

MEDDELELSER OM GRØNLAND

UDGIVNE AF

KOMMISSIONEN FOR VIDENSKABELIGE UNDERSØGELSER I GRØNLAND

Bd. 147 · Nr. 8

DEN BOTANISKE EKSPEDITION TIL VESTGRØNLAND 1946

DESMIDS FROM WEST GREENLAND

COLLECTED BY TYGE W. BÖCHER

BY

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WITH 1 FIGURE IN THE TEXT
AND 2 PLATES

KØBENHAVN

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BIANCO LUNOS BOGTRYKKERI

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1. INTRODUCTION

This material was collected by Dr. TYGE W. BÖCHER during the Botanical Expedition to West Greenland 1946. The localities where the samples were taken are described in BÖCHER 1949a. I am indebted to Dr. BÖCHER for putting his material at my disposal. It might be expected that a large number of arctic species were represented here, but this is not so, as can be seen from the list of species. The following species and varieties cannot be characterized as "arctic", but they have been met with in the northernmost parts of Scandinavia:

Euastrum verrucosum var. *groenlandicum* and var. *rhomboideum*, *Cosmarium Arnellii*, *cyclicum* var. *arcticum*, *decedens* f. *minus*, *hexalobum*, *Holmii*, *petsamoense*, *Pokornyanum*, *quadratum* var. *Willei*, *Xanthidium antilopaeum* var. *groenlandicum* (not in Scandinavia), *Staurastrum lunatum* var. *ovale* f., *petsamoense*, *subpygmaeum* var. *subangulatum*.

No new species were found.

Lists of other algae found have been added, and some of them, marked (Cz), have been determined by Docent CARL CEDERCREUTZ.

The paper was originally intended to have been accompanied by a list of all known desmids from arctic (and antarctic) regions ("circumpolar species"), but this would have taken more time than I have had at my disposal. I hope I shall get an opportunity later on to work out and publish such a list.

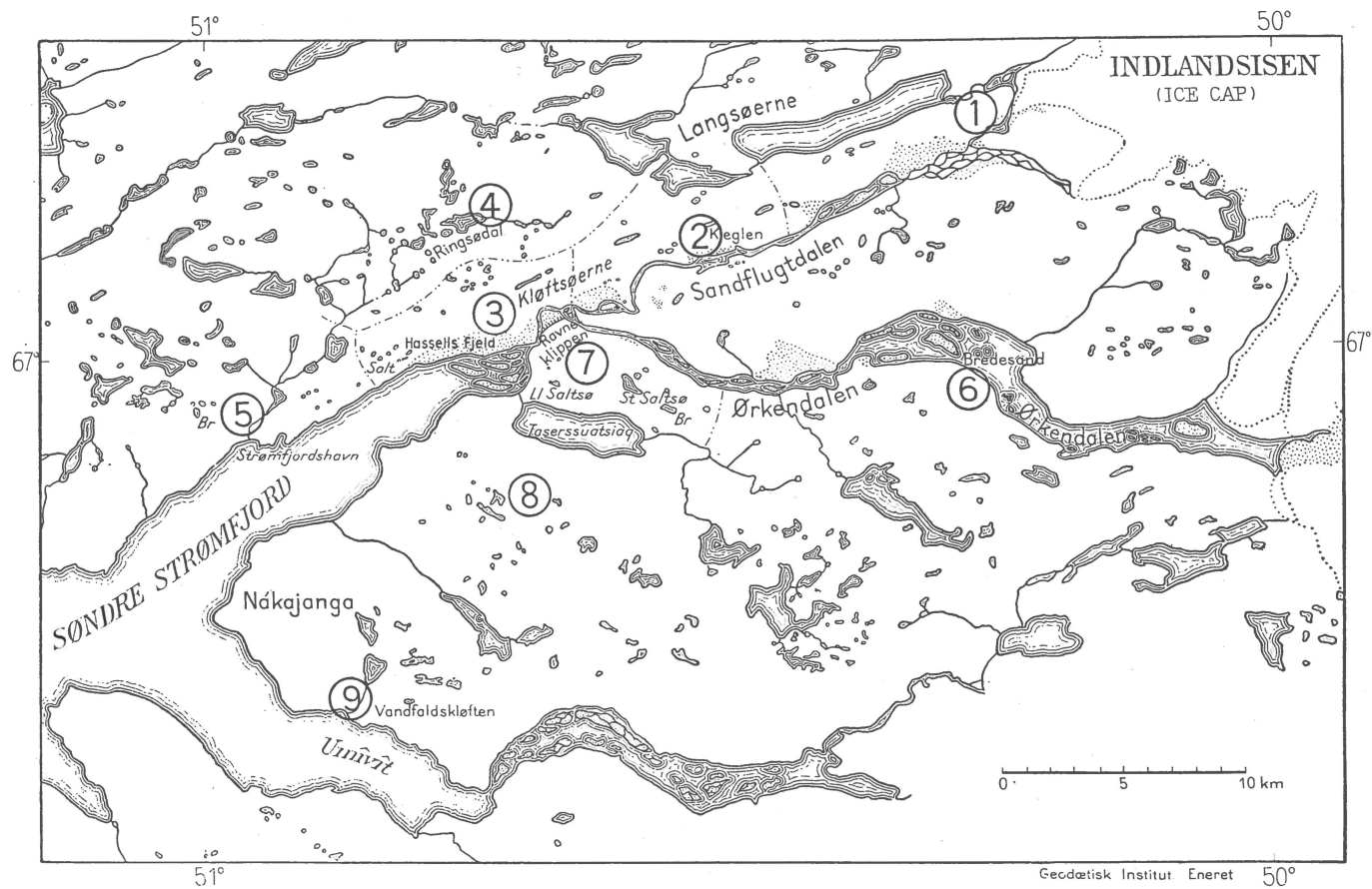


Fig. 1. Map of the inland area at the head of Søndre Strømfjord showing situation and demarcation of Localities 1—9.

2. LIST OF DESMIDS AND SOME OTHER ALGAE FOUND IN EACH SAMPLE

With the only exception of samples nos. 31—32, which are from Ivigtut and Kangâmiut, all samples originate from the area of Søndre Strømfjord. The inland region at the head of this very long fjord has been divided into 9 main localities (see map fig. 1) and in the following text the samples are arranged according to these, commencing with the region on the margin of the inland ice (Loc. 1) and ending with Itivdlinguaq (Loc. 10) half-way up the fjord (not included in the map). A description of the strange continental character of the Søndre Strømfjord inland area including investigations of climate, soil and waters is found in BÖCHER 1949b.

Main loc. 1. The ice margin area. Samples 1—2.

Sample 1. Algae from the bank of a glacier-fed river immediately by the ice cap. ²⁶/₈ 1946.

No desmids found.

Sample 2. Small hollow near the ice cap. Squeezings from mosses. ²⁶/₈ 1946.

Desmids:	Cosmarium
Closterium	Arnellii.
littorale (?)	Other algae:
Venus	Diatoms.

Main loc. 2. The terrain round Keglen. Samples 3—7.

Sample 3. Small pond in the sandy river flat. ³¹/₇ 1946.

Desmid:	Cosmarium
	reniforme.

Sample 4. Small pond between dunes in the valley. Most probably basic. ³¹/₇ 1946.

Desmids:	granatum
Cosmarium	granatum var. subgranatum
bioculatum var. hians	isthmochondrum

subcrenatum	Pediastrum Boryanum.
tetraophthalmum.	Scenedesmus bijuga.
Other algae:	Spirogyra (ster.).
Ophiocytium cochleare majus.	

Sample 5. Lake north of Keglen. ¹²/₈ 1946.

Desmids:	holmiense var. integrum
Cosmarium	punctulatum var. leiodermum
granatum	(cf. Insam & Krieger).

Sample 6. Lake in the valley Sandflugtdalen near Keglen. Water basic. ³¹/₇ 1946.

Desmids:	granatum
Cosmarium	punctulatum var. subpunctulatum
Botrytis	tetraophthalmum.

Sample 7. Algae from a small brook near Keglen. ²⁸/₈ 1946.

Desmids:	crenatum
Gonatozygon	depressum
monotaenium.	difficile
Netrium	formosulum
Digitus.	granatum
	humile
Penium sp.	impressulum
Closterium	latifrons
Dianae	margaritifera
incurvum	moniliforme
juncidum var. brevius	obtusatum
moniliferum	ochthodes
Ralfsii var. hybridum	praemorsum
regulare	protractum
striolatum.	protractum var. Schmidlei
Pleurotaenium	quadratum
Ehrenbergii (fig. 3)	Regnellii
truncatum.	reniforme
Euastrum	saxicolum
bidentatum	subprotumidum var. Gregorii
binale f. Gutwinskii	subreischii f. (?) (fig. 13)
elegans	subtumidum var. Klebsii
oblongum	subundulatum
pectinatum	tetraophthalmum
verrucosum var. subquadratum.	tinctum
Cosmarium	Turpinii f.
bioculatum	Xanthidium
Blyttii	antilopaeum f. (fig. 21).
Boeckii	Arthrodesmus
Botrytis	bifidus
capitulum var. groenlandicum	convergens (f. mamilla brevi)
consersum var. latum	octocornis.

Staurationum	Sebaldi
Bieneanum	subpygmaeum var. subangulatum
Brebissonii	teliferum.
Brevispina f. majus	Sphaerosoma
cristatum	granulatum.
cyrtocentrum	Hyalotheca
dejectum var. patens	dissiliens.
Dickiei f. groenlandicum	Desmidium
forficulatum	Swartzii.
furcigerum	Other algae:
granulosum	Trachelomomas
hexacentrum	allia
inflexum	armata
orbiculare var. depressum	volvocina
petsamoense (cf. Järnefelt 1934).	

Main loc. 3. Head of the northern branch of the fjord, north of the river.

Samples 8—19.

Sample 8. Kløftsøerne. 300 m above sea level. Acid water rich in humus. Water analyses in BÖCHER 1949b, Table 12. $\frac{6}{8}$ 1946.

Desmids:	Phaseolus
Closterium	praemorsum
Dianae	pusillum
incurvum	quadrum
Jenneri	Reinschii
macilentum	subcucumis
parvulum	subtumidum
parvulum var. angustum	subundulatum
regulare.	tetraophthalmum.
Euastrum	Staurationum
ansatum var. concavum	Avicula
bidentatum	hexacentrum
binale f. Gutwinskii	inflexum
denticulatum	lapponicum.
elegans	Hyalotheca
gemmatum	dissiliens.
pectinatum var. brachylobum.	Other algae:
Cosmarium	Bulbochaete
angulosum var. concinnum	dispar (Cz)
bioculatum	mirabilis (Cz)
Blyttii	polyandria (?).
Boeckii	Characium falcatum.
Botrytis	Coleochaete scutata (Cz).
crenatum	Draparnaldia sp. (Cz).
depressum	Mougeotia sp. (sterilis).
difficile	Oedogonium sp.
granatum	Ophiocytium majus
impressulum	Pediastrum Boryanum
ochthodes	Scenedesmus sp.

Sample 9. Kløftsøerne; see above. Squeezings from Sphagna.
6/8 1946.

Desmids:	Cosmarium
Closterium	arctoum
angustatum	ochthodes
parvulum	simplicius.
striolatum.	Staurostrum
Euastrum	Brebissonii var. laticeps (fig. 38)
ansatum var. concavum.	lunatum
Micrasterias	pseudosebaldi var. simplicius.
angulosa (cf. GRÖNBLAD, <i>New Desm.</i> , Pl. II, fig. 5).	Other algae: Diatoms.

Sample 10. The *Menyanthes* lake. Hassells Fjeld. 400 m above sea level. Acid water with some humus; cf. analysis in BÖCHER, loc. cit., Table 12. 22/8 1946.

Desmids:	contractum var. ellipsoideum
Gonatozygon	crassipelle
monotaenium.	crenatum
Netrium	Debaryi
Digitus.	depressum (cf. Arthrod. converg. v. inermis)
Closterium	difficile
costatum	diplosporum
Dianae	formosulum
incurvum	geometricum
moniliferum	granatum
Ralfsii var. gracilius	humile
regulare	impressulum
striolatum.	isthmochondrum
Pleurotaenium	laeve var. septentrionale
Ehrenbergii (fig. 2)	latifrons
truncatum.	margaritatum
Euastrum	Norimbergense f. depressum
denticulatum	obliquum f. depressum
dubium	ochthodes
elegans	perforatum
pectinatum	praegrande
pectinatum var. reductum	protractum
verrucosum var. rhomboideum.	protractum var. Schmidlei
Cosmarium	quadratum
abbreviatum f. germanica	Regnellii f.
bioculatum var. hians	Sinostegos
Blyttii	subprotumidum var. Gregorii
Boeckii	subbreinschii
Botrytis	subtumidum var. Klebsii
Botrytis var. gemmiferum	tetraophthalmum
capitulum var. groenlandicum	Turpinii.
connatum	Xanthidium
conspersum var. latum	antilopaeum (ad var. depauperatum).

Arthrodesmus	mucronatum
bifidus	orbiculare var. depressum (?) (fig. 28)
convergens	orbiculare (?) (fig. 29)
convergens f. dichotypica (= typus + Cosm. depressum v. achondrum)	Oxyacantha
convergens f.	pachyrhynchum
octocornis	punctulatum var. pygmaeum
phimus (?).	subavicula
Staurastrum	subpygmaeum var. subangulatum
Avicula	teliferum
Avicula f. dichotypica (= typus + f. ad S. cristatum)	tetracerum (non tortum).
Bieneanum	Hyalotheca
Boldtianum (cf. GRÖNBL., <i>Lappl.</i>)	dissiliens.
crenulatum var. britannicum	Sphaerozosma
cristatum	excavatum
dejectum var. patens	granulatum.
Dickiei	Other algae:
Dickiei var. maximum	Bulbochaete
erasum	intermedia (Cz)
forficulatum f. ? (fig. 39)	quadrata.
furcigerum	Oedogonium
gracile (sensu Ralfs et G. M. Smith)	nodulosum (Cz)
hexacerum	rupestre.
lapponicum	Scenedesmus
lunatum var. ovale (fig. 34—35)	bijuga
Manfeldtii	brasiliensis.

Sample 11. The *Menyanthes* lake; cf. Sample 10.

Desmids:	margaritifera
Netrium	obtusatum
Digitus.	ochthodes
Closterium	Regnellii var. minimum
incurvum.	reniforme
Pleurotaenium	sexangulare f. minimum
Ehrenbergii.	Sinostegos
Euastrum	tetraophthalmum
bidentatum	tinctum
elegans.	Turpinii.
Cosmarium	Staurastrum
Blyttii	Brebissonii
Botrytis	cyrtocera var. compactum
conspersum var. latum	granulosum (?)
crenatum var. Boldtii	hexacerum
difficile	lapponicum.
formosulum	Other algae:
granatum	Bulbochaete (ster.).
granatum var. subgranatum	Coleochaete scutata.
humile	Oedogonium (ster.).

Sample 12. The *Menyanthes* lake. Squeezings from mosses (not *Sphagna*). 22/8 1946.

Desmids: Cosmarium
formosulum.

Sample 13. The *Menyanthes* lake. Squeezings from *Sphagna*. 22/8 1946.

Desmids:	ochthodes
Mesotaenium	quadratum var. Willei
macrococum (?).	saxicolum
	subcrenatum.
Penium sp.	Staurationum
Cosmarium	Gronbladii (fig. 31).
conspersum var. latum	Desmidium
crenatum	Swartzii.
cyclicum var. arcticum	
latifrons	Other algae:
microsphinctum	Nostoc sp. (large quantities).

Sample 14. The *Menyanthes* lake. Sample from the bottom of the lake. 22/8 1946.

Desmids:	Cosmarium
Closterium	binum
angustatum	Boeckii
Delpontei	Botrytis
Dianae	difficile
incurvum	formosulum
Jenneri	granatum
moniliferum	prae grande
Ralfsii var. hybridum	protractum var. Schmidlei
regulare	reniforme
rostratum	subochthodes
turgidum.	subspeciosum (var. validius)
	subtumidum
Pleurotaenium	subtumidum var. Klebsii.
Ehrenbergii	
truncatum.	Xanthidium
	antilopaeum var. hebridarum.
Euastrum	
bidentatum	Staurationum
binale f. Gutwinski	lapponicum
denticulatum	orbiculare
elegans	teliferum.
oblongum	
pectinatum (ad var. planum)	Hyalotheca
verrucosum	dissiliens.
verrucosum var. rhomboideum	
verrucosum var. subquadratum.	Other algae:
	Caelastrum microporum.
Micrasterias	Ophycitium cochleare.
Thomasiana var. notata.	Pediastrum Boryanum.

Sample 15. Alpine lake with *Menyanthes*. Acid water. $7/8$ 1946.

Desmids:	Other algae:
Closterium	Bulbochaete rectangularis (Cz).
Dianae	Oedogonium sociale.
moniliferum.	Spirogyra (ster.).
	Tribonema sp. (Cz.).
	Zygnema (ster.).

Sample 16. Wet *Rhododendron lapponicum* heath at the foot of Hassells Fjeld. Squeezings from mosses in a pit filled with water: *Calamagrostis neglecta* abundant. pH about 7. $23/8$ 1946.

Desmids:	Other algae:
Cosmarium	Diatoms.
holmiense var. integrum.	

Sample 17. Algae from a small alkaline lake by the harbour road. $26/8$ 1946.

No desmids found.

Sample 18. Small alkaline pond near the salt lake by the harbour road; cf. BÖCHER 1949b, pp. 52—53. $28/8$ 1946.

Desmids:	punctulatum var. rotundatum
Cosmarium	tetraophthalmum.
Blyttii	Other algae:
consersum var. latum	Diatoms.
granatum	Ophiocytium cochleare.
	Pediastrum Boryanum.

Sample 19. Small alkaline pond near the salt lake beside the harbour road; cf. no. 18.

No desmids found.

Main loc. 5. The tract around Strømfjordshavn. Samples 20—25.

Sample 20. Large lake with big *Nostoc* colonies northeast of Strømfjordshavn. $28/8$ 1946.

Desmids:	granatum
Closterium	obtusatum f.
Cynthia	ochthodes
striolatum var. Borgei.	protractum
Euastrum	protractum var. Schmidlei
ansatum	subcrenatum.
elegans.	Staurastrum
Cosmarium	Dickiei
angulosum	erasum
binum	hexacerum.
Blyttii	Other algae:
Botrytis var. subtumidum	Ophiocytium cochleare.

Sample 21. Large lake with big *Nostoc* colonies; cf. Sample 20.

Desmids:	impressulum
Closterium	laeve
acerosum	latifrons (fig. 15 and 41)
costatum	margaritatum
Cynthia	ochthodes
Jenneri	ochthodes var. (cf. Grönl. 1936, fig. 43)
moniliferum	Portianum
Ralfsii var. hybridum	protractum
striolatum	protractum var. Schmidlei (cf. Grönl. Lappl.)
Venus.	quadratum
Pleurotaenium	Regnellii var. minimum
Ehrenbergii (fig. 1).	subprotumidum
Euastrum	Turpinii
ansatum f.	undulatum.
bidentatum	Staurastrum
elegans	Avicula
gemmatum	erasum
verrucosum var. subquadratum (fig. 6).	hexacerum.
Cosmarium	Other algae:
binum	Caelastrum proboscideum.
Blyttii	Ophiocytium majus.
Botrytis	Pediastrum
conspersum var. latum	Boryanum
depressum (typicum)	Braunii
diploporum	Tetras.
formosulum	Scenedesmus acutiformis.
granatum	Stigeoclonium sp. (Cz.)
granatum var. subgranatum	Tetrapedia glaucescens.
Holmii	
humile	

Sample 22. *Scirpus pauciflorus* vegetation on the beach of a small lake, probably with alkaline water. ²⁸/₈ 1946.

Desmids:	subcrenatum
Pleurotaenium	subtumidum
truncatum.	venustum var. hypohexagonum (fig. 8).
Cosmarium	Staurastrum
protractum var. Schmidlei	Brebissonii.

Sample 23. Lake northwest of Strømfjordshavn. Water alkaline, rather saline; cf. water analysis and photo on p. 50 in BÖCHER 1949b. ³/₈ 1946.

Desmids:	Cosmarium
	Regnellii f.
	subcrenatum f.

Sample 24. Small lake with *Potamogeton* sp. near the alkaline lake; cf. Sample 23. Water moderately acid. $\frac{3}{8}$ 1946.

Desmids:	granatum
Gonatozygon	granatum var. subgranatum
monotaenium.	impressulum
Closterium	margaritiferum f. Kirchneri
Dianae	praemorsum
incurvum	protractum
regulare	protractum var. Schmidlei
Venus.	quadratum
Pleurotaenium	speciosum
Ehrenbergii.	subprotumidum
Euastrum	subtumidum var. Klebsii
bidentatum	tetraophthalmum
binale f. Gutwinskii	undulatum.
denticulatum	Staurastrum
elegans	alternans
pectinatum var. brachylobum	hexacerum
pectinatum var. planum	inflexum.
verrucosum var. groenlandicum (fig. 5).	
Cosmarium	Other algae:
consersum var. latum	Bulbochaete (ster.).
depressum	Pediastrum Boryanum.
formosulum	Scenedesmus bijuga.

Sample 25. Acid lake with *Comarum*, *Menyanthes*, etc., northwest of Strømfjordshavn; cf. BÖCHER 1949b, p. 49 and fig. 15. $\frac{3}{8}$ 1946.

Desmids:	protractum
Eustrum	pseudonitidulum var. validum
bidentatum.	punctulatum var. subpunctulatum
Cosmarium	subprotumidum var. Gregorii.
granatum	Staurastrum
margaritiferum	hexacerum.

Main loc. 7. The country between Taserssuatsiaq and the western part of Ørkendalen. Samples nos. 26—28.

Sample 26. Small lake by the broadcasting station. $\frac{9}{8}$ 1946.

Desmids:	Cosmarium
Closterium	punctulatum f.
moniliferum.	Other algae:
	Caetophora sp. (Cz).

Sample 27. Lake Taserssuatsiaq. Algae from wet soil on the shore. The water is neutral and oligotrophic; cf. analysis in BÖCHER 1949b, Table 13. $\frac{30}{7}$ 1946.

Desmid:	Cosmarium
	quadratum.

Sample 28. Store Saltsø. Algae from a small hollow in one of the moss-loess terraces. Very basic; cf. BÖCHER 1949b, Table 16 and pp. 53—56. $\frac{8}{8}$ 1946.

No desmids found.

Main loc. 9. Nákajanga, Umîvît.

Sample 29. The waterfall in Vandfaldskløften. $\frac{21}{8}$ 1946.

Desmids:	Lundellii var. ellipticum f. minus (fig. 12)
Cylindrocystis crassa.	holmiense var. integrum
Pleurotaenium Ehrenbergii (f. latius).	Pokornyanum var. Taylorii
Cosmarium binum	quadratum var. Willei
crenatum	speciosum var. simplex.
decedens f. minus (Skuja; GRÖNBLAD, <i>Lappl.</i>)	Staurationum
	Meriani (7-angulatum)
	punctulatum var. striatum.

Main loc. 10. Itivdlinguaq, halfway up Søndre Strømfjord (66°30' lat. N.).

Sample 30. Small pond 250 m. above sea level. $\frac{24}{7}$ 1946.

Desmids:	Staurationum
Cosmarium quadratum	Gronbladii.
saxicolum.	Other algae:
	Synura Uvella.
	Trachelomonas volvocina.

Kangâmiut, 65°48' lat. N., south of the mouth of Søndre Strømfjord.

Sample 31. From wet mosses on a rock where water is constantly oozing down. $\frac{1}{9}$ 1946.

Desmids:	petsamoense
Cylindrocystis Brebissonii	saxicolum
crassa	speciosum.
Penium sp.	Other algae:
Cosmarium hexalobum	Diatoms.

Ivigut, 61°12' lat. N.

Sample 32. Small pond surrounded by luxuriant willow scrub; see BÖCHER 1950 p. 4. $\frac{10}{7}$ 1946.

Desmids:	Penium
Cylindrocystis Brebissonii.	Cylindrus.

Closterium	granatum var. Nordstedtii
Dianae	laeve
Jenneri.	margaritifera
Pleurotaenium Ehrenbergii	subcucumis
— f. (fig. 2).	subtumidum
Tetmemorus	tinctum
laevis.	Turpinii f.
Euastrum	Staurastrum
binale	Dickiei f. groenlandicum (cf. Boerge-
binale f. Gutwinskii.	sen 1894; Borge, Torne Träsk)
Cosmarium	paxilliferum (?).
angulosum f. rotundatum	
contractum	Other algae:
Debaryi	See BÖCHER 1950 pp. 4 and 16.

3. LIST OF SPECIES

The figures refer to the samples in which the species were found.

- Mesotaenium
 macrococcum 13
- Cylindrocystis
 Brebissonii 31, 32
 crassa 29, 31
- Netrium
 Digitus 7, 10, 11
- Penium
 sp. 7, 13, 31
 cylindrus 32
- Closterium
 acerosum 21
 angustatum 9, 14
 costatum 10, 21
 Cynthia 20, 21
 Delpontei 14
 Dianae 7, 8, 10, 14, 15, 24, 32
 incurvum 7, 8, 10, 11, 14, 24
 Jenneri 8, 14, 21, 32
 juncidum var. brevius 7
 littorale (?) 2
 macilentum 8
 moniliferum 7, 10, 14, 15, 21, 26
 parvulum 8, 9
 parvulum var. angustum 8
 Ralfsii var. gracilius 10
 Ralfsii var. hybridum 7, 14, 21
 regulare 7, 8, 10, 14, 24
 rostratum 14
 striolatum 7, 10, 21, 24
 striolatum var. Borgei 20
- turgidum 14
 Venus 2, 21, 24
- Pleurotaenium
 Ehrenbergii 7, 10, 11, 14, 24, 29, 32
 Ehrenbergii f. 32
 truncatum 7, 10, 14, 21, 22
- Tetmemorus
 laevis 32
- Euastrum
 ansatum 20
 ansatum f. 21
 ansatum var. concavum 8, 9
 bidentatum 7, 8, 11, 14, 21, 24, 25
 binale 32
 binale f. Gutwinskii 7, 8, 14, 24, 32
 denticulatum 8, 10, 14, 24
 dubium 10
 elegans 7, 8, 10, 11, 14, 20, 21 24
 gemmatum 8, 21
 oblongum 7, 14
 pectinatum 7, 10
 pectinatum var. brachylobum 8, 24
 pectinatum var. reductum 10
 pectinatum var. planum 14, 24
 verrucosum 14
 verrucosum var. groenlandicum 24

- verrucosum var. rhomboideum 10, 14
 verrucosum var. subquadratum 7, 14
 Micrasterias
 angulosa 9
 Thomasiana var. notata 14
 Cosmarium
 abbreviatum f. germanicum 10
 angulosum 20
 angulosum var. concinnum 8
 angulosum f. rotundatum 32
 arctoum 9
 Arnellii 2
 binum 14, 20, 21, 29
 bioculatum 7, 8
 bioculatum var. hians 4, 10
 Blyttii 7, 8, 10, 11, 18, 20, 21
 Boeckii 7, 8, 10, 14
 Botrytis 6, 7, 8, 10, 11, 14, 21
 Botrytis var. gemmiferum 10
 Botrytis var. subtumidum 20
 capitulum var. groenlandicum 7
 connatum 10
 conspersum var. latum 7, 10, 11, 13, 18, 21, 24
 contractum 32
 contractum var. ellipsoideum 10
 crassipelle f. 10
 crenatum 7, 8, 10, 13, 29
 crenatum var. Boldtii 11
 cyclicum var. arcticum 13
 Debaryi 10, 32
 decedens f. minus 29
 depressum 7, 8, 10, 21, 24
 difficile 7, 8, 10, 11, 14
 diplosporum 10, 21
 formosulum 7, 10, 11, 12, 14, 21
 24
 geometricum 10
 granatum 4, 5, 6, 7, 8, 10, 11, 14, 18, 20, 21, 24, 25
 granatum var. Nordstedtii 32
 granatum var. subgranatum 4, 11, 21, 24
 hexalobum 31
 holmiense var. integrum 5, 16, 29
 Holmii 21
 humile 7, 10, 11, 21
 impressulum 7, 8, 10, 21, 24
 isthmochondrum 4, 10
 laeve 21, 32
 laeve var. septentrionale 10
 latifrons 7, 10, 21, 24
 Lundellii var. ellipticum f. minus 29
 margaritatum 10, 21
 margaritifera 7, 11, 24, 25, 32
 microsphinctum 13
 moniliforme 7
 norimbergense f. depressum 10
 obtusatum 7, 11, 20
 ochthodes 7, 8, 9, 10, 11, 13, 20, 21
 ochthodes var. amoebum 21
 perforatum 10
 petsamoense 31
 Phaseolus 8
 Pokornyanum var. Taylorii 29
 Portianum 21
 praegrande 8, 14
 praemorsum 7, 8, 24
 protractum 7, 10, 14, 20, 21, 24, 25
 protractum var. Schmidlei 7, 10, 14, 20, 21, 22, 24
 pseudonitidulum var. validum 25
 punctulatum var. leiodermum 5
 punctulatum var. rotundatum 18, 26 (?)
 punctulatum var. subpunctulatum 6, 25
 pusillum 8
 quadratum 10, 27, 30

- quadratum var. Willei 13, 29
 quadrum 8, 24
 Regnellii 7
 Regnellii var. minimum 10, 23
 Reinschii 8
 reniforme 3, 7, 11, 14
 saxicolum 7, 13, 30, 31
 sexangulare f. minimum 11
 simplicius 9
 Sinostegos 10, 11
 speciosum 24, 31
 speciosum var. simplex 29
 subcrenatum 4, 13, 20, 22, 23
 subcucumis 8, 32
 subochthodes 14
 subprotumidum 21, 24
 subprotumidum var. Gregorii 7, 10, 25
 subreinschii 10
 subspeciosum (var. validius) 14
 subtumidum 8, 14, 22, 32
 subtumidum var. Klebsii 7, 10, 14, 24
 subundulatum 7, 8
 tetraophthalmum 4, 6, 7, 8, 10, 11, 18, 24
 tinctum 7, 11, 32
 Turpinii 7 (f.), 10, 11, 21, 32 (?)
 undulatum 21, 24
 venustum var. hypohexagonum 22
Xanthidium
 antilopaeum var. groenlandicum 10
 antilopaeum var. hebridarum 14
 antilopaeum f. 7
Arthrodesmus
 bifidus 7, 10
 convergens 10
 convergens f. dichotypica ×
 Cosmarium depressum var.
 achondrum 10
 convergens f. 10
 convergens f. 7
 octocornis 7, 10
 phimus 10
Staurostrum
 alternans 8, 24
 apiculatum 10
 Avicula 8, 10, 21
 Avicula f. dichotypica 7
 Bieneanum f. 7, 10
 Boldtianum 10
 Brebissonii 7, 9, 11, 22
 Brevispina f. majus 7
 crenulatum var. britannicum 10
 cristatum 7, 10
 cyrtoceram 7
 cyrtoceram var. compactum 11
 dejectum var. patens 7, 10
 Dickiei 10, 20
 Dickiei f. groenlandicum 7, 32
 Dickiei var. maximum 10
 erasum 10, 20, 21
 forficulatum 7, 10
 furcigerum 7, 10
 gracile 10
 granulatum 7, 11
 Groenbladii 13
 hexacerum 7, 8, 10, 11, 20, 21, 24, 25
 inflexum 7, 8, 24
 lapponicum 8, 10, 11, 14
 lunatum 9
 lunatum var. ovale 10
 Manfeldtii 10
 Meriani 29
 mucronatum 10
 orbiculare 14
 orbiculare var. depressum 7, 10
 Oxycantha 10
 pachydermum 10
 paxilliferum (?) 32
 petsamoense 7
 pseudosebaldi var. simplicius 8
 punctulatum var. pygmaeum 10

punctulatum var. striatum 29	Sphaerososma
Sebaldi 7	excavatum 10
subavicula 10	granulatum 7, 10
subpygmaeum var. subangula- tum 7, 10	Hyalotheca
subpygmaeum var. subangula- tum f. groenlandicum 7	dissiliens 7, 8, 10, 14
teliferum 7, 10, 11	Desmidium
tetracerum (planum) 10	Swartzii 7, 13
	Gonatozygon
	monotaenium 7, 10, 24.

4. TAXONOMICAL REMARKS ON SOME SPECIES

Penium sp. Several cells of a small *Penium* were met with, but no zygo-spores were found. Thus it was not possible to determine the species. The sterile cells were perhaps most like those of *P. spinospermum* Josh.

Euastrum verrucosum Ehr. var. *groenlandicum* (Larsen) Krieg. (By LARSEN, 1904, it was called "*E. verrucosum* var. *rhomboideum* Lund. f. *groenlandica*" and must thus have KRIEGER as author). Our specimens were not otherwise different, but the verrucae were distinctly arranged in series.

Euastrum verrucosum Ehr. var. *rhomboideum* Lundell (= var. *Lundellii* Krieger). The figure given by KRIEGER (Pl. 95, fig. 5) does not agree with LUNDELL's drawing (Pl. I, fig. 8) and I prefer to retain LUNDELL's name for the form drawn by him. It is, indeed, very difficult to decide which of the varieties are most closely related. This problem can be solved only by means of pure cultures in the laboratory.

Micrasterias angulosa Hantzsch. Polar lobe always short. Cf. KRIEGER, *Rabenh. Fl.*, Pl. 138, fig. 4, GRÖNBL., *New Desm.*, Pl. II, figs. 4—5. WEST, *Mngr.*, has a somewhat longer polar lobe. The form with a short polar lobe is by the Wests called "*M. denticulata* var. *angustosinuata* Gay". On account of the quite different vertical views I think it better to separate the two species *M. angulosa* and *M. denticulata*. It is, however, a question of subjective opinions.

Cosmarium Arnellii Boldt. The central area in front view not differentiated, the whole cell being almost uniformly granulated.

Cosmarium saxicolum Kaiser. It seems to me that *Cosmarium alpigenum* Messik. is identical with this species. (Cf. KAISER 1926, MESSIKOMMER 1942, GRÖNBLAD 1933).

Cosmarium simplicius Grönb. is another name for *C. elegantissimum* var. *simplicius* W. & W. Cf. GRÖNBLAD 1931.

Cosmarium subochthodes Schmidle var. *majus* Schmidle. Cf. Ruzicka, 1949, (et in litt.) Ruzicka states that this desmid has nothing to do with *C. hornavanense*, the cell-wall being quite different. I am sure he is right in this opinion. On the other hand he refers it to *C. tetraphthalmum* as var. *scrobiculatum* Feurstein. I should rather keep Schmidle's name *C. subochthodes* for this desmid if it is possible from a taxonomical point of view. The cell-wall is very coarsely scrobiculate, the scrobiculae being real pits, as large as the warts of *C. tetraphthalmum*. Also the shape of the semicells seems too different. Our specimens agree exactly with Schmidle's fig. 51 (1898). Unfortunately I have no microphotographic apparatus at my disposal. This desmid is not uncommon in Finland.

Cosmarium subreinschii Schmidle (1894). The central protuberance of our specimens is less prominent.

Xanthidium antilopaeum (Breb.) Kütz. var. *groenlandicum* (Boldt) nob.

I do not think this variety can be separated off as a species. The sample included specimens forming connecting links between *X. groenlandicum* and *X. antilopaeum* var. *hebridarum*. The short stout spines described by Boldt (1888) were present in several specimens, but there were cells with longer and acute spines, as in var. *hebridarum*. The central area, however, was always different from this variety with one central papilla and thickened cell-wall.

Arthrodesmus convergens Ehr. Also this species sometimes had very short, stout, and truncate spines. Sometimes the spines were lacking in one or in both semicells. Such cells cannot be distinguished from certain forms of *Cosmarium depressum*. The name *A. convergens* f. *inermis* (Jacobs.) Schmidle has been proposed for them.

Staurastrum Avicula Bréb. The samples included cells with bidentate angles as in typical specimens, but also such cells in which one semicell or both semicells had only one very short spine or spicule at the angles. Such cells somewhat remind of *S. lunatum* as figured by Grönblad (1920, III: 33—35). Cf. also *S. granulosum* (Ehr.) Ralfs in W. & W., *Mngr.* IV, pl. 128, f. 10—13 (f. 13 is called "f. *connexa*"). The granules, however, are arranged as in *S. Avicula*, not as in *S. granulosum*.

Staurastrum Boldtianum Grönbl. (= *S. spec.* Boldt, 1888, II: 51). Cf. Grönblad 1942, p. 40.

Staurastrum Brebissonii Arch. var. *laticeps* Grönbl. (1942, IV. 16—17).

The specimens from Greenland are very closely related to the variety mentioned, but the angles are more protracted upwards and the apices are more convex.

Staurastrum crenulatum (Näg.) Delp. var. *britannicum* Messik. This is what is called *S. crenulatum* in W. & W. *Mngr.* V, which, however, is not identical with NÄGELI's species as pointed out by Messikommer.

Staurastrum erasum Bréb. Our specimens greatly resembled the figures in GRÖNBLAD, (1942, IV: 14).

Staurastrum gracile Ralfs. This species is interpreted in agreement with G. M. SMITH in his *Wisc. Phytopl.*

Staurastrum Groenbladii Skuja. This desmid was originally described by GRÖNBLAD (1926) as *Cosmarium obliquum* var. *triquetrum* Gbl. There is another species which should be compared, viz. *Cosmarium pseudoprotuberans* var. *trigonum* Nordst. (1885), which is also recorded by KRIEGER (1938). KRIEGER's form, however, seems more angular and depressed.

Staurastrum lapponicum (Schmidle) Grönbl. (1926) is synonymous with *S. punctulatum* var. *muricatifforme* f. *lapponica* Schmidle (1898).

Staurastrum lunatum Ralfs. var. *ovale* Grönbl. (1942, p. 42, V: 1—2). I am convinced that this desmid from Greenland belongs to the same species as the desmid from Finnish Lapland mentioned above. The Greenland form is not identical, however, with what I have described from Lapland. The habitus is very much the same, but the shape of the chromatophores is quite different and furthermore there are commonly a pair of spinules at the angles instead of only a single mucro in the form previously described. Perhaps this desmid from Greenland should be separated out as a variety, but I think far too little is known about the range of variation in this species to introduce a new name. Moreover, it seems to me very dubious if my two desmids are at all closely related to *Staurastrum lunatum*. Thus the whole taxonomical arrangement in this case, as in many others, is only temporary. Cf. also *S. papillosum* Kirchn. in BOLDT 1885, V: 23.

The Greenland form has one or two spinules at the angles and two pyrenoids in each semicell with four radiating ridges from each pyrenoid.

Staurastrum Meriani Reinsch. The Greenland form had a 7-angulate end view.

Staurastrum petsamoense Järnefelt. (Synon.: *S. Sebaldi* var. *depauperatum* Boldt, 1885, VI: 33). This new name was introduced by JÄRNEFELT (1934, pag. 208 and p. 231 with fig. 18). I think the species is very little known, and moreover the figures were too much reduced.

My original figures are therefore reproduced here. Each semicell with a single pyrenoid. Ends of processes with 4—5 spines.

Staurastrum subpygmaeum West var. *subangulatum* W. & W. f. *groenlandicum*, nova f. Minus, isthmo elongato, sinu introrsum valde rotundato, a vertice visum triangulare, angulis non protractis. Long. 25, lat. 21 μ . The Greenland form is distinguished by its smaller size and by the elongated isthmus.

Staurastrum tetracerum Ralfs. The cells were not twisted at the isthmus.

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Plate I.

- 1—3. *Pleurotaenium Ehrenbergii* (Bréb.) De Bary. Three different forms of this variable species. Fig. 1 from Sample 21, long. 494 μ , lat. bas. 34 μ ; fig. 2 from Sample 10, long. 570, lat. bas. 38; fig. 3 from Sample 7, long. 584, lat. max. 45 μ . All figs. $\times 530$.
4. *Euastrum elegans* (Bréb.) Kütz. Long. 30, lat. 20 μ . $\times 890$.
5. *Euastrum verrucosum* Ehr. var. *groenlandicum* (Lars.) Krieg. Granules more or less conspicuously in oblique series. Long. 106, lat. 95. $\times 530$.
6. *Euastrum verrucosum* var. *subquadratum* Schmidle. Long. 98, lat. 84. The sides of the polar lobes frequently almost parallel. $\times 530$.
7. *Cosmarium crassipelle* Boldt. Shape of semicells not quite identical with BOLDT's drawings. In the diagnosis nothing is said of the chlorophores, which are single with 8 radiating plates. Long. 44, lat. 37. $\times 890$.
8. *Cosmarium venustum* Bréb. var. *hypohexagonum* W. West, forma *tumidum*. Our specimens differ only when seen in vertical view: there is a slight prominence in the middle of the cell. Otherwise exactly like WEST's figures and description. Long. 29, lat. 23 μ . $\times 890$.
9. *Cosmarium Pokornyianum* (Grun.) W. & W. var. *Taylorii* nov. var. (= *C. laeve* var. *septentrionale* quoad TAYLOR, *Newfoundl.* I, LIV: 17). Our specimens were very much like the drawing given by TAYLOR. I think, however, it is more closely related to *C. Pokornyianum* than to *C. laeve*. Cf. also KRIEGER, *Spetzl.* I:26 — INSAM & KRIEGER, (1936), I:32 which greatly resembles our specimens. Diagnosis: *Varietas differt a forma typica parte apicali minus angustata, apice latiore. Lateribus ad basin bicrenatis.* Long. 34, lat. 17 μ . $\times 890$.
10. *Cosmarium granatum* Bréb. A form with basal angles not rounded. Long. 34, lat. 21 μ . $\times 890$.
11. *Cosmarium undulatum* Corda. Long. 28, lat. 21 μ . $\times 890$.
12. *Cosmarium Lundellii* Delp. var. *ellipticum* W. West, f. *minus* Ström. Apex truncate. Pyrenoids single. Long. 55, lat. 40 μ . $\times 530$.
13. *Cosmarium subreinschii* Schmidle (1894). Long. 21, lat. 16 μ . $\times 890$.
14. *Cosmarium Arnellii* Boldt (1885). Long. 49, lat. 35 μ . $\times 530$.
15. *Cosmarium latifrons* Lund. Long. 39, lat. 37. $\times 890$.
16. *Cosmarium subturpinii* Borge (1921). Long. 80, lat. 66 μ .
- 17—20. *Cosmarium ochthodes* Nordst. Fig. 19 is an optical section of the cell-wall. Long. 84—87, lat. 64 μ . $\times 530$, fig. 19 $\times 890$.
21. *Xanthidium antilopaeum* (Bréb.) Kütz. A form with paired spines and a central papilla surrounded by a tickened area which is irregularly scrobiculate. Long. c. sp. 68, lat. c. sp. 74. $\times 530$.
- 22—23. *Xanthidium antilopaeum* var. *groenlandicum* (Boldt) nov. comb. I do not think this form should be separated from *X. antilopaeum*. Our specimens are intermediate between BOLDT's species and varieties of *X. antilopaeum*. Long. sine sp. 49, lat. c. sp. 64—76. $\times 530$.

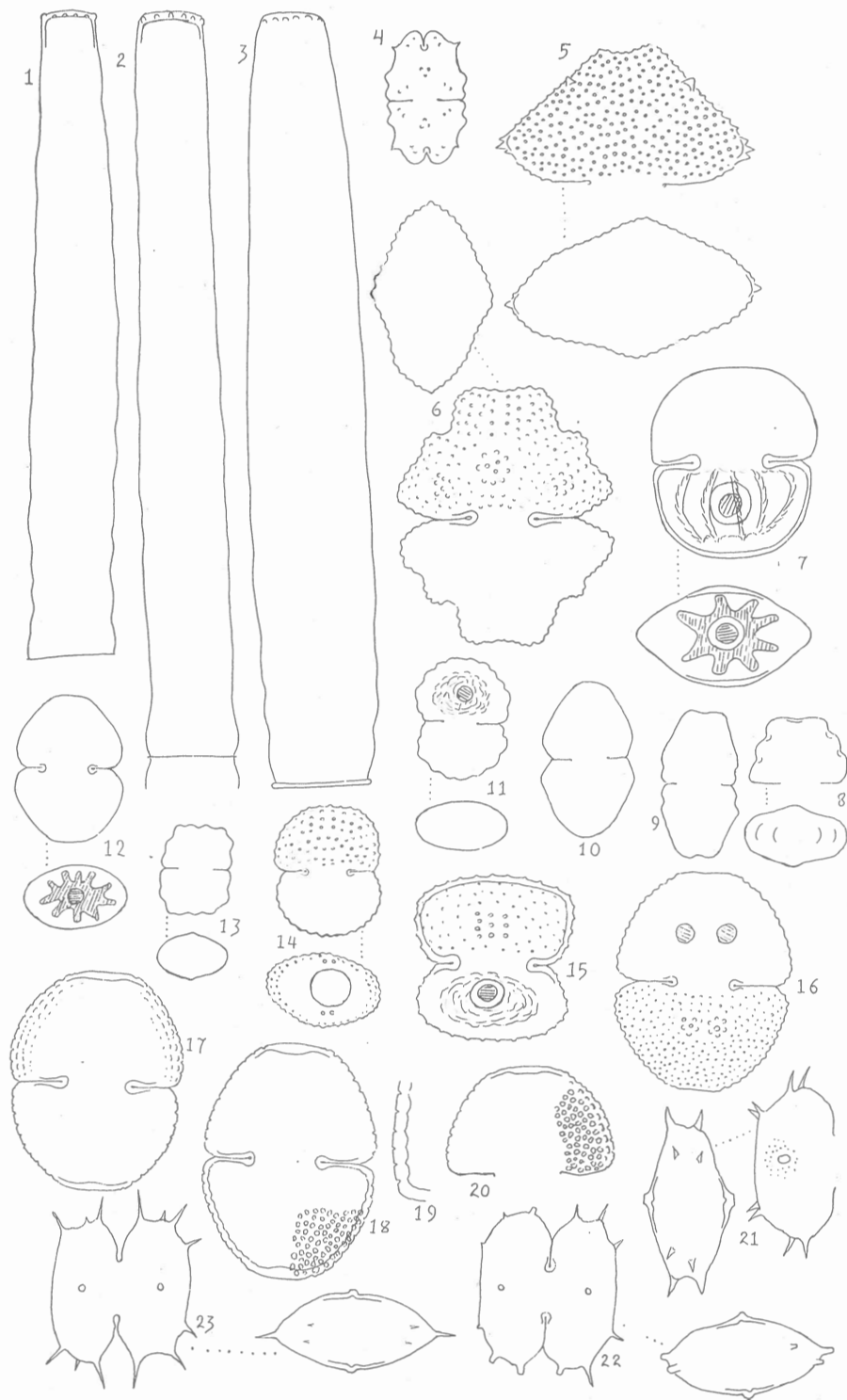


Plate II.

- 24—27. *Arthrodesmus convergens* Ehr. Specimens with reduced spines, corresponding to those of "*Xanthidium groenlandicum* Boldt". Fig. 25 has one semicell quite spineless and fig. 27 is totally destitute of spines, thus being indistinguishable from cells of *Cosmarium depressum*. Such individuals were by JACOBSEN called "*Staurastrum convergens* var. *inermis* Jac." I think, however, there exists a *Cosmarium* sp., viz. *depressum*, and on the other hand a spineless form of *Arthr. convergens*, viz. var. *inermis*. Cf. also W. & W., *Mngr.* IV, p. 108. These can be distinguished only by means of pure cultures. Long. 42—45, lat. 42—49 μ . $\times 530$.
28. *Staurastrum orbiculare* Ralfs var. *depressum* Roy & Biss. A slightly different form with a broader subtruncate apex and open sinus. Long. 23, lat. 22 μ . $\times 890$.
29. *Staurastrum orbiculare* Ralfs. Differs from the typical form with an open sinus. Long. 32, lat. 28 μ . $\times 890$.
30. *Staurastrum subpygmaeum* W. West var. *subangulatum* W. & W., *forma minor isthmo elongato*. This is considerably smaller than West's measurements and the elongated isthmus and the stouter angles give it a somewhat different appearance. Long. 25, lat. 21 μ . $\times 980$.
31. *Staurastrum Groenbladii* Skuja. Our specimens differ from the typical species with the open sinus, thus reminding a little of *S. subpygmaeum* W. West. Long. 28, lat. 23 μ . $\times 890$.
- 32—33. *Staurastrum Avicula* Bréb. Long. 39, lat. 40 μ . Nr. 32 = 530 $\times$, 33 = 890 $\times$.
- 34—35. *Staurastrum lunatum* Ralfs var. *ovale* Grönbl. Long. 30—31, lat. 32—34 μ . $\times 980$.
- 36—37. *Staurastrum petsamoense* Järnefelt. Long. 84, lat. 114 μ . $\times 530$.
38. *Staurastrum Brebissonii* Arch. var. *laticeps* Grönbl. (1942). A smaller form. Long. 45, lat. 53 μ . $\times 530$.
39. *Staurastrum forficulatum* Lund. var. *heteracanthum* Grönbl. (1921). A much smaller form. Lat. c. spin. 44 μ . $\times 890$.
40. *Staurastrum subavicula* W. & W. C. sp. long. 39, c. sp. lat. 44 μ .
41. *Cosmarium latifrons*, end view. $\times 890$. Cf. Plate I, fig. 15.

