Ehr.
19, 22. — *crista-galli* Cleve.
21. — *rhynchocephala* Hustedt.
23. — *bidentula* W. Smith.
24. *Synedra investiens* W. Smith.

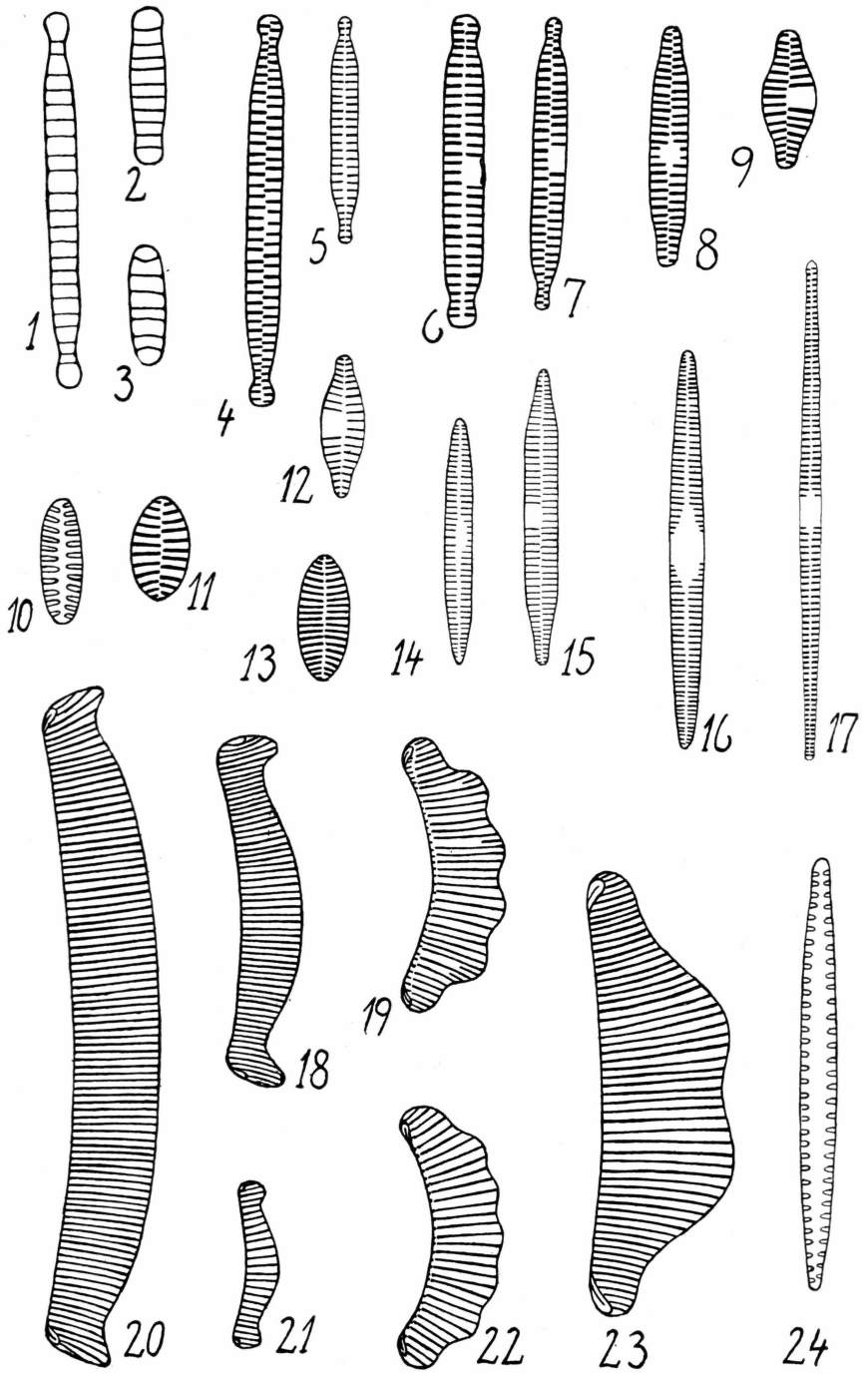
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Plate II.

(Ca. 1500 ×).

1. *Eunotia bigibba* Kütz.
2. — *praerupta* Ehr. var. *muscicola* Boye Petersen.
3, 4. — — var. *inflata* Grun.
5. *fallax* A. Cleve.
6. — *bigibba* Kütz. var. *pumila* Grun.
7, 8. — *septentrionalis* Østrup.
9, 10. — *elegans* Østrup.
11, 12, 13. — *diodon* Ehr.
14. 15. — *tenella* (Grun.) Hustedt.
16, 17. — *rhomboidea* Hustedt.
18. — *polydentula* Brun.
19. — *paludosa* Grun.
20, 21. — *tenella* (Grun.) Hustedt. Sporangial forms ?.

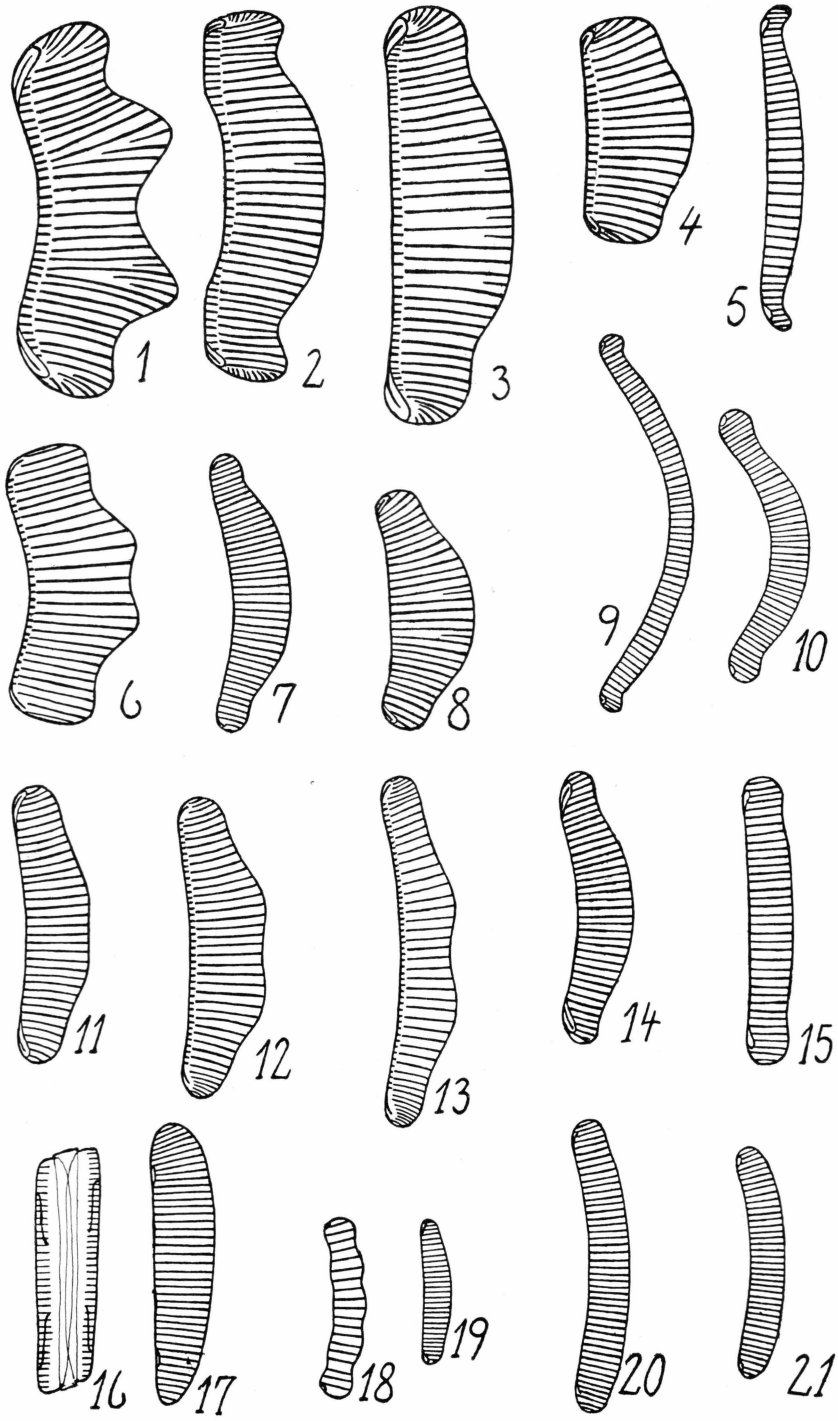
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Plate III.

(Ca. 1500 ×).

1, 2. *Achnanthes linearis* W. Smith. var. *pusilla* Grun.
3, 4. — *pygmaea* (Schum.) Cleve.
5. *Diatomella balfouriana* Grev.
6. *Mastogloia crucicula* (Grun.) Cleve.
7. *Diploneis ovalis* (Hilse) Cleve.
8. *Anomoeoneis exilis* (Kütz.) Cleve.
9. *Caloneis silicula* (Ehr.) Cleve var. *alpina* Cleve.
10. *Neidium affine* (Ehr.) Cleve var. *longiceps* (Greg.) Cleve.
11. — sp.
12, 14, 15. *Stauroneis parvula* Grun.
13. *Anomoeoneis zellensis* (Grun.) Cleve var. *linearis* Østrup.
16. *Anomoeoneis styriaca* (Grun.) Hustedt.
17. *Caloneis bacillum* (Grun.) Cleve.
18. — *fasciata* (Lagerst.) Cleve fo. *acuta* Boye Petersen.
19. — *boecheri* nov. spec.
20. — *silicula* (Ehr.) Cleve var. *truncatula* Grun.

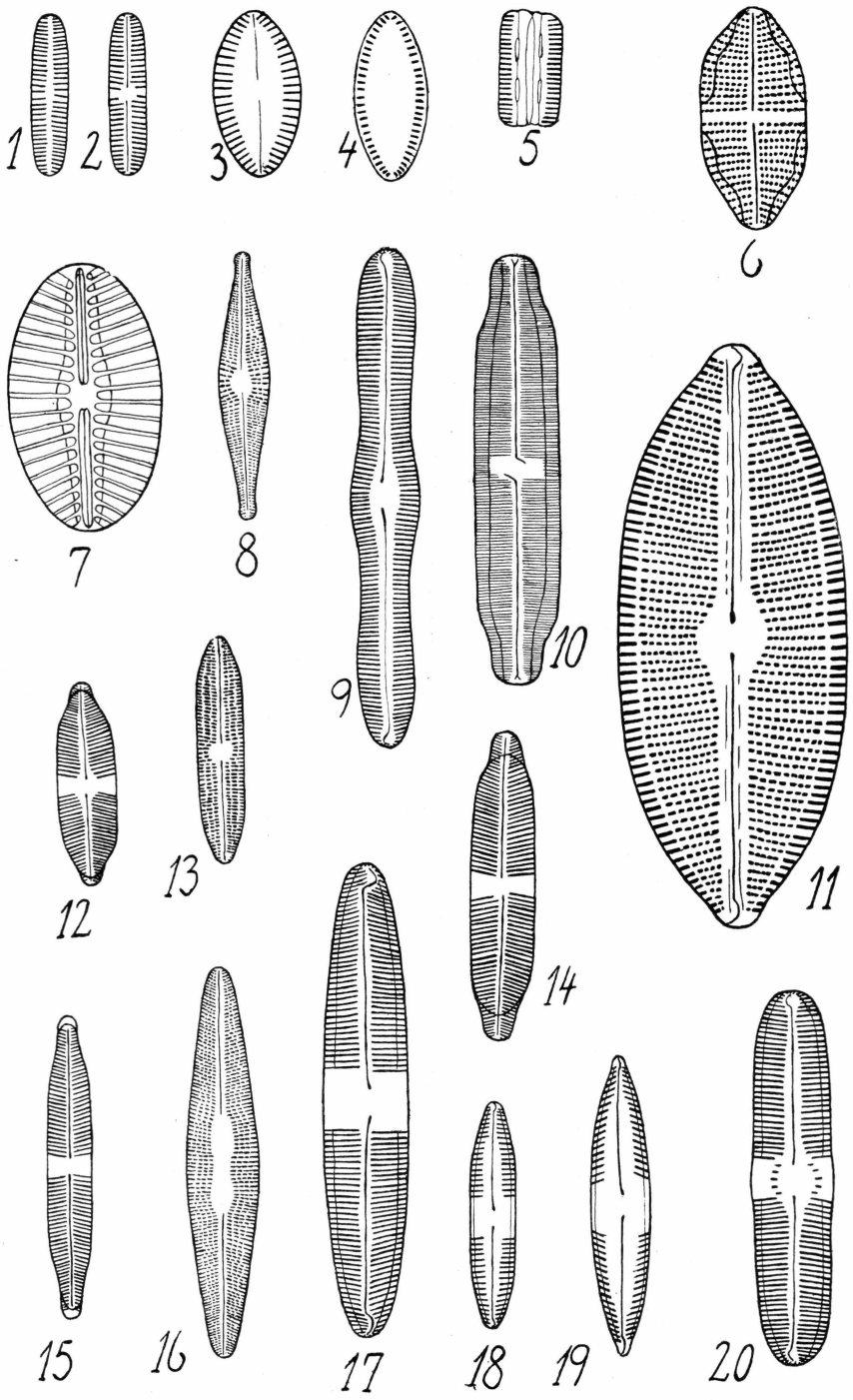
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Plate IV.

(Ca. 1500 ×).

1. *Stauroneis parvula* Grun. var. *prominula* Grun.
2. — *legumen* Ehr.
3. *Caloneis silicula* (Ehr.) Cleve var. *truncatula* Grun.
4. — *fasciata* (Lagerst.) Cleve fo. *acuta* Boye Petersen.
5. — *silicula* (Ehr.) Cleve fo. *minutissima* Hustedt.
6. *Anomoeoneis serians* (Bréb.) Cleve fo.
7. *Navicula perpusilla* Grun.

8, 9, 10. — *rotaeana* (Rabh.) Grun.

11. — *contenta* Grun.
12. — — fo. *biceps* Arnott.

13, 14, 15, 16. — *lagerstedti* Cleve var. *palustris* Hustedt.

17. — *minuscula* Grun.
18. — *subrotundata* Hustedt.
19. — *soehrensis* Krasske var. *septentrionalis* Hustedt.
20. — *hassiaca* Krasske.
21. — *forcipata* Grev. var. *suborbicularis* Grun.
22. — *variostriata* Krasske.

23, 24. — *torneensis* Cleve.

25. — *subfossalis* Hustedt.
26. — *fossalis* Krasske.
27. — *jaernefeldti* Hustedt.

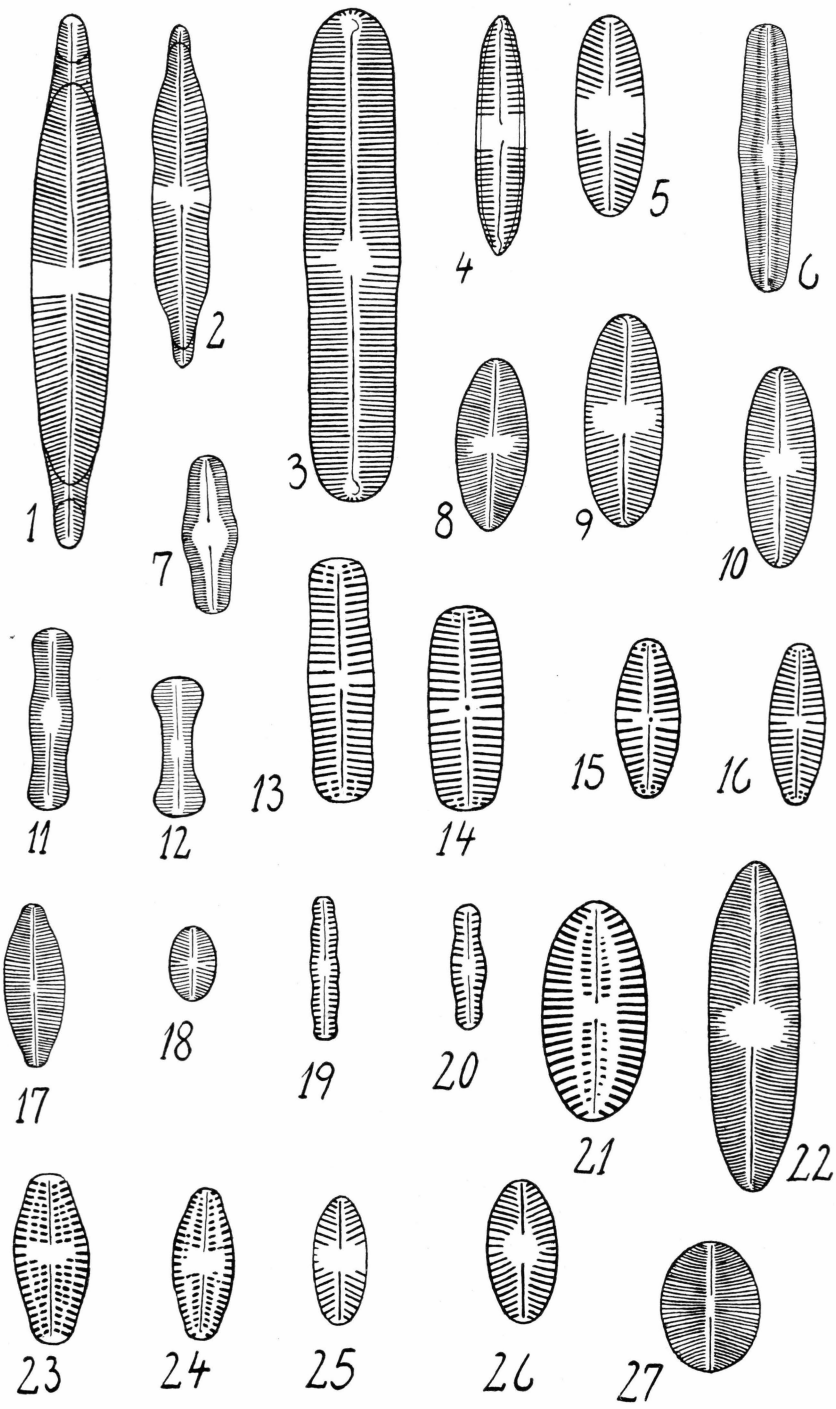
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Plate V.

(Ca. 1500 ×).

1, 2. *Navicula digitoradiata* (Greg.) A. Schmidt fo. *minor* n. f.
3. — *avenacea* (Bréb.) Grun.
4. — *cari* Ehr.
5. — *gregaria* Krasske.
6. — *halophila* (Grun.) Cleve.
8, 9. — *cincta* (Ehr.) Kütz.
12. — *subcostulata* Hustedt. ?.
11, 13, 14. — *cryptocephala* (Kütz.) Grun.
15, 16. — *salinarum* Grun. fo. *minima* Kolbe.
17. — *cryptocephala* Kütz. var. *veneta* (Kütz.) Grun.
7, 10, 18. — — fo. *terrestris* Lund.?.

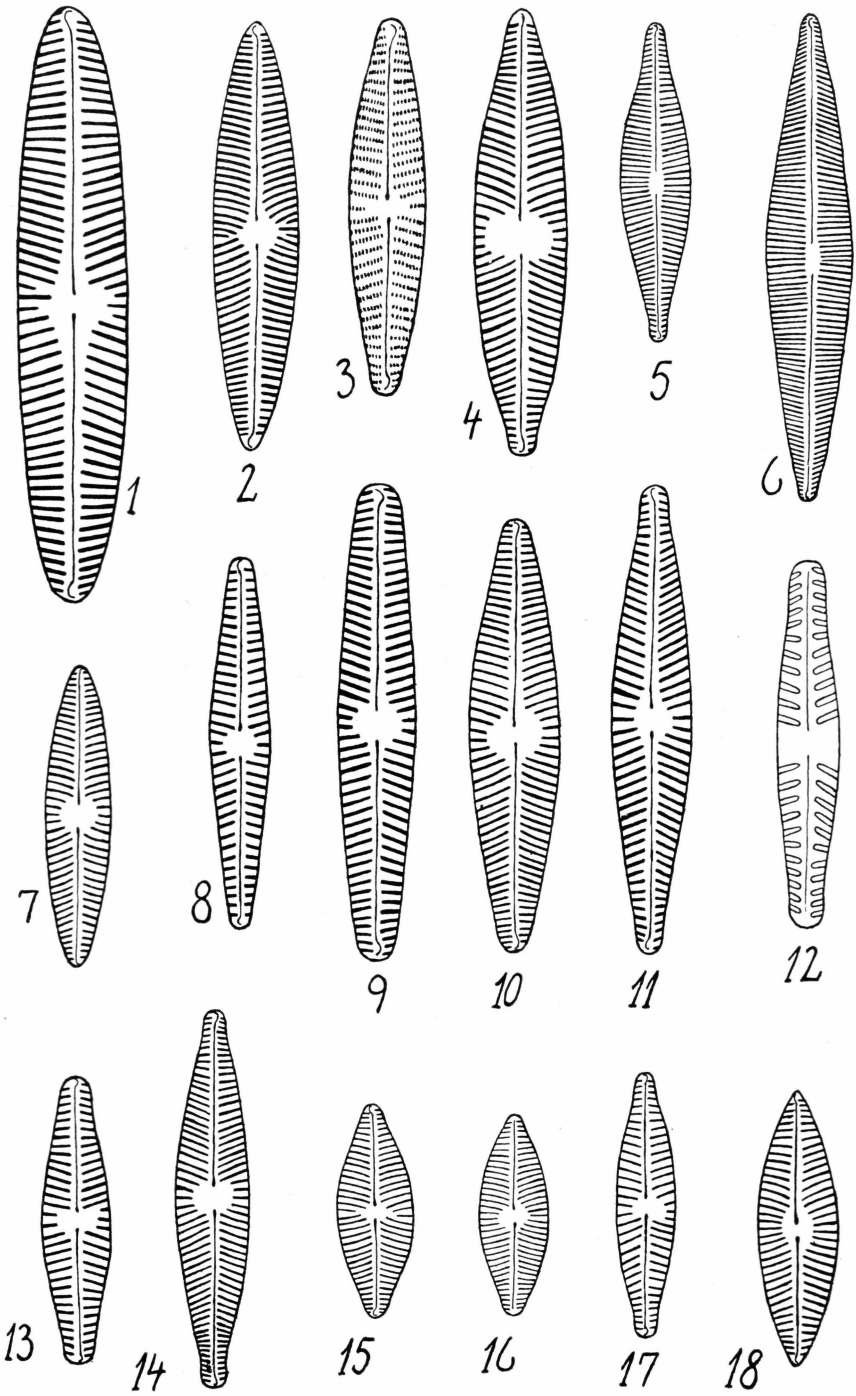
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Plate VI.

(Ca. 1500 ×).

1, 2, 3. *Navicula cincta* (Ehr.) Kütz. var. ?.
4. — *brekkaensis* Boye Petersen.
5, 6. — *petersenii* Hustedt.
7. — *ignobilis* Krasske.
8. — *kotschyi* Grun.
9. — *gibbula* Cleve.
10. — *protracta* Grun.
11. — *clementis* Grun.
12. — *pseudocryptocephala* nov. spec.
13. — *contenta* Grun.
14. — *inflata* Donk. ?.
15, 16. — *ivigtutensis* nov. spec.
17. — *amphibola* Cleve.

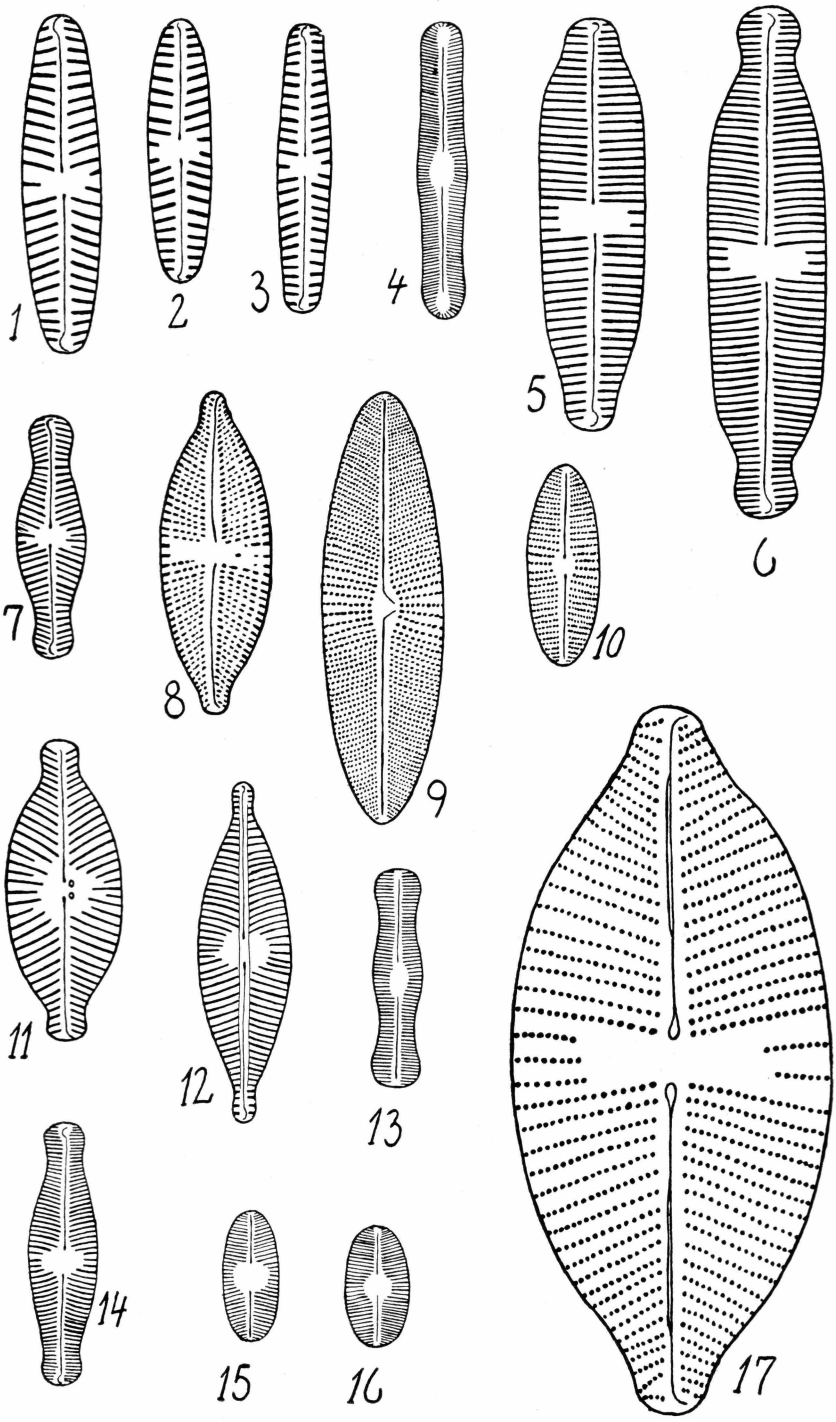
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Plate VII.

(Ca. 1500 ×).

1, 2. *Pinnularia gracillima* Greg.
3, 4. — *sublinearis* Grun.
5, 6, 7. — *interrupta* W. Smith fo. *minutissima* Hustedt.
8. — *undulata* Greg.
9. — *subcapitata* Greg. var. *hilseana* (Janisch) O. Müller.
10. — *divergentissima* Grun. var. *wulffii* Boye Petersen.
11, 14. — *interrupta* W. Smith fo. *minutissima* Hustedt.
12. — *mesolepta* (Ehr.) W. Smith. (?).
13. — *subcapitata* Greg.
15, 16, 17. — *molaris* Grun.
18. — *microstauron* (Ehr.) Cleve var. *brébissonii* (Kütz.) Hustedt.
19. — *krockii* Grun.

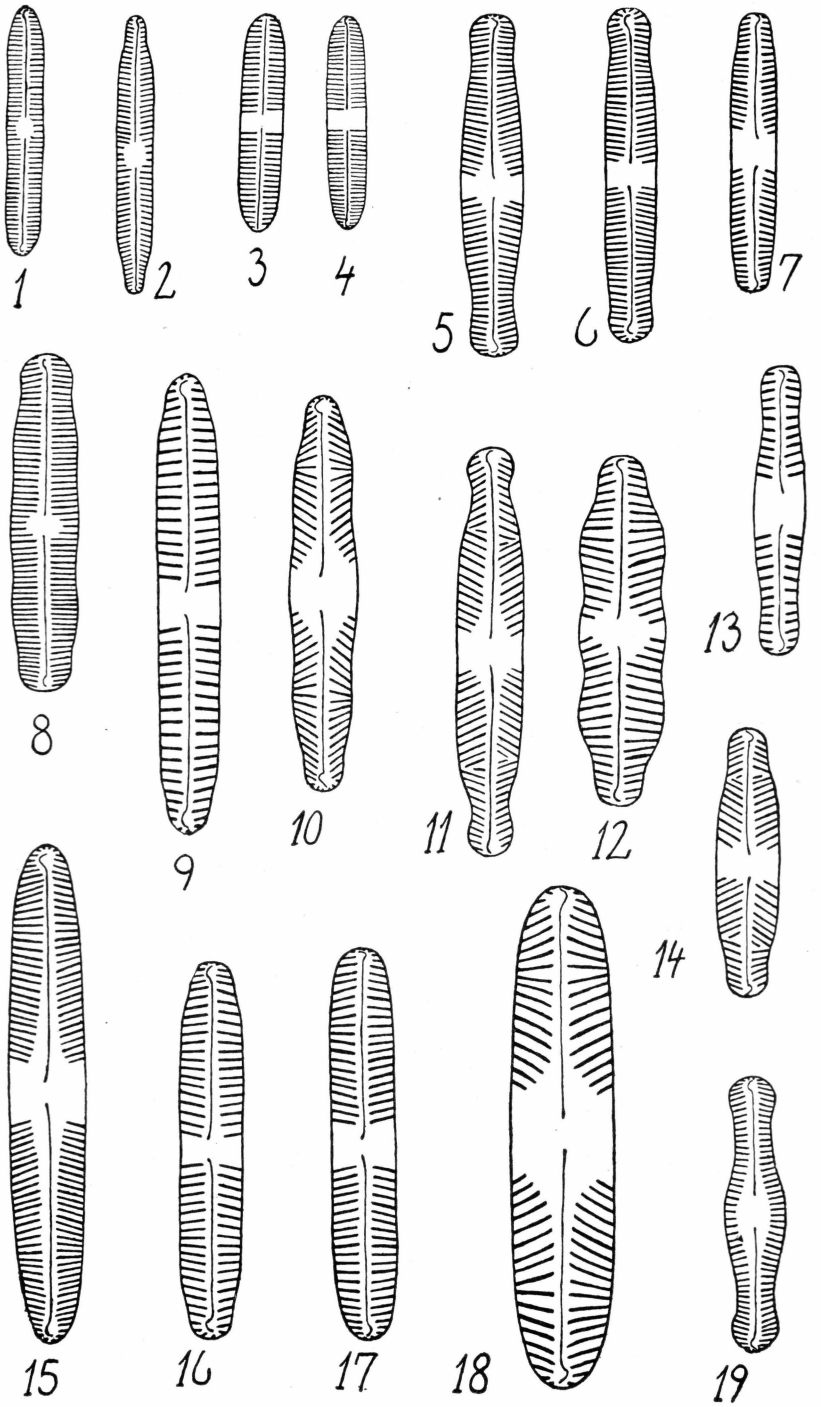
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Plate VIII.

(Ca. 1500 ×).

1, 2, 3, 4. *Pinnularia parva* (Ehr.) Grun. var. *minuta* Østrup.
6. — *microstauron* (Ehr.) Cleve.
5, 7, 8, 9. — *intermedia* Lagerst.
10. — *borealis* Ehr. fo. *ovalis* Boye Petersen.
11, 15. — *borealis* Ehr.
12. — *pulchra* Østrup. (?).
13, 14. — *borealis* Ehr.
16. — *balfouriana* Greg.

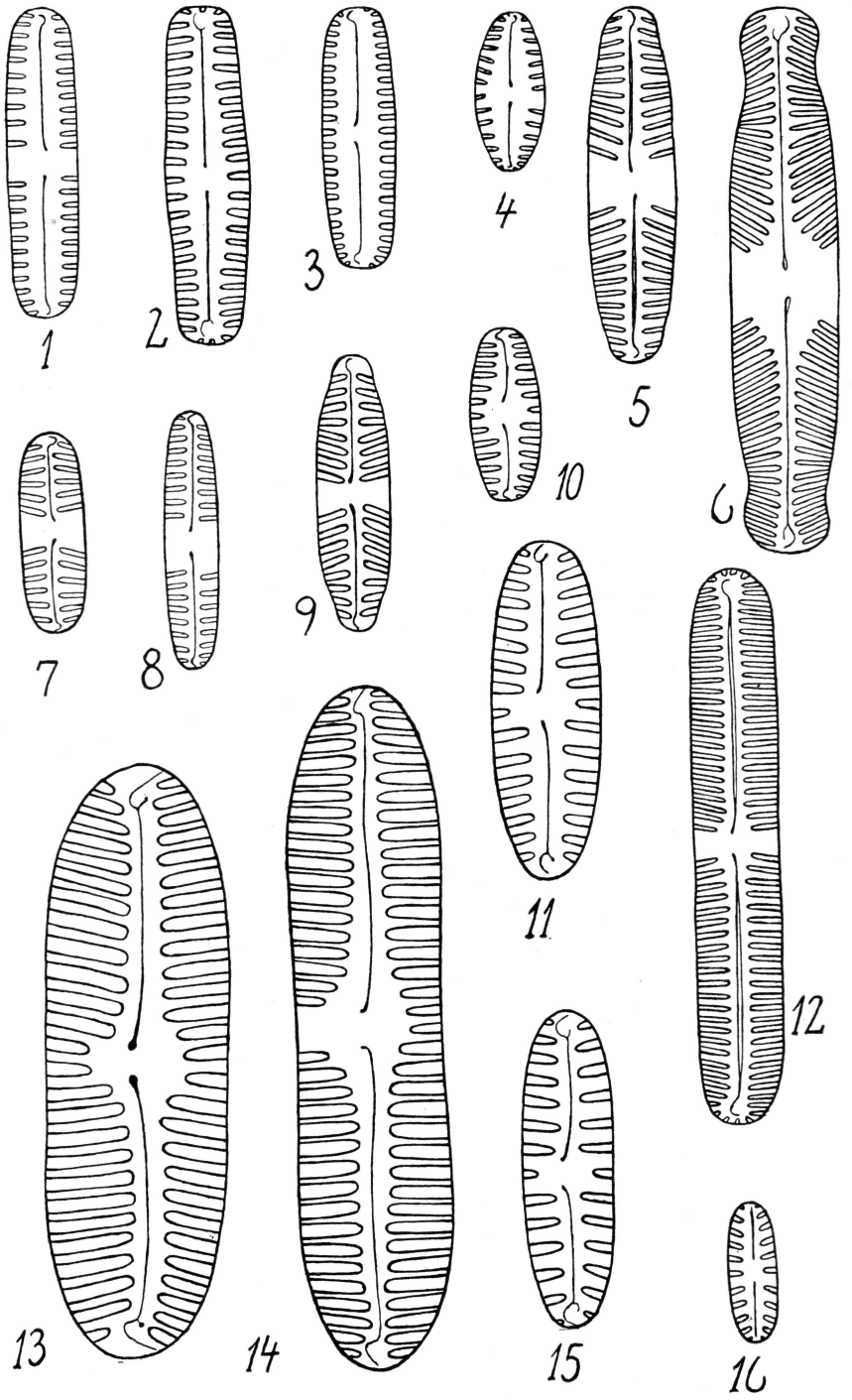
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Plate IX.

(Ca. 1500 ×).

1. *Pinnularia mesolepta* (Ehr.) W. Smith fo. *angusta* Cleve.
2. — sp.
3. — sp.
4. — sp.
5. — *hustedtii* Mölder.
6. — *nodosa* Ehr. fo. *capitata* Cleve.
7. — *boecheri* nov. spec.

8, 9. *Amphora* sp.

10. — sp.
11. — sp.

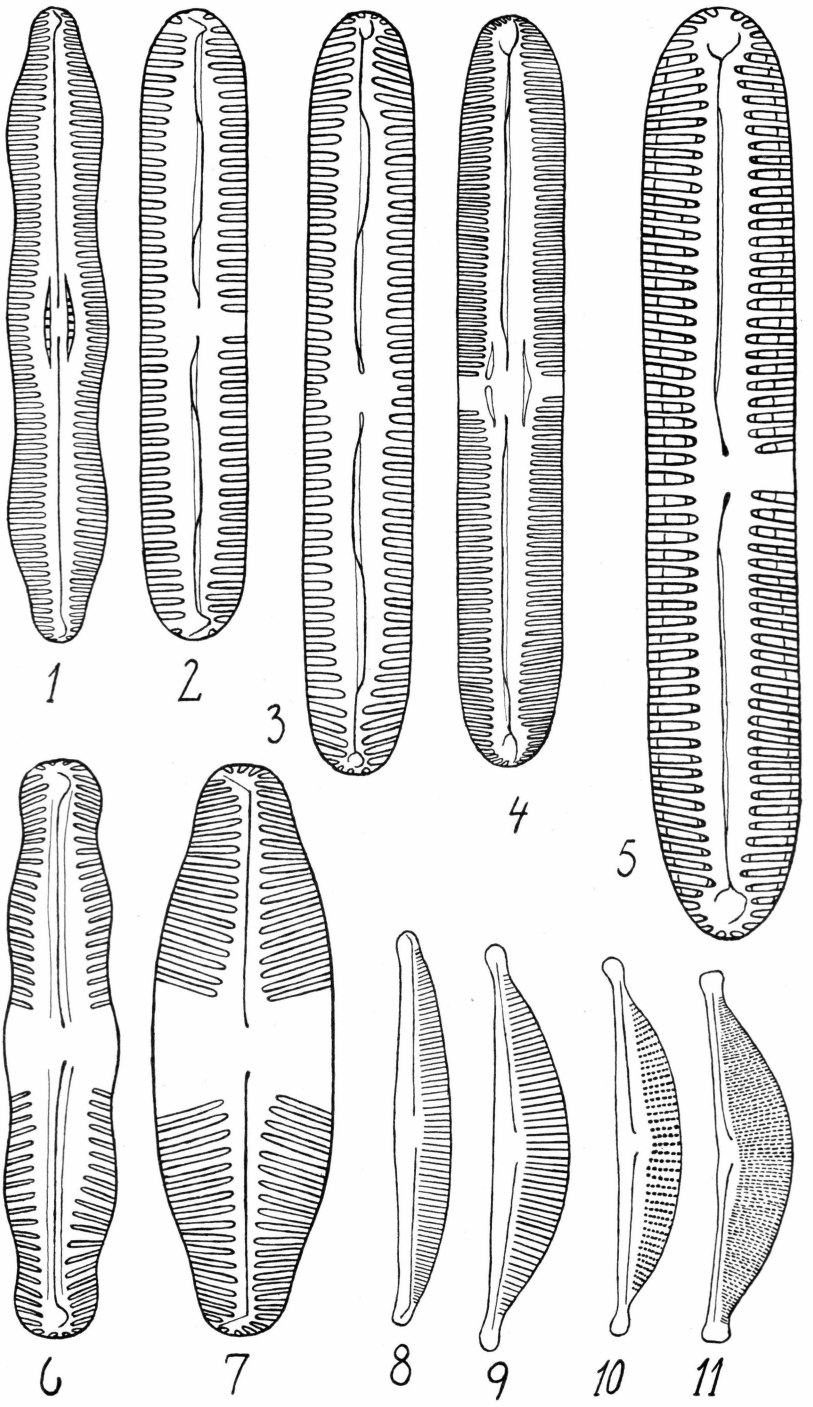
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Plate X.

(Ca. 1500 ×).

1, 2. *Amphora dubiosa* Østrup.
3, 4, 5. — *obscura* Krasske.
6. — *triundulata* Ross.
7. *Cymbella groenlandica* nov. spec.
8. — *stauroneiformis* Lagerst.
9. — *naviculiformis* Auersw.
10. — *angustata* (W. Smith) Cleve.
11, 12, 13. — *ventricosa* var. *groenlandica* nov. var.
14, 15. — *ventricosa* Kütz.
16. — *cistula* (Hempr.) Grun. var. *maculata* (Kütz.) van Heurck.
17. — *gracilis* (Rabh.) Cleve.
18. *Gomphonema parvulum* Kütz. var. *micropus* (Kütz.) Cleve.
19. — *acuminatum* Ehr.
20. — — var. *brébissonii* (Kütz.) Cleve.

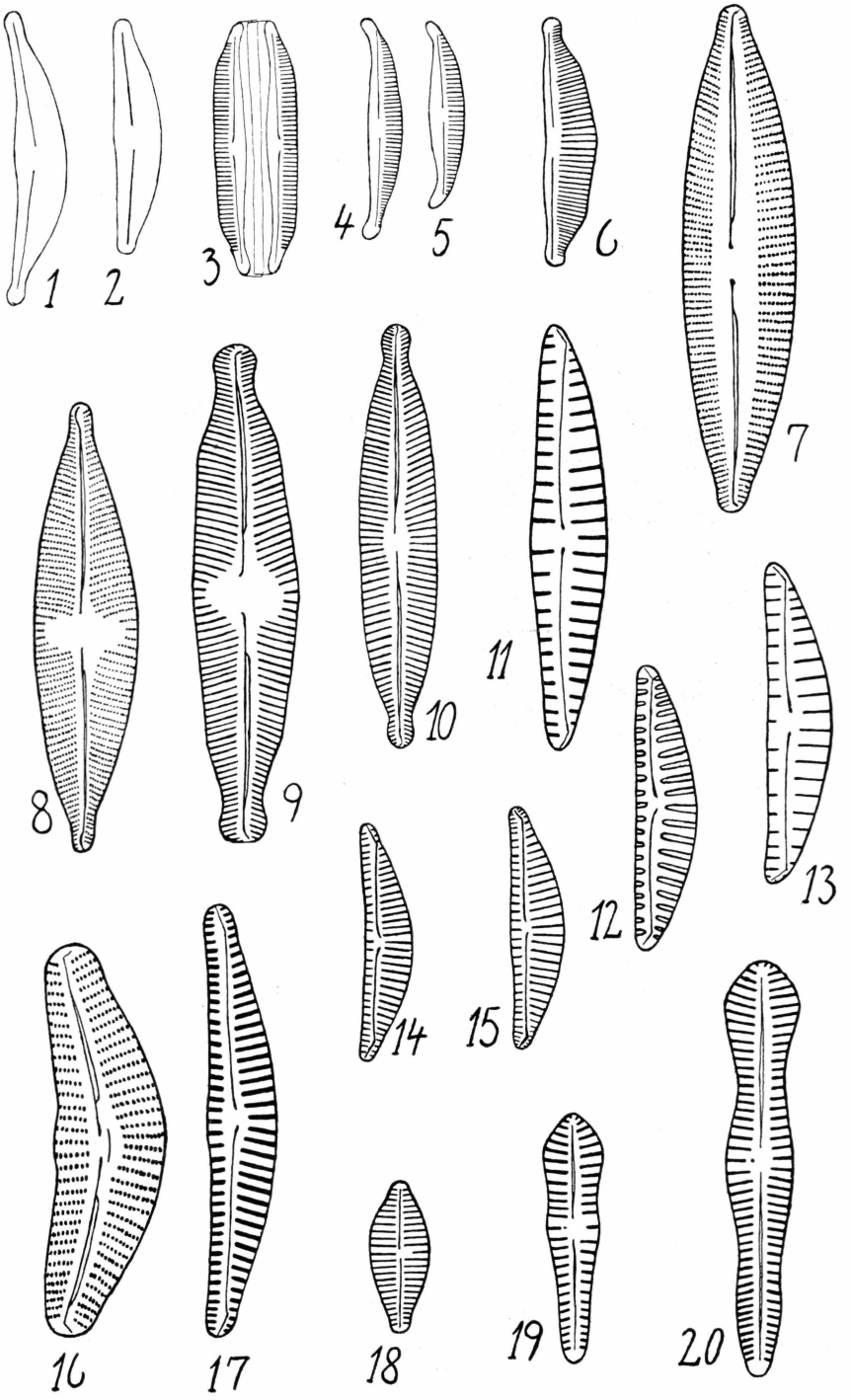
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Plate XI.

(Ca. 1500 ×).

1. *Cymbella microcephala* Grun. var. *robusta* Hustedt.
2, 3, 4. — *microcephala* Grun.
5, 6. — *obtusa* Greg. fo. *krasskei* n. f.
7, 8. — *obtusa* Greg.
9, 10. — *norvegica* Grun.
11. — *leptoceros* (Ehr.) Grun.
12. — *spuria* Cleve. (?).
13. — *stauroneiformis* Lagerst.
14. — *latens* Krasske.
15. — *hauckii* van Heurck. (?).

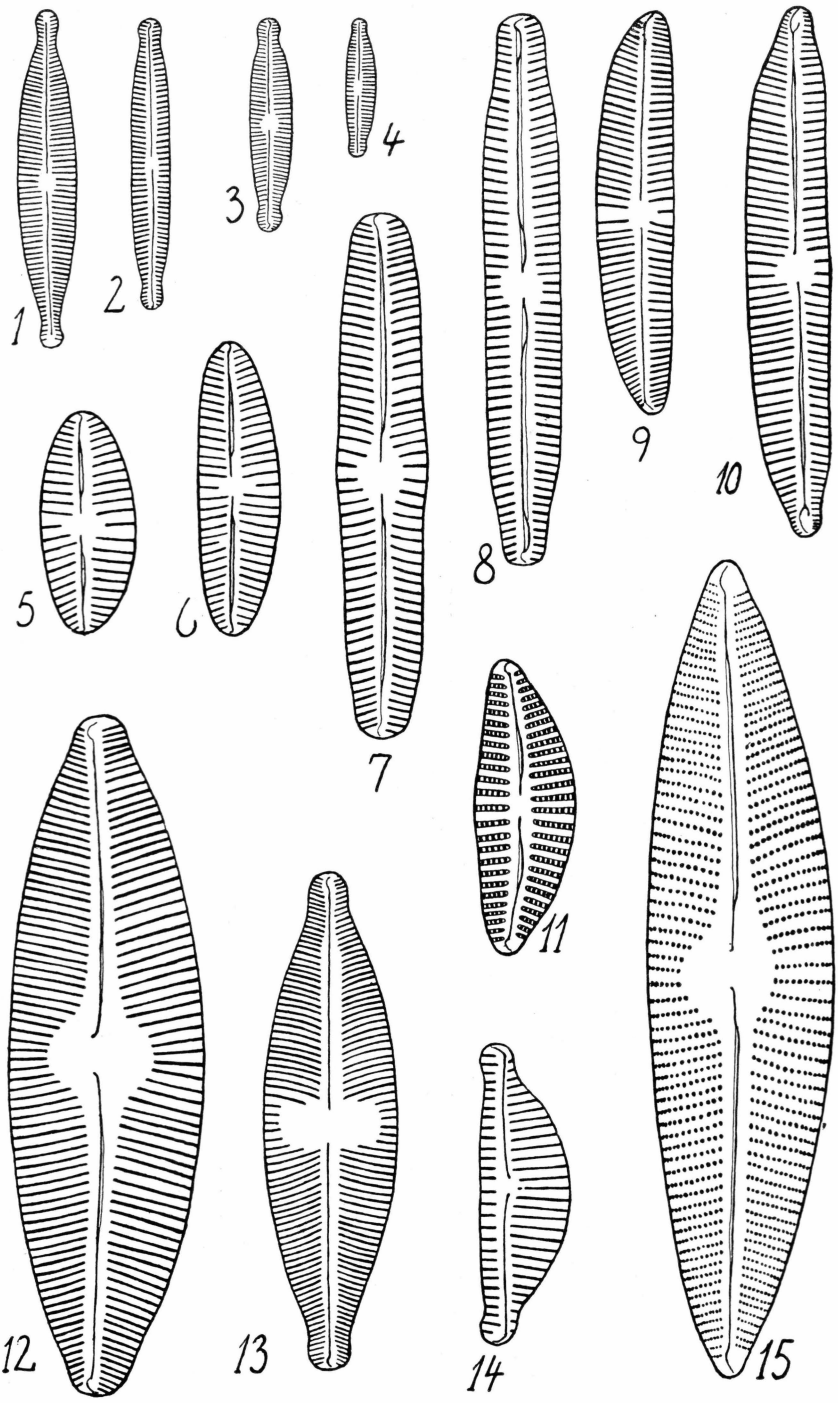
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Plate XII.

(Ca. 1500 ×).

1. *Gomphonema angustatum* (Kütz.) Rabh.
2, 3. — *angustatum* var. *producta* Grun.
4, 5, 6. — — var. *undulata* Grun.
7. — — var. *sarcophagus* (Greg.) Grun.
8. — — var. *linearis* Hustedt.
9. — *subtile* Ehr. var. *sagitta* (Schum.) Cleve.
10. — *acuminatum* Ehr. var. *turris* (Ehr.) Cleve.
11. *Nitzschia ignorata* Krasske.
12. — sp.
13, 14. — *palustris* Hustedt.
15. — sp.
16. *Gomphonema boreale* Østrup fo. *minor* nov. fo.
17. *Nitzschia* sp.
18. *Surirella lagerheimii* A. Cleve fo. *capitata* nov. fo.

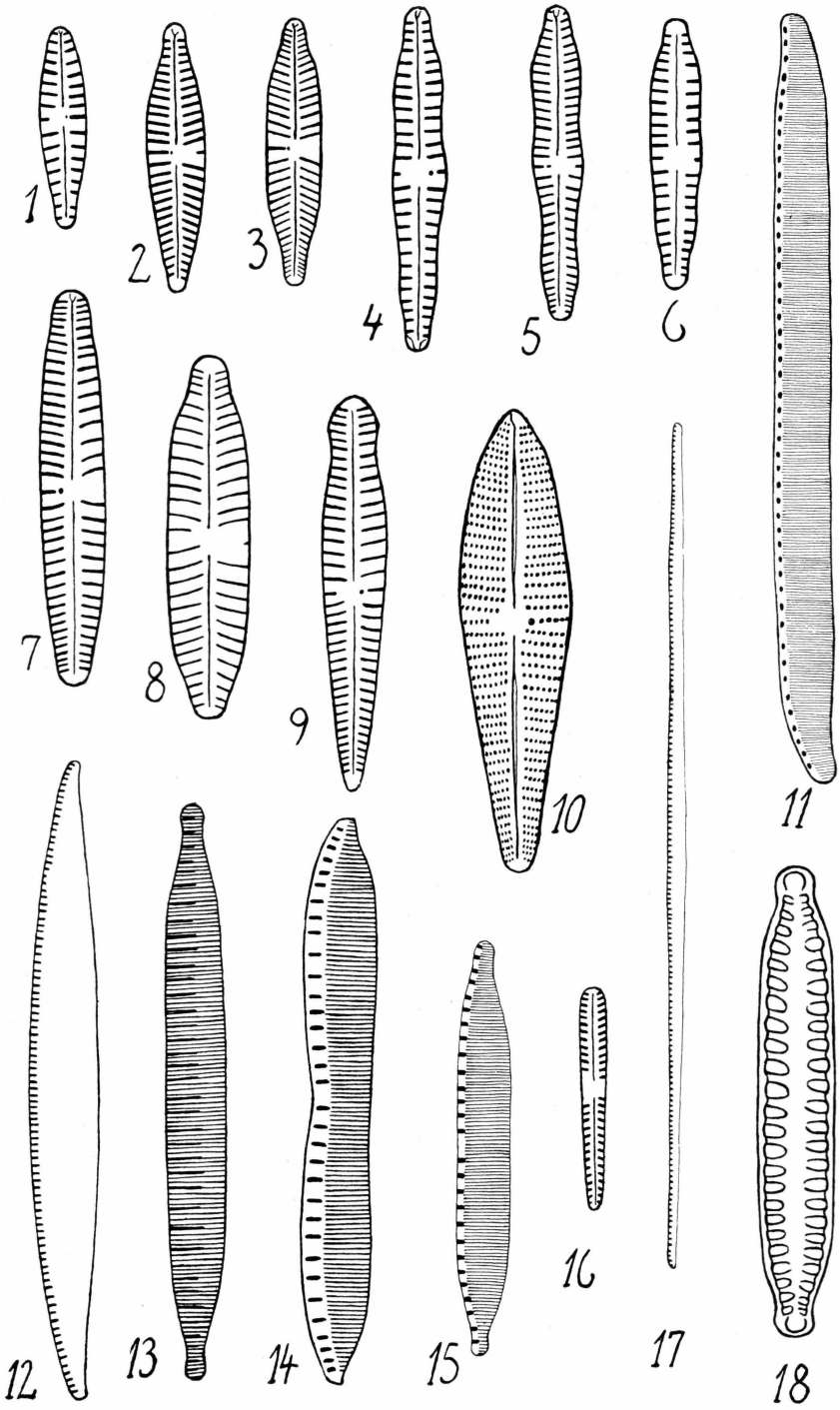
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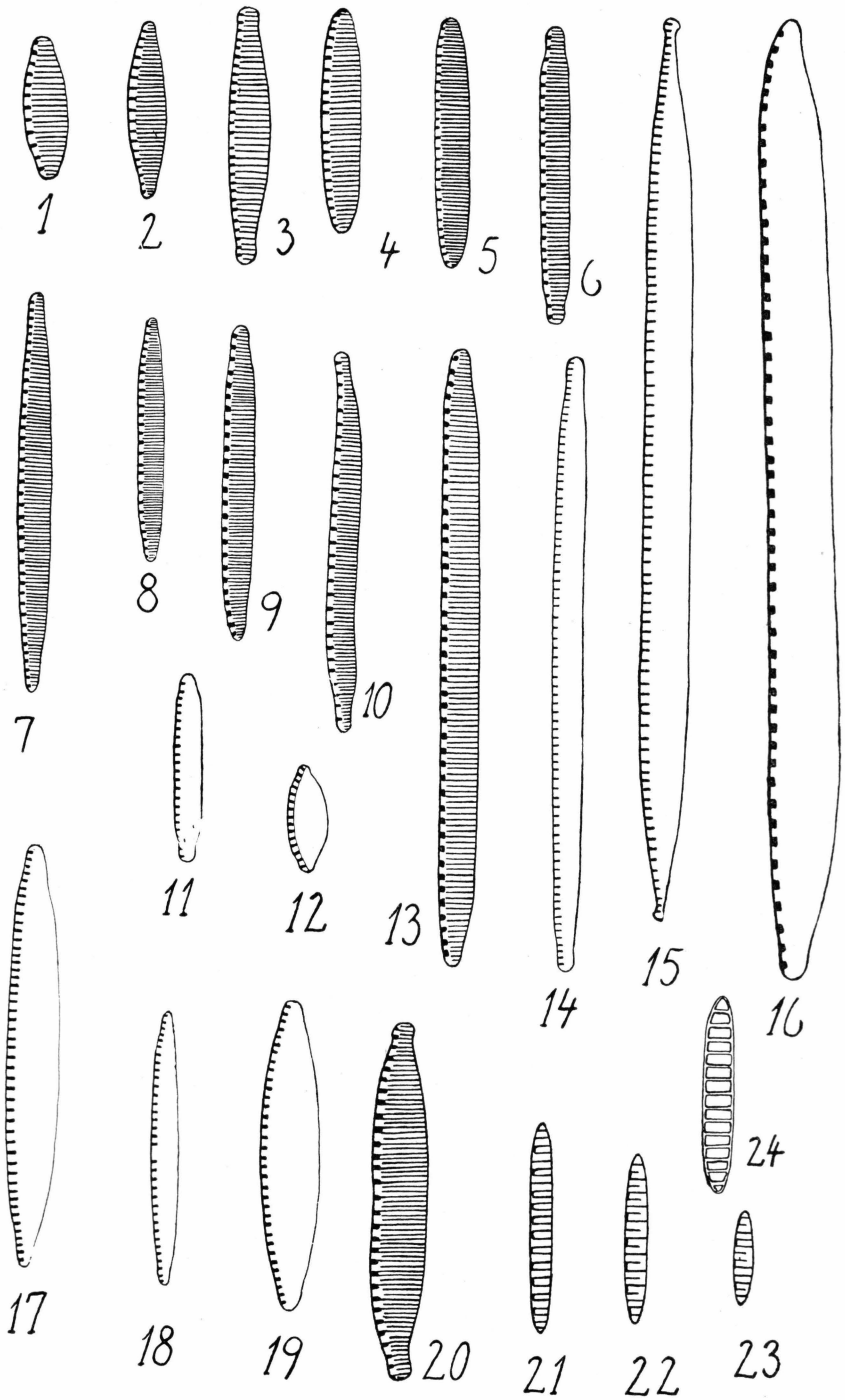
Plate XIII.

(Ca. 1500 ×).

1, 2, 3, 7. *Nitzschia romana* Grun.
4, 5, 6. — *frustulum* (Kütz.) Grun. var. *perpusilla* (Rabh.) Grun.
8. — — var. *subsalina* Hustedt.
9. — *perminuta* Grun.
10. — sp.
11, 12. — *communis* (Rabh.) Lund.
13. — *frustulum* (Kütz.) Grun.
14. — sp.
15. — sp.
16. — *obtusa* W. Smith.
17, 18. — *palea* (Kütz.) W. Smith.
19. — *kützingiana* Hilse.
20. — *hantzschiana* Rabh.
21, 22, 23. — *amphibia* Grun. fo. *thermalis* Boye Petersen.
24. *Denticula tenuis* Kütz.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