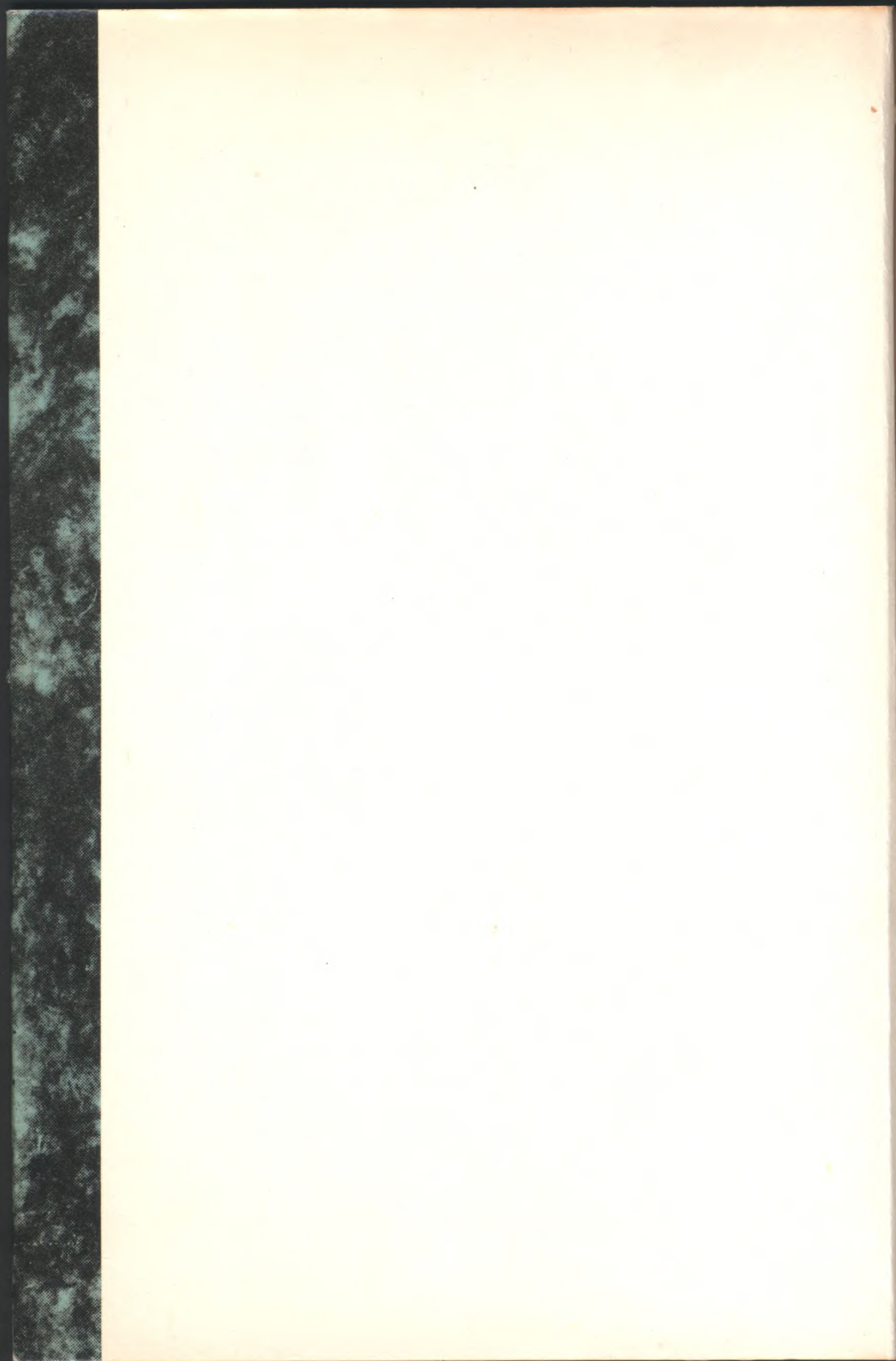


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Researches on the geographical distribution of soil microflora.

Part II.

The geographical distribution of soil algae.

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Introduction.

In part I. has been shown an outline on the geographical distribution of soil bacteria in many widely parts of the world. In the following part II. will be given the summarized principal results of our researches, made in the recent years, on the geographical distribution of soil algae in different soil types of the world.

By soil algae we mean there only the so called subterranean algae, living in the layer of the earth, where one find the highest intensity of soil life. This exists probably in a depth of 15—20 cm under the surface of the soil.

There is known that all the subterranean algae are also able, to live on the surface of the earth. We can therefore suppose: they are only facultatively subterranean. Obligately subterranean algae are up to day no known. The object of our researches was, to furnish a general picture of the geographical distribution of soil algae in the different soil types of the world in relation with some of their most important influencing environmental factors.

By our investigations have been therefore the characteristic ph values and the actual moisture content of the soil samples examined.

It will be however remarked, that the results of these researches can not be able, to give any of exacte relations concerning to the influence of ph values on the distribution of soil algae in the various soil types investigated. Only the results of investigations, which could be made immediately after drawing of the soil samples, are quite characteristic.

But these immediately analysis could be only made by the investigations of some forest alkali and other soils in Hungary and by several desert soils samples, examined by Fehér and Killian during their research work in the Sahara, in the years 1934 and 1936. The other soil samples have

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been transported or kept for more or less long periods in covered glass or metall vessels, where the physiological factors have been essential changed in consequence of anaerobic and other infavourable conditions, caused by the covered vessels.

All these results obtained, can be able therefore only give an previous out line of the influence of ph values on the distribution of algae in the different soil types of the world.

Description of soils examined and their localities

Alltogether 122 various soil samples, collected in very widely separated parts of the world have been examined.

51. samples were taken in Europa between the $69^{\circ} 30'$ and $38^{\circ} 10'$ degrees of latitude N. 17 samples have been collected in North Africa between the $35^{\circ} 30'$ and 32° degrees of latitude N. 7 samples were drawn in South Africa between the $23^{\circ} 51'$ and $35^{\circ} 04'$ degrees of latitude S. 3 samples have been taken in India (N. Asia) at the $30^{\circ} 20'$ degree of latitude N., 8 soil samples were collected in Japan between the $41^{\circ} 25'$ and $35^{\circ} 39'$ degrees of latitude N., and 4 samples have been obtained from South Asia (Java, Krakatau) between 6° and $6^{\circ} 20'$ d. o. l. S.

In North America (U. S. A.) were collected 12 samples between $43^{\circ} 30'$ and $30^{\circ} 56'$ degrees of latitude N., and from South America were sent 4 samples from an region situated between 33° and 24° degrees of latitude S.

Alltogether 16 samples were taken in Australia between the 18° and $37^{\circ} 30'$ degrees of latitude S.

The samples were collected by following institutions:

Europa:

Norway: a) Norwegian Forest Research Institute. Norges Skogsforsöksvesen Aas near Oslo.

b) Forest Officier, Skogsforvalter Elvenes. Lapland.

Finnland: Finnish Forest Research Institute.

Institutum Quaestionum forestalium Finlandiae. Helsinki.

Sweden: Biological Station Hallands Väderö.

Germany: a) Forest College. Forstliche Hochschule.

Institute of soil Science.

Bodenkundliches Institut Eberswalde.

b) Forest College. Forstliche Hochschule.

Institute of soil Science.

Bodenkundliches Institut, Tharandt.

Italy: Italian Forest Research Institute.

Stazione Sperimentale Forestale. Firenze.

France: Forest Research Institute.

Station des Recherches et Expériences forestières, Nancy.

Hungary: a) Botanical Institute of the Technical University Sopron.

b) Hungarian Forest Research Institute Sopron.

c) Forest School, Szeged.

Asia:

- India: Forest College, Dehra Dun.
 Japan: Forest Experiment Station of the Imperial Household, Tokyo.
 Korea: Forest Experiment Station, Kejo, Korea.
 Java: Herbarium and Museum for Systematical Botany, Buitenzorg.

Africa:

- Sahara: Collected by the french-hungarian soilbiological expedition of Prof. Fehér and Prof. Killian. Alger. (1934, 1936).
 South Africa: Departement of Agriculture and Forestry.
 Forest Research Section, Pretoria.

America:

- North America: a) Departement of Agriculture, Forest Service, Washington. USA.
 b) Institut of Soil Science. Cornell University Ithaca.
 (Collected by Prof. Romel.) USA.
 South America: Argentina: a) University of Tucuman.
 Departement of Regional Researches Institute Miguel Lillo.
 Universidad Nacional de Tucuman.
 Departamento de Investigaciones Regionales Instituto Miguel Lillo, Tucuman.

Australia:

- Commonwealth of Australia, Commonwealth Forestry Bureau, Canberra.
 My thanks are due and we are greatly indebted to all the institutions, colleagues and collatorators in many countries of the world, through whose kindness and help was onle possible, to obtain the soil samples for our investigationes.

Sampling.

- All the samples have been taken under sterile conditions in a depth of 15—20 cm below the surface of the soil, where can be found the highest intensity of soil life.
 The samples were taken into sterile glass or metall bottles or tubes, which have been well closed an forwarded a soon as possible to our institute.

Methods.

- For cultivation and determination of soil algae has been generally the well known and described method of Bristol Roach used. It will given here only an short outline of the method: 10 gr of soil will be well mixed with 100 cm³ of sterile nutrient inorganic medium for half an hour. As nutrient medium has been used in our institute the well known solution of Crone KNO₃ 1'00 gr, Fe₂O₃(PO₄)₂ 0'5 gr, Ca₃(PO₄)₂ 0'5 gr, CaSO₄ 0'25 gr, MgSO₄ 0'25 gr solved in 1000 cm³ destilled water. 50 cm³ of this suspension are added to 50 cm³ of the some nutrient medium.

- 50 cm³ of the mixture are again given to 50 cm³ of fresh nutrient medium and this process will be continued until we have in all 17 soil suspensions of the dilution degrees from 1:10 to 1:655360. Of each of the suspensions 3 cultures will be made in test tubes, each containig 15 cm³ of purified sand, to which will be added 5 cm³ of the suspension to be examined.

By means of this method altogether 51 test tube cultures can be made. The cultures will be placed in the light. From the number of tubes, in which no algae could be found, the number of germs living in the soil can be calculated. When also the species of soil algae will be established, for the determination of the arts however is necessary, to examine systematically each of the test tubes according to the occurrence of the different arts of soil algae. This method as one of the indirect artificial methods of soil microbiology naturally can not be perfect. But it is better for the systematical investigation of soil algae as the so called direct methods, employed by Conn, Koffmann, Cholodny, Winogradsky and other authors.

Since the purpose of these investigations was, to establish the whole algae flora of the soil, it has been not necessary to make pure unialgal cultures.

As general works of description and determination of soil algae were used the well known „Kryptogamenflora“ of Rabenhorst, the „Süßwasserflora“ of Pascher, and the text books of Eyfert Schoenichen and Lindau.

Discussion.

The results of the investigations contains the table II. The algae determined were ordered according to the clear and comprehensive system of Wettstein.

In the table II are also shown the limits of the geographical distribution (degrees of latitude) of algae determined, their characteristic pH values and the data of their quantitative occurrence in the soil, expressed in percentage of the total number of soil samples investigated.

Altogether 685. species of soil algae have been cultivated and systematically determined.

The most of these are highly adaptable, occurring in very different soil types of the world.

The some species could be found in arctic, temperate, tropical, desert, alkali, arable and forest soils. The greatest part of soil algae therefore appears, to be, very ubiquitous.

It was not possible, to determinate characteristic algal flora of the soil types or of the geographical areas examined.

Many more extended researches would be yet necessary, before the characteristic composition of the algal flora of the various soil types can be defined.

In the table IV. are shown the species found in 5. part of the world. In all the 5 parts of the world have been found 10, in 4 parts of the world 26, in 3 parts of the world 90, in 2 parts of world 112 species. Only in Europa were determined 380, only in Asia 30, only in Africa 50, only in America (N. and S.) 21, and only in Australia 9 species.

There will be given besides in the tables V., VI., VII., VIII., the list of the species which could be found only in one part of the world except Europa. In this connexion will be remarked however, that naturally it was impossible to equal distribute the soil samples in all the parts of the world.

The results secured therefore are incomplete and they can only give an previous outline of the geographical distribution of soil algae.

To be able, to characterize the quantitative occurrence of the most common soil algae in the table III. will be shown the species occurring in more as 10% of all soil types examined.

The results secured prove, that because of their adaptability, soil algae are capable to exist by most extreme and unfavourable ecological conditions.

In the table IX. have shown the characteristic soil algae of some hungarian extrem dry alkali soil of the so called „solontschak“ type and in the table X. have been given the list of soil algae found in the extreme dry desert soils of the grand desert Sahara. The table contains, to be able to furnish an complete picture of this matter, the list of soil algae determinated in the soil samples, drawn in 1936., during the great microbiological Sahara expedition of Fehér and Killian.

There is commonly known that the algae are primarily characteristic water organisms and the terrestrial and aerial algae were during their evolution adapted, to be able to life in or on the soil, moistened only by atmospheric water in the form of rain or dew.

They are therefore often exposed to long and intensive dry climatic periods.

The results of these researches have proved, that the terrestrial algae are capable, to exist in the extrem dry dessert soils, whose water content in many of cases could not been determined with our physical methods. They can therefore also life in dry soils with osmotic pressures higher than 50 atmospheres, which was considered up to present time as the extreme limit of microbiological life within the soil.

Concerning to the influence of environmental factors on the geographical distribution of soil algae appears, that the pH values and the values of the actual moisture content to have no appreciable effect on these relations.

The soil algae can adapt themselves to their environment and life in state of stable equilibrium with the other species of their biocenose.

It was in general not possible to assign characteristic algal flora or association to any soil types or to any geographical area. Much more extended and more detailed investigations are yet necessary, before the composition of the algal flora of the different soil types can be determined.

Summary.

1. Altogether 122 soil samples collected from very different soil types in all parts of the world have been investigated and 685 species of soil algae were cultivated and determinated.

2. It could be established that the most of the common soil algae are probably more or less ubiquitous. The same species occurs in the different soil types and geographical areas of the world.

3. The environmental factors: pH and actual moisture content in general are not be able, to essential influence the geographical distribution of soil algae.

4. We can suppose, that the soil algae, are adapted to life in the deeper layers of the earth in a state of stable equilibrium with the other species of their biocenose.

5. There was not possible, to find characteristic algal associations in any of geographical areas and soil of the world.

6. The results of these investigations can not be able, to give a complete picture of the geographical distribution and association of the algal flora of the soil. They can only furnish a first and previous outline for further researches.

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World map showing the geographical distribution of the origins of soils examined.
8 and 11 were examined only in relation of the distribution of soil bacteria.

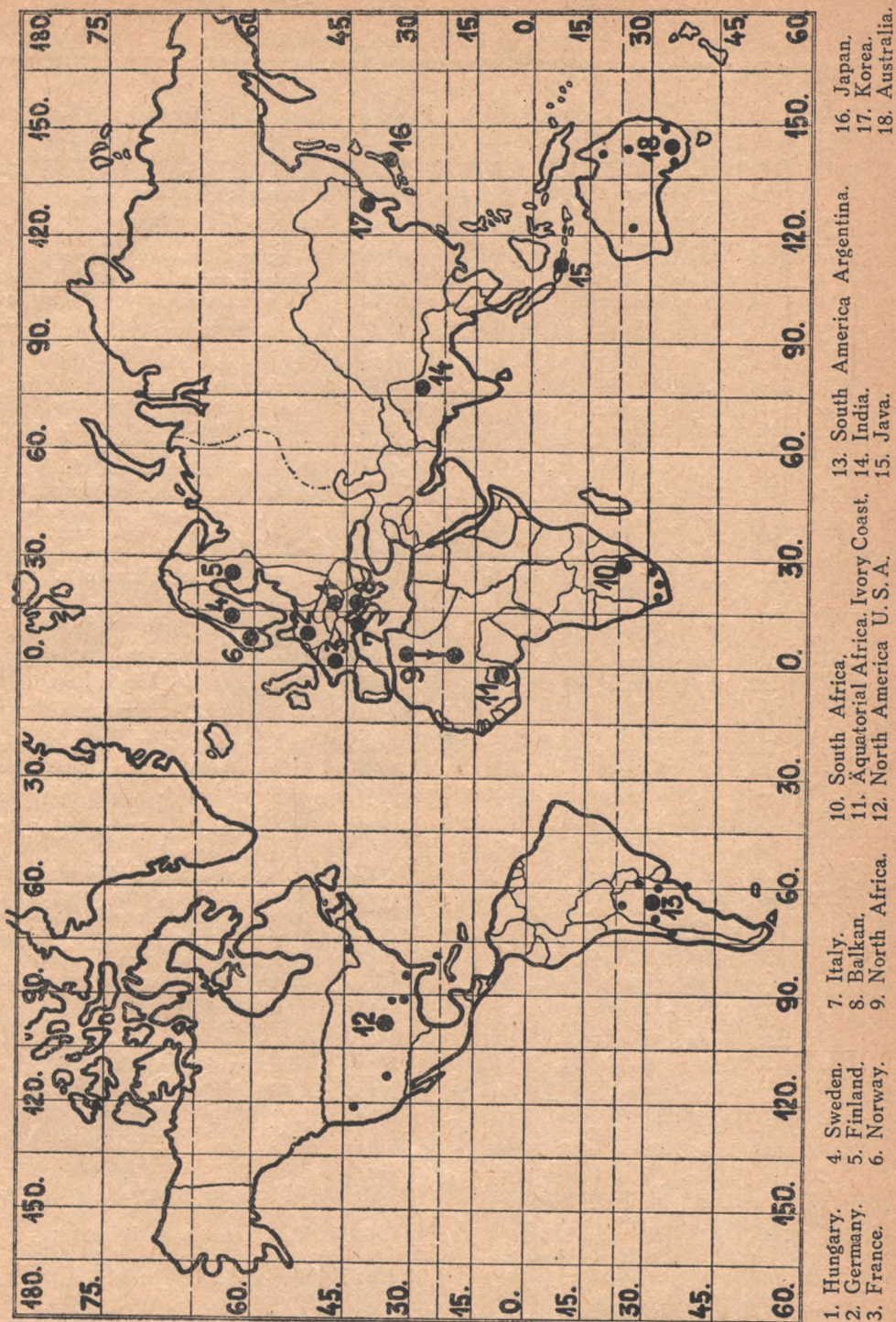


TABLE I.
Geographical distribution of the localities (fig. 1.)

Country	Nr.	Localities Nr.	Locality	Degree of latitude	Characteristic
Hungary	1	5	Szeged	46°15' N	Forest of Robinie, Sand.
	2	6	Szeged	46°15' N	Pinus nigra, Sand.
	3	7	Kecskemét	46°55' N	Robinia pseudacacia, Sand.
	4	11	Sopron	47°47' N	Carpinus, brown forest soil.
	5	15	Sopron	47°47' N	Picea excelsa, brown soil.
	6	25	Miskolc	48°10' N	Fagus silvatica, black loamy soil.
	7	28	Miskolc	48°10' N	Quercus robur, black loamy soil.
	8	29	Fürged	46°30' N	Arable soil. Loam.
	9	30	Fürged	46°30' N	Arable soil. Loam.
	10	30a	Fürged	46°30' N	Arable soil. Loam.
Germany	11	31	Eberswalde	52°40' N	Fagus silvatica, Sand. Mull.
	12	32	Eberswalde	52°40' N	Pinus silvestris, Sand. Podsol.
Sweden	13	33	Hallands-Väderö	57° N	Fagus silvatica, Sand.
	14	34	Hallands-Väderö	57° N	Pinus silvestris, Sand. Podsol.
	15	35	Hallands-Väderö	57° N	Alnus glutinosa, Swampsoil.
	16	35a	Stockholm	59°15' N	Pinus silv. Forest soil. Loam.
	17	35b	Stockholm	59°15' N	Picea excelsa, Forest soil. Loam.
	18	36c	Stockholm	59°15' N	Quercus, Forest soil. Loam.
Finland	19	37	Rajvola	60°17' N	Picea excelsa, Pinus silv. Sand. Podsol.
	20	38	Rajvola	60°17' N	Picea excelsa, Betula odorata. Loam. Podsol.
Norway	21	39	Namdalseid	63°40' N	Pinus silvestris, Podsol. Sand.
	22	40	Kivalo	66°50' N	Picea excelsa, Virgin forest.
	23	41	Kivalo	66°50' N	Picea excelsa, Betula odorata. Sand. feeble podsol.
Finland	24	42	Kivalo	66°50' N	Pinus silvestris, Sand. feeble podsol.
	25	43	Kivalo	66°50' N	Pinus silvestris, Sand. feeble podsol.
	26	44	Petsamo	69°20' N	Betula odorata. Virgin forest, feeble podsol.
	27	45	Petsamo	69°20' N	Betula odorata. Virgin forest, Sand. feeble podsol.
Norway	28	46	Petsamo	69°20' N	Betula odorata, feeble podsol.
	29	47	Elvenes bei Kirkenes	69°30' N	Betula odorata, feeble podsol. Loam.
Germany	30	48	Tharandt	51° N	Picea excelsa. Loam. Modertyp.
	31	48/1	Tharandt	51° N	Picea excelsa. Loam. Modertyp.
	32	49	Tharandt	51° N	Picea excelsa. Loam. Humustyp.
	33	49/1	Tharandt	51° N	Picea excelsa. Loam. Humustyp.
	34	50	Tharandt	51° N	Moder. Loam.
	35	51	Tharandt	51° N	Picea excelsa, Loam. Humustyp.
	36	51/1	Tharandt	51° N	Picea excelsa, Loam. Humustyp.
	37	54	Nancy	48°42' N	Quercus, Fagus, Carpinus, Loam.
France	38	55	Arcachon	48°25' N	Pinus maritima, Sand, dunes.
	39	56	Reno-Valdien	48°25' N	Quercus, Fagus, Deep Loam.
	40	57	Nizza	43°45' N	Pinus halepensis. Sand.
Italy	41	58	Fonte all' Albate (Prov. Florenz.)	43°46' N	Fagus silvatica. Loam.
	42	59	Paradisino (Prov. Florenz.)	43°46' N	Abies alba, Loam.
	43	60	Marmisudici (Prov. Florenz.)	43°46' N	Castanea vesca, Loam.
Sicilia	44	61	Borno	45°57' N	Picea, Larix, Loam.
	45	62	Messina	38°10' N	Pinus pinea, Sandy loam.

Country	Nr.	Localities Nr.	Locality	Degree of latitude	Characteristic
Italy	46	63	Livorno	43°3' N	Pinus pinea, Sandy loam.
	47	64	Livorno	43°3' N	Quercus, Ilex, Arbutus unedo, Phillyrea variabilis, Erica arborea, Loamy soil.
Jugoslavia	48	65	Maosovo	41°30' N	Fagus silvatica Loamy soil.
	49	66	Pec	41°30' N	Pinus nigra, Loamy soil.
	50	67	Spalato	43°35' N	Pinus halepensis, Loamy soil.
Sahara	51	68	Lake from Plitvica	44°50' N	Fagus silvatica, Loamy soil.
	52	69	Umm-El-Agebab	32°21' N	Juniperus phoenicea Rocky ground.
	53	70	Umm-El-Agebab	32°21' N	Red soil. Clay.
	54	71	Korf-Ouerg	35°30' N	Atriplex halimus, Sand.
	55	72	Korf-Ouerg	35°30' N	Suaeda-Assoziation, Sand.
	56	73	Korf-Ouerg	35°30' N	Arable sand.
	57	74	Korf-Ouerg	35°30' N	Statice, Salt soil.
	58	75	Korf-Ouerg	35°30' N	Red soil.
	59	76	Beni-Ounif	32° N	Oasis.
	60	77	Beni-Ounif	32° N	Desert Sand.
North Africa	61	78	Beni-Ounif	32° N	Loamy desert soil.
	62	80	Beni-Ounif	32° N	Oasis, Loamy soil.
	63	81	Beni-Ounif	32° N	Oasis, Sandy loamy, poor soil.
	64	82	Beni-Ounif	32° N	Oued Zousfana, Dunes.
	65	83	Beni-Ounif	32° N	Zizyphus lotus, Sand.
	66	84	Beni-Ounif	32° N	Rocky ground.
	67	85	Beni-Ounif	32° N	Anabasis, Sandy loam.
	68	86	Beni-Ounif	32° N	Palmgarden loam.
	69	95	Cape-Town	35°04' S	Pinus insignis, Sandy loam.
	70	96	Knysna	34°04' S	Podocarpus latifolius, Olea.
South Africa	71	u.97	Knysna	34°04' S	laurifolia, Apodytes dimidiata, Curtisia faginea, Loam.
	72	98	Stutterheim	32°31' S	Pinus pinaster. P. insignis, P. halepensis, Gray sand.
	73	99	Stutterheim	32°31' S	Podocarpus sp. Olea laurifolia, Fagara sp., Celtis rhamnifolia, Vepris lanceolata, Rhus sp., etc. Loam.
	74	100	Woodbush	23°51' S	Loam.
	75	101	Woodbush	23°51' S	Eugenia Gerardii, Xymalos monospora, Olea foecolata, Myrsine melanophleas, Ficus natalensis, Podocarpus latifolius, Loamy soil.
Asia-India	76	102	Dehra-Dun	30°20' N	Mallotus philippinensis, Grewia elastica, Deep loamy soil.
	77	103	Dehra-Dun	30°20' N	Adina cordifolia, Terminalia Bel-lerica, Kydia calycina, Lagerstroemia parviflora, Lannea grandis, Sand.
	78	104	Dehra-Dun	30°20' N	Eugenia jambolana, Trewia nudiflora, Albizzia procera, Cedrela toona, Sand.
Asia Java	79	105	Krakatau	6°10' S	Virgin forest. Loam.
	80	106	Verlaten Eiland	6°05' S	Virgin loam.
Japan	81	107	Anak-Krakatau	6° S	Vulkan without vegetation.
	82	108	Depok	6°20' S	Virgin forest. Loam.
	83	109	Tokio	35°39' N	Pinus densiflora, Loam.
	84	110	Tokio	35°39' N	Castanea crenata, Loam.
	85	111	Tokio	35°39' N	Cryptomeria japonica, Loam.
	86	112	Tokio	35°39' N	Chamaecyparis obtusa, Loam.

Country	Nr.	Localities Nr.	Locality	Degree of latitude	Characteristic
Japan	87	113	Keijo	41°25' N	Larix dahurica var. coreana, Picea koraiensis, Abies nephrolepis Loam.
	88	114	Keijo	41°25' N	Larix dahurica var. coreana, Loam.
	89	115	Keijo	41°25' N	Larix dahurica var. coreana Loam.
	90	116	Keijo	41°25' N	Picea jezoensis, Abies nephrolepis, Loam.
North America	91	117	Jacksonville	43° N	Forest soil Loam.
	92	118	Camillus-Baldinsville	43° N	Forest soil Loam.
	93	119	Camillus-Baldinsville	43° N	Forest soil with humus Loam.
	94	120	Enfield-Jacksonville	43°30' N	Forest soil with humus Loam.
	95	121	Safford Ar.	34° N	Quercus-forest Loam.
	96	122	Bambridge Georg.	30°56' N	Pinus strobus, Sandy loam.
	97	123	Pittsboro N. Car.	35°40' N	Pasture Loam.
	98	124	Napa Cal.	38°15' N	Pinus, Picea, Quercus, Loamy soil.
	99	125	Ardmore Okl.	34°6' N	Arable soil, Loam.
	100	126	Eufaula Okl.	35°15' N	Quercus-forest, Loam.
	101	127	Edgefield S. Car.	33°50' N	Quercus-forest, Loam.
	102	128	Columbia Miss.	31°10' N	Arable soil, Loam.
Argentina S. America	103	150	Entre Rios. Dept. Nogoya	33°60' N	Pasture, Loamy soil.
	104	152	San Juan, Dept. caucete	31°30' S	Loamy soil, Olea forest.
	105	153	San Louis	34° S	Arable soil, Loam.
	106	155	Salta. Dept. Auta	24° S	Arable soil, Loam.
	107	129	Moruya South Coast.	36° S	Loamy forest soil with Eucalyptus maculata.
Australia	108	130	Millicent, S. A.	37°30' S	Loamy forest soil with Eucalyptus caicellata.
	109	131	Bendigo Vict.	37° S	Loamy forest soil with Eucalyptus sideroxylon.
	110	132	Bendigo Vict.	37° S	Loamy forest soil with Eucalyptus sideroxylon.
	111	133	Block Little Jerra Vict.		Loamy forest soil with Eucalyptus regnans.
	112	134	Parish of Krambruk. Vict.		Loamy forest soil with Eucalyptus globulus.
	113	135	Fraser Islaid Queensland	28° S	Loamy forest soil with Syncarpia Hillii, Tristania conferta, Schizomeria ovata.
	114	136	Ex Yeulba. Dalby District Queensland	27° S	Loamy forest soil with Callistris glauca.
	115	137	Brisbane Valley Queensland	27°30' S	Loamy forest soil with Araucaria, Cunninghamia.
	116	138	Brisbane Valley Queensland	27°30' S	Loamy forest soil with Araucaria, Cunninghamia.
	117	139	Brisbane Valley Queensland	27°30' S	Loamy forest soil with Eucalyptus paniculata, Jagera pseudorhus, Acacia.
	118	140	Pemberton W. A.		Eucalyptus diversicolor Red-sand.
	119	141	Ludlow W. A.		Eucalyptus gomphocephala, Loamy soil.
	120	142	Teesdale Hill S. W. A. 142/a. A.-Horizont		Eucalyptus marginata, Loamy soil.
			142/b. B.-Horizont		
	121	143	Atherton N. Quland	18° S	Flindersia, Cedrale, Endiandra, Tarrietia, Loamy soil.
	122	144	North-Coast New. S. Wales	32° S	Pasture.

TABLE II.

The geographical distribution of soil algae investigated.

The data show: 1. Frequency %. 2. Limits of distribution.

Degrees of latitude N. North, S. South. 3. The characteristic ph and moisture values (%).

E. = Europa. Af. = Africa. Am. = America. Au. = Australia. As. = Asia.

Schizophyta—Schizophyceae.

Anabaena circinalis (Kütz) Hansg.	3.41%	(N 46° 30') (6'59, 10%)	E.
Anabaena sp.	0.85%	(N 32°) (8'53, 6'2%)	Af.
Anabaena constricta Szaf. Geitler	2.56%	(N 35° 40' 48° 42', S 37°) (4'92—5'61) (9'8—25'8%)	E. Am. Au.
Anabaena elliptica Lemm.	0.85%	(N 52°) (3'60, 18%)	E.
Anabaena flos aquae (Lyngb.) Bréb.	0.85%	(N 32°) (8'59, 0'4%)	Af.
Anabaena Fülleborni Schmidle	1.7 %	(N 35° 30') (8'59, 0'4%)	Af.
Anabaena gelatinicola Ghoze	0.85%	(S 6°) (5'30, 30'5%)	As.
Anabaena laxa (Rabenh.) A. Br.	0.85%	(N 47° 47') (5'05, 18'4%)	E.
Anabaena Levanderi Lemm.	1.7 %	(N 35° 30'—38° 15') (5'05, 21'2%)	Af. Am.
Anabaena minutissima Lemm.	7.7 %	(N 35° 15'—48° 42') (3'8— 7'16, 3'8—25'8%)	E. Am.
Anabaena oscillarioides Lemm. var. Anabaena tenuis Lemm.	6.—%	(N 32°—66° 50') (4'96—8'59, 0'4—23'8%)	E. Af.
Anabaena sphaerica Born. et Flah.	0.85%	(N 30° 56') (4'92, 14'1%)	Am.
Anabaena torulosa (Carm.) Lagerh.	3.41%	(N 31° 11'—44° 30' S 24°) (4'20—8'55, 0'6—25%)	E. Af. Am. Au.
Anabaena variabilis Kütz.	16.41%	(N 33° 50'—69° 20' S 24°) (4'22—7'11, 0'6—47'2%)	E. Af. Am. Au.
Anabaena Viguierei Denus et Fremy.	0.85%	(N 51°) (5'12, 39%)	E.
Anabaena austugmalis var. in- crassata (Nygard.) Geitler	0.85%	(N 47° 47') (5'05, 18'4%)	E.
Aphanocapsa biformis A. Br.	3.41%	(N 35° 30'—48° 42', S 23° 51') (4'65—5'61, 7'9—27'6%)	E. Af. As.
Aphanothece Castagnei (Breb.) Rabh.	1.—%	(S 24°) (5—7, 3—25%)	Am.
Aphanocapsa delicatissima W. et G. S. West.	4.27%	(N 35° 40'—69° 20') (5'09—7'08, 3'8—28'4%)	E. Am.
Aphanocapsa elachista W. et G. S. West.	1.7 %	(N 51°—60° 17') (5'12—6'52, 20'2—39%)	E.
Aphanocapsa endolithica Er- cegovic	1.7 %	(N 32°—52° 40') (5'83—8'35, 0'98—11'4%)	Af.
Aphanocapsa flava (Kütz. Rabenh.)	1.7 %	(N 35° 39', S 28°) (4'38—4'52, 1'2—12'2%)	As. Au.
Aphanocapsa fusco-lutea Hansg.	0.85%	(N 47° 47') (5'46, 9'5%)	E.
Aphanocapsa Grevillei (Hass) Rabenh.	4.27%	(N 30° 56'—52° 40') (4'56— 5'83, 11'4—45'6%)	E. As. Am.
Aphanocapsa Koordersi Strom	0.85%	(N 32°) (8'24—8'35, 0'98— 2'6%)	Af.
Aphanocapsa montana Cra- mer	12.8 %	(N 31° 10'—69° 20') (4'20— 7'45, 2'2—47'1%)	E. Af. Am.
Aphanocapsa muscicola Menegh. (Wille)	1.7 %	(N 32°—66° 50') (5'16—8'55, 0'2—19'1%)	E. Af.

Aphanocapsa pulchra (Kütz.) Rabenh.	3.41%	(N 32°—59°) (4'68—6'95, 6'2—36%)	E. As. Af.
Aphanocapsa rivularis (Carmisch.) Rabenh.	1.7 %	(N 51°—52° 40') (5'15—6'35), 14'4—37'8%)	E.
Aphanocapsa rufescens Hansg.	0.85%	(N 51°) (5'12, 39%)	E.
Aphanocapsa sp.	0.85%	(N 32°) (7'84—8'55, 0'6—2'3%)	Af.
Aphanocapsa sideroderma Naumann	0.85%	(N 69° 20') (5'93, 23%)	E.
Aphanocapsa testacea Naeg.	24.78%	(N 32°—69° 20') (4'20—8'80, 0'98—48%)	E. Af. Am.
Aphanocapsa virescens (Hass.) Rabenh.	1.7 %	(N 43°—46° 30') (5'92—6'59, 10—45'9%)	E. Am.
Aphanothece caldarium Richt.	1.7 %	(N 35° 40'—47° 47') (5'05—5'09, 9'3—18'4%)	E. Am.
Aphanothece Castagnei (Bréb.) Rabenh.	0.85%	(N 48° 10') (5'23, 11'1%)	E.
Aphanothece clathrata W. et G. S. West.	4.27%	(N 35° 15'—69° 20') (4'65—6'02, 5'94—25'8%)	E. Am.
Aphanothece conferta Richt.	0.85%	(N 57°) (3'48, 45'2%)	E.
Aphanothece sp.	2.56%	(N 51°) (4'28—4'94, 35'4—54%)	E.
Aphanothece laxa (Kütz.) Rabenh.	0.85%	(N 51°) (3'96—4'34, 34'1—35'4%)	E.
Aphanothece microspora (Menegh.) Rabenh.	1.5 %	(N 60° 17') (5'24—6'52, 20'02—28'4%)	E.
Aphanothece microscopica Naeg.	1.7 %	(N 31° 10'—35° 39') (4'20—4'52, 12'2—13'6%)	E. Am. As.
Aphanothece muralis (Tommasch.) Lemm.	0.85%	(N 48° 10') (5'23, 45'2%)	E.
Aphanothece Naegeli Wartm.	5.13%	(N 48° 10'—69° 20') (3'48—5'63, 20'1—45'2%)	E. Am.
Aphanothece nidulans Richt.	2.56%	(N 44° 30'—51°, S 6°) (4'34—5'74, 6'5—35'4%)	E. As.
Aphanothece saxicola Naeg.	5.97%	(N 31° 10'—66° 50', S 32° 31'—33° 55') (4'15—8'8, 1'3—48%)	E. Am. Af.
Aphanothece stagnina (Spreng.) A. Br.	9.4 %	(N 42° 40'—69° 20', S 6—27°) (4'56—6'02, 0'5—32'1%)	E.As.Af.Au.
Aphanothece subachroa Hansg.	4.27%	(N 51°—69° 20') (4'28—6'18, 22'4—47'1%)	E.
Chamaesiphon africanus Schmidle.	0.85%	(N 35° 30')	Af.
Chamaesiphon fuscus (Rost) Hansg.	0.85%	(N 52° 40') (6'35, 37'8%)	E.
Chamaesiphon polonicus (Rost) Hansg.	0.85%	(N 43° 35')	E.
Chamaesiphon polymorphus Geitler	1.7 %	(N 34°—48° 10') (5'23—5'60, 11'1—16'7%)	E. Am.
Calothrix aeruginea (Kütz.) Thur.	0.85%	(N 32°) (8'53, 0'2%)	Af.
Calothrix brevissima G. S. West	0.85%	(N 46° 30') (6'34, 12%)	E.
Calothrix parietina var. africana Thur.	0.85%	(N 32°) (8'53, 0'2%)	Af.
Calothrix scopulorum (Web. et Mohr.) Ag.	0.85%	(N 46° 15') (7'11, 2'2%)	E.
Chlorogloea microcystoides Geitl.	3.41%	(N 35° 15'—52° 40') (5'11—6'73, 5'94—37'8%)	E. Am.
Chroococcopsis gigantea Geitl.	1.7 %	(N 47° 47'—66° 50') (4'86—5'43, 8'8—28%)	E.

<i>Chroococcus aurantiofuscus</i> (Kütz.) Rabenh.	1.7 %	(N 43°) (5'92—5'89, 29'2—45'9%)	Am.
<i>Chroococcus cohaerens</i> (Breb.) Naeg.	5.13%	(N 32°—60° 17') (4'06—6'9 6'4—54%)	E. Af.
<i>Chroococcus cinnamomeus</i>	0.85%	(N 46° 30') (6'59, 10%)	E.
<i>Chroococcus dispersus</i> (v. Keissl.) Lemm.	1.7 %	(N 66° 50') (4'86—6'15, 8'8—28%)	E.
<i>Chroococcus fuliginus</i> (Lenorm.) Rabenh.	1.70%	(N 47° 47'—51°) (4'06—5'46, 9'5—54%)	E.
<i>Chroococcus giganteus</i> W. West.	1.7 %	(N 48° 10'—66° 50') (5'11—5'23, 8'8—11'1%)	E.
<i>Chroococcus helveticus</i> Naeg.	1.7 %	(N 51°) (4'90—5'12, 22'4—39%)	E.
<i>Chroococcus limneticus</i> Lemm.	12.—%	(N 30° 56'—60° 17') (4'72—6'73, 7'2—39%)	E.As. Am.
<i>Chroococcus lithophilus</i> Ercegovic	0.85%	(N 52°) (3'60, 18%)	E.
<i>Chroococcus macrococcus</i> (Kütz.) Rabenh.	7.7 %	(N 43°—60° 17') (3'48—6'02, 7'9—45'2%)	E. As. Am.
<i>Chroococcus</i> sp.	0.85%	(N 35° 30')	Af.
<i>Chroococcus minimus</i> (v. Keissl.) Lemm.	9.4 %	(N 32°—69° 20') (4'65—8'8, 0'6—36'2%)	E, Af.
<i>Chroococcus minor</i> (Kütz.) Naeg.	6.83%	(N 46° 15'—69° 30') (3'96—7'11, 3'8—67'8%)	E.
<i>Chroococcus minutus</i> (Kütz.) Naeg.	21.37%	(N 32°—69° 30', S, 6°) (4'06—8'53, 0'5—54%)	E. As. Af. Am
<i>Chroococcus oblitteratus</i> Richt.	1.7 %	(N 69° 20'—69° 30') (6'09—6'13, 21'2—40'2%)	E.
<i>Chroococcus pallidus</i> Naeg.	6.—%	(N 45° 57'—69° 17') (5'24—7'29, 2'2—47'1%)	E. Am.
<i>Chroococcus sabulosus</i> (Menegh.) Hansg.	2.56%	(N 51°—66° 50') (4'23—6'15, 18'3—48%)	E.
<i>Chroococcus schizodermaticus</i> W. West.	1.7 %	(N 32°—34° 02') (5'16—8'8, 2'2—18'2%)	Af.
<i>Chroococcus tenax</i> Hieron.	4.27%	(N 51°—66° 50') (4'89—6'52, 12'5—39%)	E.
<i>Chroococcus turgidus</i> (Kütz.) Naeg.	18.8 %	(N 30° 56'—69° 30', S, (18—38°) (3'48—8'35, 0'98—45'9%)	E. Af. Am. Au.
<i>Chroococcus turicensis</i> (Naeg.) Hansg.	0.85%	(N 35° 15') (5'11, 5'94%)	Am.
<i>Chroococcus varius</i> A. Br.	8.55%	(N 30° 56'—69° 20', S, 6°) (4'06—7'11, 0'5—54%)	E. As. Af. Am.
<i>Clastidium rivulare</i> Hansg.	0.85%	(N 69° 20') (5'46—24'1%)	E.
<i>Clastidium setigerum</i> Kirchn.	0.85%	(N 47° 47') (5'05, 18'4%)	E.
<i>Coelosphaerium confertum</i> W. et G. S. West.	0.85%	(N 35° 30')	Af.
<i>Coelosphaerium Goetzei</i> Schmidle	0.85%	(N 35° 30')	Af.
<i>Coelosphaerium Kuetzingianum</i> Naeg.	2.56%	(N 30° 20'—34°) (5'08—5'60, 5'8—16'7%)	E. As. Am.
<i>Coelosphaerium minutissimum</i> Lemm.	0.85%	(N 57°) (3'48, 45'2%)	E.
<i>Cylindrospermum majus</i> Kütz.	3.41%	(N 46° 15'—66° 50') (4'23—7'11, 2'2—48%)	E.
<i>Cylindrospermum musciola</i> Kütz.	6.83%	(N 46° 15'—69° 20') (4'64—7'11, 2'2—37%)	E.
<i>Cylindrospermum stagnale</i> (Kütz.) Born, et Flah.	2.56%	(N 32°—52° 40') (5'12—6'90, 6'4—39%)	E. Af.
<i>Dactylococcopsis acicularis</i> Lemm.	1.7 %	(N 47° 47'—57°) (3'48—5'05, 18'4—45'2%)	E.

<i>Dactylococcopsis raphidioides</i> Hansg.	1.7 ‰	N 47° 47'—60° 17') (4'86—5'31, 8'8—26'2%)	E.
<i>Dactylococcopsis rupestris</i> Hansg.	3.41 ‰	(N 32°—66° 50') (5'02—8'59, 0'4—19'1%)	E. Af.
<i>Dactylococcopsis Schmithii</i> R. et F.	0.85 ‰	(N 48° 25') (3'93, 16'1%)	E.
<i>Dermocarpa prasina</i> (Reinsch) Bornet.	0.85 ‰	(N 59°) (5'44, 9'8%)	E.
<i>Dermocarpa solitaria</i> Collins et Hervey	1.7 ‰	(N 46° 15') (6'73—7'11, 2'2—7'2%)	E.
<i>Eucapsis alpina</i> Clements et Shantz.	3.41 ‰	(N 32°—69° 20') (5'05—8'25, 0'98—39%)	E. Af.
<i>Fischirella ambigua</i> (Kütz.) Gom.	1.7 ‰	(N 47° 47'—57°) (4'23—5'43, 9'5—48%)	E.
<i>Gloeocapsa aeruginosa</i> (Carm.) Kütz.	0.85 ‰	(N 43° 30') (5'81, 30'6%)	Am.
<i>Gloeocapsa alpina</i> (Naeg.) Brand.	6.0 ‰	(N 38° 10'—69° 20') (4'06—6'34, 10'7—54%)	E.
<i>Gloeocapsa atrata</i> (Turp.) Kütz.	0.85 ‰	(N 30° 20') (5'10, 7'5%)	As.
<i>Gloeocapsa caldariorum</i> Rabenh.	0.85 ‰	(N 57°) (4'42—35'9%)	E.
<i>Gloeocapsa compacta</i> (Kütz.)	0.85 ‰	(N 32°) (8'52—8'80, 2'2—18'2%)	Af.
<i>Gloeocapsa conglomerata</i> Kütz.	2.56 ‰	(N 51°—69° 20') (5'15—5'83, 11'4—20'1%)	E.
<i>Gloeocapsa coracina</i> Kütz.	8.55 ‰	(N 51°—69° 20') (3'96—6'52, 19'1—54%)	E. Af.
<i>Gloeocapsa decorticans</i> (A. Br.) P. Richt.	0.85 ‰	(S 37°) (5'40, 8'6%)	Af.
<i>Gloeocapsa dermochroa</i> Naeg.	3.41 ‰	(N 51°—69° 20') (5'11—6'52, 20'2—67'8%)	E.
<i>Gloeocapsa gelatinosa</i> Kütz.	0.85 ‰	(N 35° 30')	Af.
<i>Gloeocapsa gigas</i> W. et G. S. West.	0.85 ‰	(N 32°) (7'84—8'55, 0'6—2'3%)	Af.
<i>Gloeocapsa haematodes</i> Kütz.	0.85 ‰	(N 52°) (3'50, 20%)	E.
<i>Gloeocapsa Kuetzingiana</i> Naeg.	0.85 ‰	(N 32°) (6'95, 6'2%)	Af.
<i>Gloeocapsa magma</i> (Bréb.) Kütz.	6.83 ‰	(N 32° 40'—60° 17', S 23° 51') (4'94—5'90, 0'2—28'6%)	E. Af. Am. Au.
<i>Gloeocapsa montana</i> Kütz.	8.55 ‰	(N 43° 30'—69° 20'), (4'06—6'15, 18'3—37'8%)	E. Am.
<i>Gloeocapsa muralis</i> Kütz.	1.7 ‰	(N 51°—69° 20') (5'40—6'09, 20'1—37'8%)	E.
<i>Gloeocapsa polydermatica</i> Kütz.	4.27 ‰	(N 47° 47'—66° 50') (4'42—5'43, 8'8—35%)	E.
<i>Gloeocapsa punctata</i> Naeg.	6.0 ‰	(N 35° 30'—69° 20') (4'06—5'41, 20'01—54%)	E. Af. Am.
<i>Gloeocapsa purpurea</i> Kütz.	1.7 ‰	(N 51°—69° 20') (4'22—6'46, 25'2—47'1%)	E.
<i>Gloeocapsa quaternaria</i> (Bréb.) Kütz.	0.85 ‰	(N 35° 30')	Af.
<i>Gloeocapsa rupestris</i> Kütz.	5.13 ‰	(N 30° 56'—52° 40') (4'92—6'35, 14'1—47'1%)	E. Af. Am.
<i>Gloeocapsa rupicola</i> Kütz.	8.55 ‰	(N 43° 30'—69° 20', S 23° 51'—34° 02') (4'22—7'42, 2'2—47'1%)	E. Af. Am.
<i>Gloeocapsa sabulosa</i> (Menegh.) Richt.	0.85 ‰	(N 32°) (8'52—8'80, 2'2—18'2%)	Af.
<i>Gloeocapsa salina</i> Hansg.	0.85 ‰	(N 52° 40') (6'35—37'8%)	E.
<i>Gloeocapsa sanguinea</i> (Ag.) Kütz.	2.56 ‰	(N 51°—69° 20') (5'24—6'09, 20'1—37'8%)	E.

<i>Gloeocapsa scopulorum</i> Naeg.	6.83%	(N 51°—69° 20') (4.96—6.46, 11.4—37.8%)	E.
<i>Gloeocapsa stegophyla</i> (Itzigs.) Rabenh.	1.7 %	(N 32°—52° 40') (6.35—8.8 2.2—37.8%)	E. Af.
<i>Gloeotheca coerulea</i> Geitler.	6.0 %	(N 32°—51°, S 6°—37°) (5.12 —8.55, 0.6—39%)	E. As, Af.
<i>Gloeotheca confluens</i> Naeg.	3.41%	(N 47° 47'—52° 40') (4.90— 6.18, 9.5—47.1%)	E.
<i>Gloeotheca fusco-lutea</i> Naeg.	2.56%	(N 51°—60° 17') (4.90—5.15, 14.4—23.8%)	E.
<i>Gloeotheca linearis</i> Naeg.	4.27%	(N 47° 47'—69° 20') (3.48— 5.63, 18.4—48%)	E.
<i>Gloeotheca magna</i> Wolle.	0.85%	(N 57°) (4.23, 48%)	E.
<i>Gloeotheca membranacea</i> (Rabenh.) Born.	4.27%	(N 47° 47'—60° 17') (3.48— 5.83, 18.4—45.2%)	E.
<i>Gloeotheca monococca</i> (Kütz.) Rabenh.	1.7 %	(N 60° 17'—69° 30') (4.96— 5.41, 20.1—26.2%)	E.
<i>Gloeotheca palea</i> (Kütz.) Rabenh.	0.85%	(N 66° 50') (6.05, 16.8%)	E.
<i>Gloeotheca rupestris</i> (Lyngb.) Born.	0.85%	(N 60° 17'—66° 50') (4.86— 5.11, 8.8—28%)	E.
<i>Gloeotheca ustulata</i> Beck. Mannag.	0.85%	(N 47° 47') (5.05, 18.4%)	E.
<i>Gloeotrichia echinulata</i> (Schmidt) Richt.	2.5 %	(N 46° 15'—66° 50') (4.06— 6.15, 8.8—54%)	E. Am.
<i>Gomphosphaeria aponina</i> Kütz.	0.85%	(N 47° 47') (5.43, 9.5%)	E.
<i>Gomphosphaeria lacustris</i> Chod.	0.85%	(N 52° 40') (6.35, 37.8%)	E.
<i>Hapalosiphon fontinalis</i> (Ag.) Born.	0.85%	(N 69° 20') (5.93, 32.1%)	E.
<i>Hapalosiphon intricatus</i> W. et G. S. West.	1.7 %	(N 46° 15'—69° 20') (5.41— 6.73, 7.2—20.1%)	E.
<i>Holopedia bella</i> G. Beck.	0.85%	(N 35° 30')	E. Af.
<i>Holopedia geminata</i> Lagerh.	1.7 %	(N 30° 20'—48° 42') (4.65— 6.02, 5.8—25.8%)	E. As.
<i>Hydrocoleus heterotrichus</i> Kütz.	1.7 %	(N 38° 15'—47° 47') (5.05— 5.43, 9.5—21.2%)	E. Am.
<i>Hydrocoleus lyngbyaceus</i> Kütz.	0.85%	(N 52° 40') (6.18, 47.1%)	E.
<i>Isocystis infusionum</i> (Kütz.) Borzi.	6.0 %	(N 46° 15'—66° 50') (4.64— 7.16, 3.8—23.8%)	E.
<i>Leptochaeta crustacea</i> Borzi.	0.85%	(N 59°) (5.44, 9.8%)	E.
<i>Leptochaeta rivularis</i> Hansg.	0.85%	(N 51°) (5.15, 14.4%)	E.
<i>Lithocapsa fasciculata</i> Erceg.	0.85%	(N 69° 20') (4.74, 15%)	E.
<i>Lyngbia bipunctata</i> Lemm.	1.7 %	(N 51°—60° 17') (5.15—5.24, 14.4—20.2%)	E.
<i>Lyngbia contorta</i> Lemm.	0.85%	(N 52° 40') (5.83, 11.4%)	E.
<i>Lyngbia fontana</i> (Kütz.) Hansg.	0.85%	(N 52°) (3.50, 20%)	E.
<i>Lyngbia Kuetzingiana</i> Kirch.	0.85%	(N 66° 50') (5.16, 19.1%)	E.
<i>Lyngbia limnetica</i> Lemm.	1.7 %	(N 35° 30'—47° 47') (5.05, 18.4%)	E. Af.
<i>Lyngbia perelegans</i> Lemm.	0.85%	(N 41° 25') (4.76, 51.6%)	As.
<i>Merismopedia convoluta</i> Bréb.	2.56%	(N 47° 47'—51°) (5.05—5.43, 9.5—39%)	E.
<i>Merismopedia elegans</i> A. Br.	0.85%	(N 69° 20') (5.63, 23.1%)	E.
<i>Merismopedia glauca</i> Naeg.	1.7 %	(N 59°—69° 30') (5.31—5.51, 11.7—23.3%)	E.
<i>Merismopedia minima</i> G. Beck.	0.85%	(N 69° 20') (4.89—5.96, 6.1— 12.5%)	E.

<i>Merismopedia punctata</i> Meyen	2.56%	(N 35° 30'—60° 17') (4'86—5'12, 8'8—39%)	E. Af.
<i>Merismopedia tenuissima</i> Lemm.	3.41%	(N 51°—69° 20') (5'12—5'93, 11'4—39%)	E.
<i>Microchaete tenera</i> Thur.	0.85%	(N 60° 17') (4'86—5'11) (8'8—28%)	E.
<i>Microcoleus saciatus</i> W. et G. S. West.	0.85%	(N 48° 42') (4'65—6'02, 7'9—25'8%)	E.
<i>Microcoleus tenerimus</i> Gom.	0.85%	(N 51°) (5'12—5'22, 39%)	E.
<i>Microcoleus vaginatus</i> (Vauch.) Gom.	2.56%	(N 35° 30'—48° 42') (4'65—6'02, 7'9—51'6%)	E. As. Af.
<i>Microcystis aeruginosa</i> Kütz.	0.85%	(N 52°) (3'50, 20%)	E.
<i>Microcystis elabens</i> (Menegh.) Kütz.	2.56%	(N 52° 40'—60° 17', S 6°) (5'24—5'83, 6'5—20'2%)	E. As.
<i>Microcystis firma</i> (Bréb. et Lenorm.) Rabenh.	10.25%	(N 51°) (5'40, 37'8%)	E. Af.
<i>Microcystis flosaquae</i> (Wittr.) Kirchn.	2.56%	(N 47° 47'—69° 20', S 32° 40') (4'74—5'90, 1—23'1%)	E. Au.
<i>Microcystis fusco-lutea</i> (Hansg.) Forti.	1.70%	(N 32°—69° 20' S 24°) (5'63—8'59, 0'4—23'1%)	E. Au.
<i>Microcystis holsatica</i> Lemm.	4.0 %	(N 48° 42'—69° 20') (S 24°) (4'65—6'15, 6'1—25%)	E. Am.
<i>Microcystis holsatica</i> var. minor Lemm.	0.85%	(N 52°) (3'50, 20%)	E.
<i>Microcystis</i> sp. (Menegh.) Kütz.	0.85%	(N 69° 20') (5'96, 6'1%)	E.
<i>Microcystis marginata</i> F. E. Fritsch.	0.85%	(N 52° 40') (6'18, 47'1%)	E.
<i>Microcystis merismopedioides</i> Lemm.	0.85%	(N 69° 20') (5'96, 6'1%)	E.
<i>Microcystis pallida</i> (Farlow.) Mig.	0.85%	(N 31° 10') (4'2, 13'6%)	Am.
<i>Microcystis protocystis</i> Crow.	0.85%	(S 6°) (5° 30') (30'5%)	As.
<i>Microcystis pulvereae</i> (Wood.) Richt.	41.88%	(N 32°—69° 20', S 28°—32° 40') (3'93—8'59, 0'2—39%)	E. As. Am.
<i>Microcystis scripta</i> (Richt.) Lemm.	0.85%	(N 60° 17') (4'86—5'11, 8'8—20%)	Af. Au.
<i>Microcystis stagnalis</i> Lemm.	4.27%	(N 48° 25'—69° 20') (3'93—7'42, 2'2—48%)	E.
<i>Myxosarcina chroococcoides</i> Geitler.	7.7 %	(N 44° 30'—69° 20') (5'11—5'93, 9'5—39%)	E.
<i>Myxosarcina concinna</i> Printz.	2.56%	(N 35° 30'—43° 30') (5'10—5'20, 1'3—2'3%)	E. Af.
<i>Nodularia armorica</i> Thuret.	2.56%	(N 35° 15'—69° 20') (4'23—5'93, 5'94—48%)	E. Am.
<i>Nodularia Harveyana</i> Thur.	1.7 %	(N 35° 30'—46° 15') (7'11—2'2%)	E. Af.
<i>Nodularia spumigena</i> Mert.	0.85%	(N 44° 30') (5'74, 25%)	E.
<i>Nostoc calcicola</i> Bréb.	6.0 %	(N 32°—47° 47') (5'43—8'80, 0'6—39%)	E. Af.
<i>Nostoc carneum</i> Ag.	14.0 %	(N 32° 40'—57°) (S 33° 60') (4'22—6'80, 1—47'1%)	E. Af. Au. Am.
<i>Nostoc coeruleum</i> Lyngb.	2.56%	(N 31° 10'—59°) (4'20—7'29, 11'7—16'6%)	E. Af. Au. Am.
<i>Nostoc commune</i> Vauch.	22.0 %	(N 31° 10'—69° 30') (S 33° 60') (4'20—8'8, 0'6—47'1%)	E. Af. Am.
<i>Nostoc cuticulare</i> (Bréb.) Born et Flah.	0.85%	(N 35° 15') (5'11, 5'94%)	Am.
<i>Nostoc ellipsosporum</i> (Desm.) Rabenh.	6.83%	(N 30° 56'—69° 20') (4'42—6'02, 7'9—35%)	E. Af. Am.
<i>Nostoc humifusum</i> Carm.	36.0 %	(N 35° 30'—69° 20') (S 24°) (5'96—6'95, 6'1—7'8%)	E. Af. Am.

Nostoc Kihlmanni Lemm.	0.85%	(N 59°) (5'51, 11'7%)	E.
Nostoc Linckia (Roth.) Born.	8.0 %	(N 32°—59°) (S 33° 60'—34°) (5'44—8'59, 0'4—11'7%)	E. Af. Am.
Nostoc macrosporum Menegh.	6.0 %	(N 30° 20'—69° 20') (4'65— 7'11, 2'2—39%)	E. As. Am. Af.
Nostoc microscopicum Carm.	1.7 %	(N 46° 15'—51°) (5'12—6'73, 7'2—39%)	E.
Nostoc minutissimum Kütz.	7.7 %	(N 30° 20'—69° 20') (4'96— 7'11, 2'2—39%)	E. Af. Am.
Nostoc minutum Desm.	0.85%	(N 52° 40') (6'35, 37'8%)	E.
Nostoc sp.	0.85%	(N 44° 30') (5'74, 25%)	E.
Nostoc muscorum Kütz.	8.0 %	(N 34°—60° 17') (S 24° 34') (4'65 —6'2, 3'8—25'8%)	E. Af. Am.
Nostoc paludosum Kütz.	4.0 %	(N 32°—47° 47', S 37°—31° 30') (5'05—8'40, 1'5—18'4%)	E. Af. Au. Am.
Nostoc parmelioides Kütz.	2.5 %	(N 47° 47'—57°) (4'02—5'43, 9'5—66'7%)	E.
Nostoc Passerinianum Born. et Thur.	1.7 %	(N 47° 47'—52°) (5'43, 9'5%)	E.
Nostoc piscinale Kütz.	2.0 %	(N 46° 15'—51°) (S 33° 60°) (4'98—6'73, 7'2—39%)	E. Am.
Nostoc punctiforme (Kütz.) Hariot.	1.0 %	(N 47° 47') (S 33° 60') (5'43, 9'5%)	E. Am.
Nostoc rivulare Kütz.	0.85%	(N 48° 42') (4'65—6'02, 7'9— 25'8%)	E.
Nostoc sphaericum Vauch.	2.56%	(N 57°—69° 20') (4'02—6'09, 16'8—66'7%)	E.
Nostoc verrucosum Vauch.	12.0 %	(N 32°—69° 20') (4'70—7'08, 2'2—28'4%)	E. Af. Am.
Oncobyrsa rivularis (Kütz.) Menegh.	5.13%	(N 32°—59°) (5'23—8'53 0'2—16'7%)	E. Af. Am.
Oscillatoria beggiatoiformis (Grun.) Gom.	0.85%	(N 51°) (5'12, 39%)	E.
Oscillatoria chlorina Kütz.	0.85%	(N 52° 40') (5'83, 11'4%)	E.
Oscillatoria curviceps Ag.	2.56%	(N 34°—47° 47') (5'05—5'6, 9'5—18'4%)	E.
Oscillatoria geminata Menegh.	0.85%	(N 52° 40') (6'35, 37'8%)	E.
Oscillatoria irrigua Kütz.	1.70%	(N 35° 30'—66° 50') (5'16, 19'1%)	E. Af.
Oscillatoria homogenea Frémy.	0.85%	(N 32°) (8'15—8'40, 1'5—3'5%)	Af.
Oscillatoria jenensis G. Schmid.	0.85%	(N 32°) (8'52—8'80, 2'2— 18'2%)	Af.
Oscillatoria Kütziana Naeg.	0.85%	(N 52°) (3'60, 20'0%)	E.
Oscillatoria limnetica Lemm.	0.85%	(N 47° 47') (5'05, 18'4%)	E.
Oscillatoria limosa (Roth) Ag.	10.24%	(N 32°—69° 20', S 37°) (3'48— 8'80, 2'2—48'0%)	E. Af. Au.
Oscillatoria Meslini Frémy.	0.85%	(N 32°) (8'52—8'80, 2'2— 18'2%)	Af.
Oscillatoria minima Gickl- horn	0.85%	(N 46° 15') (7'11, 2'2%)	E.
Oscillatoria princeps Vauch.	4.26%	(N 32°—57°) (4'42—8'8, 2'2— 35'0%)	E. Af.
Oscillatoria rubescens D. C.	0.85%	(N 57°) (4'42, 35%)	E.
Oscillatoria sancta Kütz.	1.70%	(N 32°—46° 15') (7'11—8'80, 2'2—18'2%)	E. Af.
Oscillatoria splendida Grev.	1.7 %	(N 47° 47', S 37°) (5'05—5'60, 8'6—18'4%)	E. Au.
Oscillatoria subtilissima Kütz.	0.85%	(N 60° 17') (5'24—6'52, 20'2— 28'4%)	E.
Oscillatoria tenuis Ag.	2.56%	(N 32°—48° 42') (4'65—8'80, 2'2—25'8%)	E. Af.

Oscillatoria sp.	0.85%	(S 37°) (5'40—8'6%)	Au.
Pentalonema crassum (Naeg.) Mig.	0.85%	(N 51°—60° 17') (5'24—20'2%)	E.
Phormidium autumnale (Ag.) Gom.	2.56%	(N 51°) (4'06—5'43, 22'4—67'8%)	E.
Phormidium foveolarum (Mont.) Gom.	4.0 %	(N 32°—52° 40') (S 24—33° 60') (6'35—8'40, 1'5—37'8%)	E. Af. Am.
Phormidium interruptum Kütz.	0.85%	(N 41° 30')	E.
Phormidium Jenkelianum Schmid.	9.4 %	(N 46° 15'—69° 20') (4'22—7'11, 2'2—47'2%)	E.
Phormidium molle	1.0 %	(S 24°) (6'7, 12%)	Am.
Phormidium mucicola Hub. Pestalozzi et Naun.	0.85%	(N 48° 10') (5'23, 11'1%)	E.
Phormidium rubroterricola Gardner.	0.85%	(N 33° 55') (4'15, 25'8%)	Af.
Phormidium uncinatum Gom.	0.85%	(N 32°) (8'59, 0'4%)	Af.
Plectonema capitatum Lemm.	0.85%	(S 32° 40') (5'90, 1%)	Au.
Plectonema puteale (Kirchn) Hansg.	0.85%	(N 51°) (4'34, 35'4%)	E.
Plectonema tenue Thuret	1.7 %	(S 18°—32° 40') (4'97—5'90, 0'2—7'6%)	Au.
Plectonema Wollei Farlow.	0.85%	(N 51°)	E.
Pleurocopsa aurantiaca Geitl.	0.85%	(N 46° 15') (6'73, 7'2%)	E.
Pleurocopsa cuprea Hansg.	25.0 %	(N 32°—69° 20') (S 33° 60') (4'23—8'53, 0'2—48%)	E. Af. Am.
Pleurocopsa fuliginosa Hauck	1.7 %	(N 35° 15'—46° 15') (5'11—6'73, 5'94—7'2%)	E. Am.
Pleurocopsa minor Hansg.	8.—%	(N 32°—69° 20') (S 34°) (4'86—8'44, 1'5—28%)	E. Af. Am.
Pleurocopsa terrestris nov. spec.	7.68%	(N 30° 10'—59° 43') (5'05—6'73, 1'3—39'0%)	E.
Radaisia cornuana Sauv.	2.56%	(N 32°—35° 30') (8'59, 0'4%)	Af.
Rhabdoderma lineare Schmid. et Lauterb.	1.70%	(N 47° 47'—51°) (5'12—5'43, 9'5—39%)	E.
Rhabdoderma minima Lemm.	2.56%	(N 32°—51°) (5'12—8'59, 0'4—39%)	E. Af.
Rhopalodia gibba (Ehrenb.) O. Müll.	1.7 %	(N 47° 47'—59°) (5'05—5'51, 11'7—18'4%)	E.
Rivularia atra Roth.	0.85%	(N 46° 15') (5'15, 14'4%)	E.
Rivularia nitida Ag.	0.85%	(N 69° 20') (5'24, 11'9%)	E.
Sacconema rupestris Borzi	0.85%	(S 6°) (5'30, 30'5%)	As.
Schizotrix aurantiaca Kütz.	0.85%	(N 51°) (4'34, 35'4%)	E.
Schizotrix coriacea (Kütz.) Gom.	1.7 %	(N 52° 40'—57°) (4'06—5'40, 37'8—54%)	E.
Schizotrix elongata W. et G. S. West.	1.70%	(N 35° 20') (S 32° 31') (5'81, 21'2%)	Af.
Schizotrix fragilis (Kütz.) Gom.	0.85%	(N 66° 50') (5'02, 16'1%)	E.
Schizotrix Triesii (Ag.) Gom.	0.85%	(N 51°) (5'22, 39%)	E.
Schizotrix Gomontii Weber van Bosse.	0.85%	(N 35°)	Af.
Schizotrix Heufleri Grün.	0.85%	(N 57°) (4'23, 48%)	E.
Schizotrix Lamyi Gom.	0.85%	(N 47° 47') (5'43, 9'5%)	E.
Schizotrix penicillata (Kütz.) Gom.	0.85%	(N 41° 19') (4'56, 45'6%)	As.
Schizotrix septentrionalis Gom.	0.85%	(N 60° 50') (6'00, 19'1%)	E.
Scytonema Arcangelii f minus Born. Flah.	0.85%	(N 32°) (8'53, 0'2%)	Af.
Scytonema Bewsii F. E. Fritsch.	2.56%	(N 32°) (8'15—8'53, 0'2—18'2%)	Af.

<i>Scytonema Hofmanni</i> Ag.	1.7 %	(N 38° 10', S 23° 51') (5'16—5'61, 3'8—27'6%)	E. Af.
<i>Scytonema myochrous</i> (Dillw.) Ag.	1.7 %	(N 66° 50') (4'43, 35'4%)	E.
<i>Scytonema stuposum</i> (Kütz.) Born.	2.56%	(N 48° 42'—51°) (4'65—6'35, 7'9—39%)	E.
<i>Scytonema varium</i> Kütz.	0.85%	(N 47° 47') (4'28, 25'8%)	E.
<i>Spirulina tenerrima</i> Kütz.	0.85%	(N 51°) (5'12, 39%)	E.
<i>Stigonema hormoides</i> (Kütz.) Born. et Flah.	0.85%	(N 60° 17') (6'52, 28'4%)	E.
<i>Stigonema minutum</i> (Ag.) Hass.	4.0 %	(N 32°—51°, S 6°—34°) (5'12—8'53, 0'2—39%)	E. As. Af. Am.
<i>Stigonema minutissimum</i> Borzi.	0.85%	(S 32° 40') (5'90, 0'2%)	Au.
<i>Symploca cartilaginea</i> (Mont.) Gom.	1.7 %	(N 41° 19'—41° 25') (4'68—4'76, 36—51'6%)	As.
<i>Symploca dubia</i> (Naeg.) Gom.	1.7 %	(N 32°—52° 40') (6'35—8'53, 0'2—37'8%)	E. Af.
<i>Symploca elegans</i> Kütz.	0.85%	(N 47° 47') (5'43, 9'5%)	E.
<i>Symploca funicularis</i> Setchell et Gardner	0.85%	(N 34°) (5'60, 16'7%)	Am.
<i>Synechococcus aeruginosus</i> (Naeg.)	0.85%	(N 44° 30') (5'74, 25%)	E.
<i>Synechococcus brunneolus</i> Rabenh.	0.85%	(N 69° 20') (5'63, 23'1%)	E.
<i>Synechococcus elongatus</i> Naeg.	2.57%	(N 51°) (3'96—5'40, 34'1—37'8%)	E. As. Am.
<i>Siphononema polonicum</i> Geitl.	6.0 %	(N 32°—52° 40') (5'12—8'55, 0'2—39%)	E. Af.
<i>Tolypothrix tenuis</i> Kütz.	0.85%	(N 35° 15') (5'11, 5'94%)	Am.
<i>Xenococcus Kernerii</i> Hansg.	0.85%	(N 48° 42') (4'65—6'02, 7'9—25'8%)	E.

Zygophyta — Zygothryceae.

<i>Achnanthes coarctata</i> Bréb.	0.85%	(N 51°) (5'12, 39%)	E.
<i>Achnanthes exilis</i> Kütz.	1.7 %	(N 35° 15'—30°) (5'11, 5'94%)	Af. Am.
<i>Achnanthes exigua</i> Grun.	0.85%	(N 35° 15') (5'11, 5'94%)	Am.
<i>Achnanthes minutissima</i> Kütz.	0.85%	(N 35° 39') (4'52, 12'2%)	As.
<i>Achnanthes longipes</i> Ag.	0.85%	(N 41° 25') (4'72, 55'2%)	As.
<i>Amphora ovalis</i> Kütz.	0.85%	(N 51°) (5'12, 39%)	E.
<i>Bacillaria paradoxa</i> Gmel.	9.4 %	(N 46° 15'—69° 20') (4'23—6'75, 5'9—47'1%)	E.
<i>Caloneis alpestris</i> Grun.	0.85%	(N 47° 47')	E.
<i>Caloneis fasciata</i> Lagestr.	0.85%	(N 66° 50') (5'11, 8'8%)	E.
<i>Caloneis latiuscula</i> Kütz.	0.85%	(N 34° 06') (5'35, 17'2%)	Am.
<i>Closterium Küetzingii</i> Bréb.	0.85%	(N 46° 15') (7'11, 2'2%)	E.
<i>Closterium rostratum</i> Ehrenb.	0.85%	(N 60° 17') (4'70, 12'2%)	E.
<i>Closterium</i> sp.	0.85%	(N 46° 15') (7'08, 3'8%)	E.
<i>Closterium turgidum</i> Ehrenb.	0.85%	(N 47° 47') (5'43, 9'5%)	E.
<i>Cosmarium laeve</i> Rabenh.	1.7 %	(N 47° 47'—69° 20') (5'41, 20'1%)	E.
<i>Cosmarium moniliforme</i> (Thurp.) Ralfs.	2.56%	(N 35° 15'—66° 50') (4'01—6'05, 5'4—16'8%)	E. Am.
<i>Cosmarium nitidulum</i> de Not.	0.85%	(N 48° 10') (4'90, 8'3%)	E.
<i>Cosmarium palangula</i> Bréb.	1.70%	(N 60° 17'—66° 50') (4'86—6'25, 23'2—32'1%)	E.
<i>Cosmarium parvulum</i> Bréb.	0.85%	(N 46° 15') (6'73, 7'2%)	E.
<i>Cosmarium speciosum</i> Lund.	0.85%	(N 46° 15') (7'11, 2'2%)	E.

Cosmarium subcucumis Schmidle	2'56°/o	(N 46° 15'—69° 30') (4'30—6'73, 7'2—8'3%)	E.
Cosmarium subtumidum Nordst.	1'7 °/o	(N 60° 17'—66° 50') (4'86—6'25, 23'2—32'1%)	E.
Cosmarium Thwaitesii Ralfs.	0'85°/o	(N 66° 50') (4'89, 12'5%)	E.
Cosmarium udulatum Corda	0'85°/o	(N 48° 10') (4'90, 8'3%)	E.
Cylindrocystis Brebissonii Menegh.	10'25°/o	(N 47° 47'—69° 20', S 37°) (4'42—6'22, 8'6—40'2%)	E. Af.
Cylindrocystis Brebissonii var. minor West. u. West.	0'85°/o	(N 47° 47') (5'43, 9'5%)	E.
Cylindrocystis crassa de Bary	6'83°/o	(N 47° 47'—69° 30') (4'86—6'73, 7'2—20'1%)	E.
Cymbella amphicephala Naeg.	0'85°/o	(N 34° 06') (5'35, 17'2%)	Am.
Cymbella aspera Ehrenb.	0'85°/o	(N 69° 20') (4'74, 15%)	E.
Cymbella austriaca Grun.	1'7 °/o	(N 47° 47'—51°) (5'05—5'22, 18'4—39%)	E.
Cymbella Ehrenbergii Kütz.	0'85°/o	(N 66° 50') (4'64, 13'3%)	E.
Desmidium cylindricum Grev.	1'7 °/o	(N 69° 20'—69° 30') (6'09—6'13, 21'2—40'2%)	E.
Diatoma anceps Ehrenb. (Kirchn.)	0'85°/o	(N 47° 47') (5'05, 18'4%)	E.
Diatoma hiemale (Lyngb.) Heib.	3'41°/o	(N 35° 39'—48° 10') (4'52—5'23, 11'1—55'2%)	E. As.
Diatoma vulgare Bory.	10'25°/o	(N 35° 30'—69° 30') (4'56—6'09, 8'3—51'6%)	E. As. Af.
Diatomella Balfouriana Grév.	1'7 °/o	(N 42° 40', S 6°) (5'30—30'5%)	E. As.
Docidium baculum Bréb.	0'85°/o	(N 48° 10') (5'23, 11'1%)	E.
Docidium nobile (Richt.) Lund.	1'7 °/o	(N 60° 17') (4'70—4'86, 12'2—28'6%)	E.
Epithemia argus (Ehrenb.) Kütz.	1'7 °/o	(N 52° 40') (5'83—6'35, 11'4—37'8%)	E.
Eunotia arcus Ehrenb.	0'85°/o	(N 51°) (5'12, 39%)	E.
Eunotia diodon Ehrenb.	2'56°/o	(N 47° 47') (5'05—5'43, 9'5—18'4%)	E.
Eunotia Ehrenbergii Ralfs.	3'41°/o	(N 57°—66° 50') (4'42—6'25, 17'1—23'3%)	E.
Eunotia gracilis (Ehrenb.) Rabenh.	1'7 °/o	(N 60° 17'—63° 40') (4'12—6'22, 13'8—18'5%)	E.
Eunotia lunaris Ehrenb.	0'85°/o	(N 57°) (4'02, 66'7%)	E.
Eunotia praerupta Ehrenb.	0'85°/o	(N 60° 17') (6'22, 18'5%)	E.
Eunotia robusta Ralfs.	2'56°/o	(N 57°—66° 50') (4'23—4'86, 11'3—48%)	E.
Eunotia sudetica O. Müll.	0'85°/o	(N 51°) (4'94, 37'1%)	E.
Eunotia tridentula Ehrenb.	4'27°/o	(N 52° 40'—69° 20') (4'12—6'35, 11'9—37'8%)	E.
Fragilaria capucina Desm.	1'7 °/o	(N 52° 40'—69° 20') (4'96—5'83, 11'4—23%)	As.
Fragilaria intermedia Grunow. W. H. Sin.	0'85°/o	(N 66° 50') (5'11, 8'8%)	E.
Fragilaria pinnata Ehrenb. rg.	0'85°/o	(N 41° 25') (4'76, 51'6%)	As.
Fragilaria rhombus Ehrenberg.	1'7 °/o	(N 51°—69° 20') (5'43—5'46, 21'4—67'8%)	E.
Fragilaria brevistriata Grunow. W. H. Sin.	0'85°/o	(N 41° 25') (4'76, 51'6%)	As.
Fragilaria sp.	0'85°/o	(N 66° 50') (5'11, 8'8%)	E.
Gonatozygon Brebissonii de Bary.	6'0 °/o	(N 47° 47'—69° 30') (4'86—6'05, 16'8—39%)	E.
Gonatozygon monotaenium de Bary.	8'55°/o	(N 47° 47'—69° 30') (S 32° 31') (4'90—6'25, 8'3—47'1%)	E. Af.
Gonatozygon spirotaenia de Bary.	0'85°/o	(N 51°) (5'11, 39'9%)	E.

Mastogloia Braunii Grun.	0.85%	(N 35° 36')	Af.
Mastogloia Grevillei W. Sm.	0.85%	(N 41° 19') (4'56, 45'6%)	As.
Mastogloia pusilla Grunow.	0.85%	(N 35° 30')	Af.
Mastogloia elliptica (Ag.) Cleve.	0.85%	(N 69° 30') (5'31, 23'3%)	E.
Mastogloia Macdonaldi Greville.	0.85%	(N 32°) (8'53, 0'2%)	Af.
Mastogloia Smithii var. lacustris Thw.	0.85%	(N 48° 42') (4'65—6'02, 7'9—25'8%)	E.
Meringosphaera baltica Lohm.	0.85%	(N 69° 30') (5'31, 23'3%)	E.
Mesotaenium Braunii de Bary.	3.41%	(N 34° 6'—66° 50') (4'34—6'15, 12'5—35'4%)	E. Am.
Mesotaenium caldariorum (Lagerh.) Hansg.	1.7 %	(N 60° 17'—69° 30') (4'86, 28'6%)	E.
Mesotaenium chlamyosporum de Bary.	1.7 %	(N 66° 50') (5'02—6'00, 16'1—19'1%)	E.
Mesotaenium Endlicherianum Naeg.	11.11%	(N 34°—69° 20') (4'65—6'52, 1'3—37'8%)	E. Af. Am.
Mesotaenium macrococcum var. truncatum West. u.	0.85%	(S 6°) (5'30, 30'5%)	As.
Mesotaenium micrococcum (Kütz.) Kirchn.	4.27%	(N 47° 47'—69° 30') (5'63—6'09, 8'3—23'1%)	E.
Mesotaenium sp.	0.85%	(N 69° 30') (5'83, 23'3%)	E.
Mesotaenium violascens de Bary.	9.4 %	(N 46° 15'—69° 30') (4'99—7'16, 3'38—35'4%)	E.
Navicula sp.	0.85%	(N 46° 15') (7'11, 2'2%)	E.
Navicula appendiculata Ag.	0.85%	(N 69° 20') (5'93, 32'1%)	E.
Navicula atomus Naeg.	0.85%	(N 51°) (5'12, 39%)	E.
Navicula bacilliformis Grun.	1.7 %	(N 47° 47'—69° 20') (5'05—6'09, 18'4—20'2%)	E.
Navicula bacillum Ehrenb.	1.7 %	(N 42° 40'—48° 10') (4'90, 8'3%)	E.
Navicula borealis Ehrenb.	15.38%	(N 42° 40'—69° 30') (4'02—6'52, 9'5—66'7%)	E.
Navicula Brebissonii Kütz.	5.13%	(N 35° 30'—69° 30') (4'12—7'11, 1'9—28'6%)	E. Af.
Navicula cardinalis Ehrenb.	2.56%	(N 42° 40'—51° S 34° 02') (5'12—5'16, 6'8—39%)	E. Af.
Navicula cryptocephala Kütz.	1.7 %	(N 47° 47'—51°) (5'12—5'43, 9'5—39%)	E.
Navicula divergens W. Sm.	0.85%	(N 52° 40') (5'83, 11'4%)	E.
Navicula elliptica var. oblonga Bristol.	2.56%	(N 46° 15') (7'08, 3'8%)	E.
Navicula gastrum Ehrenb.	0.85%	(N 34°) (5'60, 16'7%)	Am.
Navicula globiceps Greg.	0.85%	(N 41° 19') (4'68, 36%)	As.
Navicula intermedia Bristol.	4.27%	(N 46° 15'—69° 30') (4'02—7'16, 3'8—66'7%)	E.
Navicula interrupta W. Sm.	1.7 %	(N 42° 40'—66° 50') (4'86—5'11, 8'8—28%)	E. Am.
Navicula lata Bréb.	0.85%	(N 69° 20') (5'24, 11'9%)	E.
Navicula minima Grun.	0.85%	(N 46° 15') (6'73, 7'2%)	E.
Navicula parva (Ehrenb.) Greg.	0.85%	(N 51°) (5'12, 39%)	E.
Navicula perpusilla Grun.	0.85%	(N 66° 50') (6'05, 16'8%)	E.
Navicula stomatophora Grun.	5.13%	(N 48° 10'—69° 20') (4'90—6'22, 8'3—67'8%)	E.
Navicula terricola Bristol.	4.27%	(N 46° 15'—69° 30') (4'64—7'11, 2'2—28'6%)	E.
Navicula viridis Nitsch.	1.7 %	(N 60° 17') (4'94, 5'01%)	E.
Netrium digitus (Ehrenb. Itzigs) u. Roth.	1.7 %	(N 51°—69° 30') (5'31—6'35, 21'2—37'8%)	E.
Netrium Naegeli (Bréb.) West.	0.85%	(N 34° 06'—66° 50') (5'31—35, 17'2%)	E. Am.

Nitzschia amphioxys Kütz.	2'56°/o	(N 46° 15'—60° 17') (4'70—6'73, 5'9—18'4%)	E.
Nitzschia dubia W. Sm.	0'85°/o	(N 51°) (5'12, 39%)	E.
Nitzschia frustulum (Kütz.) Grun.	0'85°/o	(N 60° 17') (4'70, 12'2%)	E.
Nitzschia hungarica Grun.	1'7 °/o	(N 42° 45'—48° 10') (5'23—11'1%)	E.
Nitzschia vermicularis (Kütz.) Hantzsch.	0'85°/o	(N 63° 40') (4'12, 13'8%)	E.
Onychonema filiforme (Ehrenb.) Roy. u. Biss.	0'85°/o	(S 6°) (5'30, 30'5%)	As.
Penium cruciferum (de Bary) Witte.	0'85°/o	(N 66° 50') (6'05, 16'8%)	E.
Penium curtum Bréb.	1'7 °/o	(N 60° 17', S 37°) (4'86—5'40, 8'6—28'4%)	E.
Penium Jenneri Ralfs.	3'41°/o	(N 48° 10'—69° 20') (4'90—6'18, 8'30—47'1%)	E.
Penium libellula (Focke.) Nordst.	3'41°/o	(N 57°—69° 30') (4'23—6'13, 20'1—48%)	E.
Penium minutum (Ralfs.) Clev.	2'56°/o	(N 47° 47'—60° 17') (4'70—5'43, 9'5—39%)	E.
Penium Mooreanum Arch.	1'7 °/o	(N 51°—69° 20') (5'12—5'24, 11'9—39%)	E.
Penium navicula Bréb.	3'41°/o	(N 48° 10'—60° 50') (4'90—6'22, 8'3—18'5%)	E.
Penium truncatum Ralfs.	2'56°/o	(N 60° 17'—66° 50') (4'96—6'25, 16'8—32'1%)	E.
Pinnularia divergens W. Sm.	0'85°/o	(N 51°) (5'12, 39%)	E.
Pinnularia sp.	0'85°/o	(N 48° 10') (5'23, 11'1%)	E.
Pinnularia molaris Grun.	0'85°/o	(N 51°) (5'12, 39%)	E.
Pinnularia globiceps Greg.	0'85°/o	(N 41° 19') (4'68, 36%)	As.
Pinnularia viridis (Nitzsch.) Ehrenberg.	2'56°/o	(N 34° 06'—51°) (5'11—5'35, 5'94—39%)	E. Am.
Pleurotaenium Ehrenbergii (Bréb.) de Bary.	4'27°/o	(N 5°—66° 50') (4'2—5'16, 8'8—35%)	E.
Pleurotaenium trabecula (Ehrenb.) Naeg.	0'85°/o	(N 66° 60') (6'15, 18'3%)	E.
Pleurotaenium coronatum (Bréb.) Rabenh.	0'85°/o	(N 47° 47') (5'05, 18'4%)	E.
Pleurotaenium truncatum (Bréb.) Naeg.	0'85°/o	(N 48° 10') (5'23, 11'1%)	E.
Rhopalodia musculus (Kütz.) O. Müll.	0'85°/o	(N 35° 30')	Af.
Roya cambrica var. limnetica West. et West.	0'85°/o	(N 35° 39') (4'94, 28'6%)	As.
Roya obtusa (Bréb.) West.	12'8 °/o	(N 41° 25'—69° 30', S 23° 51'—35° 04') (4'22—6'46, 3'8—55'2%)	E. As. Af.
Sphaerosozma vertebratum Ralfs.	0'85°/o	(S 6°) (5'30, 30'5%)	As.
Spirotaenia acuta Hilse	0'85°/o	(N 41° 19') (4'68, 36%)	As.
Spirotaenia bacillaris Lütkem.	1'7 °/o	(N 52° 40'—66° 50') (6'00—6'35, 19'1—37'8%)	E.
Spirotaenia bohémica Lütkem.	0'85°/o	(N 52° 40') (5'83, 11'4%)	E.
Spirotaenia condensata Bréb.	0'85°/o	(N 47° 47') (5'05, 18'4%)	E.
Spirotaenia bryophila (Bréb.) Lütkem.	0'85°/o	(N 35° 30')	Af.
Spirotaenia endospira (Bréb.) Archer.	6'0 °/o	(N 32°—69° 30') (4'23—8'80, 2'2—47'1%)	E. Af.
Spirotaenia erythrocephala Itzigs.	0'85°/o	(N 66° 50') (6'15, 18'3%)	E.

<i>Spirotaenia eboracensis</i> G. S. West.	0.85%	(N 41° 19') (4'68, 36%)	As.
<i>Spirotaenia minuta</i> Thur.	2.56%	(N 38° 15'—51°) (5'05—5'60, 16'7—39%)	E. Am.
<i>Spirotaenia truncata</i> Archer.	0.85%	(N 41° 25') (4'76, 51'6%)	As.
<i>Staurastrum Bieneanum</i> Rabenh.	0.85%	(N 42° 45')	E.
<i>Staurastrum minutissimum</i> Auersw. Reinsch.	0.85%	(N 69° 30') (5'31, 26'2%)	E.
<i>Staurastrum muricatum</i> Bréb.	1.70%	(S 27° 30'—32°) (4'28—4'89, 25'8—36'2%)	Au.
<i>Staurastrum muticum</i> Bréb.	0.85%	(S 27° 30') (5'07, 3'8%)	Au.
<i>Surirella ovalis</i> Bréb.	0.85%	(N 47° 47') (5'43, 9'5%)	E.
<i>Synedra acus</i> Kütz.	0.85%	(N 69° 20') (5'41—6'09, 18'9—20'2%)	E.
<i>Synedra ulna</i> Ehrenb.	3.41%	(N 60° 17'—69° 20') (4'93, 6'52, 8'8—40'2%)	E.
<i>Tetmemorus minutus</i> de Bary.	0.85%	(N 66° 50') (5'11, 8'8%)	E.
<i>Tetracyclus rupestris</i> (A. Br.) Grun.	0.85%	(N 66° 50') (5'11, 8'8%)	E.
Chlorophyceae			
<i>Agloe silvicola</i> (Chodat.) Pascher.	0.85%	(N 51°) (3'50, 20%)	E.
<i>Apiococcus consociatus</i> Korschikoff.	9.4 %	(N 47° 47'—51°, S 6° 40'—37') (3'93—6'02, 8'6—43'5%)	E. As.
<i>Apiocystis Brauniana</i> Naeg.	12.8 %	(N 35° 30'—52° 40', S 37°—37° 30') (4'65—6'02, 0'2—47'1%)	E. As. Af. Au.
<i>Apiocystis</i> sp.	6.0 %	(N 35° 30'—60° 17', S 34° 0'2—38°) (4'65—6'02, 6'8—25'8%)	E. Af. Au.
<i>Askenasyella conferta</i> W. et G. S. West	0.85%	(N 47° 47') (5'43, 9'5%)	E.
<i>Asterococcus limneticus</i> G. M. Smith.	1.7 %	(N 35° 39'—48° 25') (3'93—4'72, 10'2—16'1%)	E. As.
<i>Asterococcus superbus</i> (Cienk), Scherff.	0.85%	(N 51°) (3'50, 20%)	E.
<i>Athrocystis ellipsoidea</i> W. et G. S. W.	1.7 %	(N 32°—35° 30') (8'53, 0'2%)	Af.
<i>Botrydiopsis arrhiza</i> Borzi.	29.2 %	(N 32°—69° 20' S 6°—38°) (3'93—8'80, 0'5—47'1%)	E. As. Af. Au. Am.
<i>Botrydiopsis minor</i> n. sp.	5.0 %	(N 32°—60° 17', S 37° 30' S 24°—31° 30') (4'70—8'80, 0'2—18'2%)	E. Am. As.
<i>Botrydiopsis cuprea</i> n. sp.	1.7 %	(N 38° 10'—59°) (5'51—5'61, 3'8—11'7%)	E.
<i>Botrydiopsis eriensis</i> Snow.	0.85%	(N 48° 42') (4'65—6'02, 7'9—25'8%)	E.
<i>Botrydiopsis minor</i> Schmidle	14.53%	(N 32°—60° 17' S 38°) (4'12—8'80, 0'98—39%)	E. As. Af. Au.
<i>Botrydiopsis spec.</i>	1.7 %	(N 42° 45'—66° 50') (4'64—11'2%)	E. Am.
<i>Botrydiopsis turfosa</i> Pascher	15.0 %	(N 32°—60° 17' S 24°) (4'65—8'80, 0'5—18'2%)	E. As. Af. Am.
<i>Botryococcus terricola</i> Klebs.	1.7 %	(N 35° 30')	Af.
<i>Botryococcus Braunii</i> Kütz.	0.85%	(N 34° 06') (5'35, 17'2%)	Am.
<i>Bumilleriopsis brevis</i> (Gerneck) Printz.	3.41%	(N 35° 39'—69° 20') (3'93—6'09, 9'5—20'2%)	E. As.
<i>Carteria alpina</i> Schmidle	0.85%	(N 48° 10') (5'23, 11'1%)	E.
<i>Carteria elongata</i> Pascher	0.85%	(N 52° 40') (6'18, 47'1%)	E.

<i>Carteria globosa</i> Korschikoff	1'7 ‰	(N 47° 47'—52° 40') (5'23—6'18, 11'1—47'1%)	E.
<i>Carteria Klebsii</i> (Dang.) Francé	12'0 ‰	(N 46° 15'—69° 20') (4'23—7'16, 3'8—67'8%)	E. Am.
<i>Carteria multifilis</i> (Fres.) Dill.	4'27 ‰	(N 46° 15'—69° 20') (4'90—6'75, 5'9—26'2%)	E.
<i>Carteria obtusa</i> Dill.	3'41 ‰	(N 47° 47'—52° 40') (5'23—6'18, 9'5—47'1%)	E.
<i>Carteria oleifera</i> Pascher	2'56 ‰	(N 46° 15'—69° 20') (4'86—6'73, 7'2—28'6%)	E.
<i>Characiopsis Naegeli</i> (A. Br.) Lemm.	0'85 ‰	(N 47° 47') (5'23, 11'1%)	E.
<i>Cladophora fracta</i> Kütz.	0'85 ‰	(N 30° 20') (5'08, 5'8%)	As.
<i>Cladophora glomerata</i> (L.) Kütz.	2'56 ‰	(N 43°—69° 20') (4'12—6'13, 1'9—45'9%)	E. Am.
<i>Chlamydobephlaris brunnea</i> Francé	8'55 ‰	(N 30° 20'—69° 20') (4'70—5'56, 7'5—47'1%)	E. As.
<i>Chlamydomonas alpina</i> Pascher	0'85 ‰	(N 30° 20') (5'08, 5'8%)	As.
<i>Chlamydomonas angulosa</i> Dill.	12'0 ‰	(N 34° 06'—69° 20') (4'90—6'52, 1'0—47'1%)	E. Af. Am.
<i>Chlamydomonas angusta</i> Diesing.	3'41 ‰	(N 48° 10'—69° 20') (4'89—5'46, 8'3—20'2%)	E.
<i>Chlamydomonas Braunii</i> Gorosch.	2'56 ‰	(N 47° 47'—52° 40') (5'32—6'18, 9'5—47'1%)	E.
<i>Chlamydomonas coccifera</i> Goroschankin	0'85 ‰	(N 52° 40') (5'83, 11'4%)	E.
<i>Chlamydomonas communis</i> Perty.	1'7 ‰	(N 60° 17'—65° 50') (4'64—4'70, 11'3—12'2%)	E.
<i>Chlamydomonas Ehrenbergii</i> Gorosch.	4'27 ‰	(N 46° 15'—69° 17') (4'86—6'73, 7'2—28'6%)	E.
<i>Chlamydomonas globulosa</i> Perty	1'7 ‰	(N 52° 40'—69° 20') (4'49—5'83, 16'7—23'3%)	E.
<i>Chlamydomonas Kleinii</i> Schmidle	0'85 ‰	(N 47° 47') (5'05, 18'4%)	E.
<i>Chlamydomonas microscopica</i> G. S. West.	0'85 ‰	(N 32°) (6'95, 6'2%)	Af.
<i>Chlamydomonas minima</i> Korschikoff	0'85 ‰	(N 34° 06') (5'35, 17'2%)	Am.
<i>Chlamydomonas minutissima</i> Korschikoff	1'7 ‰	(N 34° 06'—47° 47') (5'23—5'35, 11'1—17'2%)	E. Am.
<i>Chlamydomonas Reinhardi</i> Dang.	1'7 ‰	(N 46° 15'—47° 47') (5'43—6'75, 5'9—9'5%)	E.
<i>Chlamydomonas reticulata</i> Gorosch.	3'41 ‰	(N 46° 15'—47° 47') (6'73—7'16, 2'2—7'2%)	E.
<i>Chlamydomonas simplex</i> Pascher.	0'85 ‰	(N 47° 47') (5'43, 9'5%)	E.
<i>Chlamydomonas</i> sp.	1'7 ‰	(N 32°—47° 47') (5'46—8'80, 2'2—18'2%)	E. Af.
<i>Chlamydomonas Snowiae</i> Printz.	0'85 ‰	(N 51°) (5'12, 39%)	E.
<i>Chlorella acuminata</i> Gerneck.	0'85 ‰	(N 47° 47') (5'43, 9'5%)	E.
<i>Chlorella ellipsoidea</i> Gerneck.	0'85 ‰	(N 47° 47') (5'23, 11'1%)	E.
<i>Chlorella miniata</i> (Naeg.) Oltm.	5'13 ‰	(N 32°—63° 40') (4'12—6'90, 6'4—39%)	E. Af. Am.
<i>Chlorella saccharophila</i> (Krüg.) Nads.	5'13 ‰	(N 45° 57'—69° 20') (4'34—7'29, 7'2—39%)	E.
<i>Chlorella vulgaris</i> Beijer	33'0 ‰	(N 32°—69° 30', S 24°—27°) (4'02—8'59, 0'2—66'7%)	E. As. Af. Am.
<i>Chlorobotrys ellipsoideus</i> nov. spec.	0'85 ‰	(N 69° 30') (5'31, 23'3%)	Au. E.

<i>Chlorobotrys limnetica</i> G. M. Schmith.	0.85%	(N 51°) (3'50, 20'0%)	E.
<i>Chlorobotrys minor</i> n. sp.	0.85%	(N 35° 30')	E.
<i>Chlorobotrys neglecta</i> Pascher et Geitl.	12.0 %	(N 31° 10'—60° 20') (4'20—8'84, 0'6—47'1%)	E. Af. As. Am.
<i>Chlorobotrys nov. spec.</i>	1.7 %	(N 47° 47'—69° 20') (5'41—6'09, 9'5—20'2%)	E.
<i>Chlorobotrys polychloris</i> Pascher.	36.2 %	(N 30° 20'—60° 20', S 6° 38'—33° 50') (4'12—8'80, 1'3—47'1%)	E. As. Af. Au. Am.
<i>Chlorobotrys regularis</i> (West.) Bohl.	23.93%	(N 30° 20'—69° 30', S 6°—34° 02') (4'12—8'8, 0'5—47'1%)	E. As. Af. Au.
<i>Chlorobotrys viridis</i> n. sp.	6.0 %	(N 38° 10'—69° 30') (5'24—7'11, 2'2—2'02%)	E.
<i>Chlorobotrys viridis terricola</i> n. sp.	0.85%	(N 34° 59') (5'44—5'60, 9'8—16'7%)	E. Am.
<i>Chlorocloster terrestris</i> Pasch.	28.2 %	(N 30°—69° 30', S 6°) (3'93—8'80, 0'4—47'1%)	E. As. Af. Am.
<i>Chlorococcum africanum</i> Reinsch.	3.41%	(N 32°—35° 30') (7'84—8'55, 0'6—3'5%)	Af.
<i>Chlorococcum botryoides</i> (Kütz.) Rabenh.	6.0 %	(N 69° 30', S 6°—32° 31') (4'80—5'96, 0'5—13'6%)	E. As. Af.
<i>Chlorococcum caldarium</i> (Magn.)	0.85%	(N 32°) (7'84—8'55, 0'6—2'3%)	Af.
<i>Chlorococcum grumosum</i> (Richt.)	6.0 %	(N 31° 10'—51° 31', S 27° 30'—32° 31') (4'01—6'90, 5'4—39%)	E. Af. Am. Au.
<i>Chlorococcum humicolum</i> (Naeg.) Rabenh.	88.0 %	(N 32°—69° 30', S 6°—35°) (3'48—8'80, 0'5—67'8%)	E. As. Af. Au. Am.
<i>Chlorococcum infusionum</i> (Schränk.) Menegh.	7.7 %	(N 32°—69° 20', S 6°—27°) (4'56—8'80, 0'2—30'5%)	E. As. Af. Au.
<i>Chlorococcum olivaceum</i> Rabenh.	3.41%	(N 47° 47'—51° 40', S 35° 04') (5'16—6'18, 3'8—47'1%)	E. Af.
<i>Chlorococcum variabile</i> (Hansg.)	0.85%	(S 33° 55') (4'15, 25'8%)	Af.
<i>Chlorococcum viride</i> Ag.	17.95%	(N 32°—69° 30', S 32° 31') (3'48—8'35, 0'98—67'8%)	E. Af.
<i>Chlorochytrium pallidum</i> Klebs.	1.7 %	(N 47° 47') (5'05—5'43, 9'5—18'4%)	E.
<i>Chlorogonium elongatum</i> Dang.	2.56%	(N 47° 47'—69° 20') (5'43—6'13, 4'02—67'8%)	E.
<i>Chlorogonium euchlorum</i> Ehrenb.	2.56%	(N 46° 55'—63° 40') (4'12—7'08, 3'8—18'4%)	E.
<i>Chlorosaccus fluidus</i> Luther.	0.85%	(N 48° 42') (4'65—6'02, 7'9—25'8%)	E.
<i>Chlorosarcina elegans</i> Gerneck	2.56%	(N 47° 47'—59° 43', S 6°) (5'30—5'43, 9'5—30'5%)	E. As.
<i>Chlorosarcina minor</i> Gerneck.	16.41%	(N 32°—60° 17' S 36—37°) (4'12—8'55, 0'6—39%)	E. Af. Au.
<i>Chlorosphaera alismatis</i> Klebs.	6.0 %	(N 32°—66° 10') (5'02—7'45, 7'4—47'1%)	E. Af.
<i>Chlorosphaera angulosa</i> (Corda) Klebs.	2.56%	(N 52° 40'—57°) (3'48—6'18, 45'2—48%)	E.
<i>Chlorosphaera consociata</i> Klebs.	2.56%	(N 47° 47'—48° 10') (4'98—5'43, 9'5—16'3%)	E.
<i>Chlorotylum cataractarum</i> Kütz.	0.85%	(N 51°) (5'43, 67'8%)	E.
<i>Coccomonas orbicularis</i> Stein.	3.41%	(N 46° 15'—66° 50') (4'86—6'73, 7'2—28'6%)	E.
<i>Coccomyxa dispar</i> Schmidle	45.30%	(N 30° 20'—69° 30', S 6° 28') (3'48—8'55, 0'4—37'8%)	E. As. Af. Am. Au.
<i>Coccomyxa lacustris</i> Chodat.	1.7 %	(N 66° 50') (4'64—5'11, 8'8—11'2%)	E.

<i>Coccomyxa subellipsoidea</i> Acton.	0.85%	(N 48° 10') (5'23, 11'1%)	E.
<i>Coccomyxa subglobosa</i> Pascher	0.85%	(N 51°) (3'50, 20'0%)	E.
<i>Coelastrum microsporum</i> Naeg.	1.7%	(N 34° 06'—47° 47') (5'05— 5'35, 16'1—18'4%)	E. As.
<i>Coelastrum proboscideum</i> Bohlin.	0.85%	(N 59°) (5'41, 16'8%)	E.
<i>Crucigenia quadrata</i> Morren.	2.56%	(N 46° 15'—48° 10') (4'0— 6'75, 5'9—11'1%)	E.
<i>Crucigenia rectangularis</i> (A. Br.) Gay.	2.56%	(N 43°—66° 50') (5'56—6'15, 16'9—29'2%)	E. Am.
<i>Cystococcus humicola</i> Naeg.	41.0%	(N 32°—69° 20', S 6°—38°) 3'96—8'30, 0'6—34'1%)	E. As. Af. Am. Au.
<i>Dactylothece Braunii</i> Lagerheim.	15.38%	(N 32°—66° 50' S 6°—6° 40') (4'36—8'59, 0'5—39%)	E. As. Af.
<i>Dactylothece macrococca</i> Hansg.	0.85%	(S 6°) (5'54, 0'5%)	As.
<i>Desmatractum plicatum</i> W. et G. S. West.	0.85%	(S 6° 40') (4'36, 43'5%)	As.
<i>Dichranochaete reniformis</i> Hieron.	0.85%	(N 48° 10') (4'90, 8'3%)	E.
<i>Dictyosphaerium ehrenbergia-</i> <i>num</i> Naeg.	9.4%	(N 30° 20'—69° 20') (5'05— 8'53, 0'2—20'2%)	E. As. Af.
<i>Dictyosphaerium reniforme</i> Bulnh.	0.85%	(N 66° 50') (5'02, 16'1%)	E.
<i>Dispora cuneiformis</i> (Schmidle.) Printz.	1.7%	(N 47° 47', S 6° 40') (4'36— 5'46, 9'5—43'5%)	E. As.
<i>Dispora crucigenioides</i> Printz.	4.27%	(N 42° 45'—69° 20') (3'93— 6'09, 9'5—20'2%)	E. Am.
<i>Elakatothrix acuta</i> Pascher.	3.41%	(N 32°—66° 50') (5'96—8'59, 0'4—47'1%)	E. Af.
<i>Elakatothrix gelatinosa</i> Wille.	6.83%	(N 32°—66° 50', S 6°) (4'65— 8'53, 0'5—25'8%)	E. As. Af.
<i>Elakatothrix viridis</i> (Snow.) Printz.	1.7%	(N 47° 47') (5'43, 9'5%)	E. Af.
<i>Eremosphaera viridis minor</i> G. T. Moore.	3.41%	(N 32°—51°) (5'05—6'95, 6'2—39%)	E. Af.
<i>Eremosphaera minor</i> nov. sp.	0.85%	(S 38°) (4'58, 25'4%)	Au.
<i>Eremosphaera viridis</i> de Bary.	26.5%	(N 30° 20'—69° 30') (3'48— 8'35, 0'98—45%)	E. As. Am. Af. Au.
<i>Eremosphaera viridis major</i> G. T. Moore.	17.95%	(N 32°—69° 30', S 32° 31'— 38°) (5'43—8'35, 0'98— 47'1%)	E. Af. Am. Au.
<i>Excentrosphaera viridis</i> G. T. Moore.	0.85%	(N 30° 56') (4'92, 14'1%)	Am.
<i>Gigantochloris permaxima</i> Pascher.	0.85%	(N 51°) (5'12, 39%)	E.
<i>Gigantochloris minor</i> A. Br.	0.85%	(N 43° 45') (5'56, 16'9%)	E.
<i>Gigantochloris mucosus</i> A. Br.	13.68%	(N 43° 46'—69° 20' S 37°) (4'34—6'95, 8'6—47'1%)	E. Au.
<i>Gigantochloris Schrötteri</i> (Chod.) Lemm.	2.56%	(N 32° 51') (5'12—8'55, 0'6— 39%)	E. Af.
<i>Gloeocystis botryoides</i> Naeg.	20.51%	(N 32°—66° 50', S 6° 38') (4'12—8'55, 0'5—45'6%)	E. As. Af. Au.
<i>Gloeocystis planctonica</i> Lemm.	0.85%	(N 47° 47')	E.
<i>Gloeocystis rupestris</i> Rabenh.	4.27%	(N 32° 51') (5'05—8'59, 0'4—18'4%)	E. Af.
<i>Gloeocystis vesiculosa</i> Naeg.	9.4%	(N 32°—66° 50', S 37° 30') (5'10—8'59, 0'2—37'8%)	E. Af. Au.

<i>Gloeotaenium Loitlersbergia-</i> <i>num</i> Hansg.	8.55%	(N 32° 31'—69° 20', S 6° 40') (4'12—6'13, 1'9—43'5%)	E. As. Af.
<i>Gloeotila contorta</i> Chodat.	0.85%	(N 35° 30')	Af.
<i>Gloeotila protogenita</i> Kütz.	10.25%	(N 30° 30'—69° 30', S 6° 37') (3'48—8'53, 0'2—45'2%)	E. As. Af. Am.
<i>Gonium pectorale</i> Muell.	0.85%	(N 47° 47') (5'05, 18'4%)	E.
<i>Gonium sociale</i> (Dujardin) Warming.	1.7 %	(N 46° 15') (6'73—7'5, 5'9— 7'2%)	E.
<i>Hofmania Lauterbornei</i> (Schmidle) Wille.	1.7 %	(N 46° 15'—30°) (6'75—7'11, 2'2—10'2%)	E.
<i>Hormidium</i> sp.	0.85%	(N 52° 40') (6'18, 47'1%)	E.
<i>Hormidium flaccidum</i> A. Br.	15.38%	(N 34° 0'6—69° 30', S 38°) (4'12—6'13, 1'9—45'9%)	E. Am. Au.
<i>Hermotila</i> sp.	2.56%	(N 38° 10'—48° 42') (4'65— 6'02, 7'9—25'8%)	E.
<i>Hermotila mucigena</i> Borzi.	21.37%	(N 30° 56'—69° 30', S 37°) (4'34—6'73, 7'2—45'9%)	E. As. Am.
<i>Hyalogonium acus</i> (Korsch.) Pascher.	0.85%	(N 47° 47') (5'43, 9'5%)	E.
<i>Kentrosphaera Facciolae</i> Borzi.	6.0 %	(N 46° 51'—52° 40', S 6° 40'— 32° 31') (4'23—6'75, 5'9— 47'1%)	E. As. Af.
<i>Keratococcus raphidioides</i> (Hansg.) Pascher.	0.85%	(N 66° 10') (5'02, 16'1%)	E.
<i>Keratococcus sabulosus</i> Pa- scher.	1.7 %	(N 47° 47'—51°) (5'12—5'46, 9'5—39%)	E.
<i>Kirchneriella lunaris</i> (Kirch.) Moebius	2.56%	(N 57°—69° 30') (4'23— 6'13, 23'3—48%)	E.
<i>Kirchneriella obesa</i> (West.) Schmidle.	1.7 %	(N 48° 10'—52° 40') (5'23— 6'35, 11'1—37'8%)	E.
<i>Leptosira mediciana</i> Borzi.	0.85%	(N 32°) (8'53, 0'2%)	Af.
<i>Mesostigma viride</i> Lauterb.	0.85%	(N 52° 40') (6'35, 37'8%)	E.
<i>Microspora moniliformis</i> Kütz.	0.85%	(N 57°) (3'48, 45'2%)	E.
<i>Microspora quadrata</i> Hazen.	0.85%	(N 47° 47') (5'05, 18'4%)	E.
<i>Microspora stagnorum</i> (Kütz.) Lagerh.	4.27%	(N 47° 47'—57°) (3'48—5'43, 8'3—45'2%)	E. As.
<i>Microspora tenuissima</i> Kütz.	0.85%	(N 66° 50') (4'64, 11'3%)	E.
<i>Microspora Zonata</i> Kütz.	1.7 %	(N 47° 47'—60° 17') (5'05—5'24, 18'4—20'2%)	E.
<i>Monocilia viridis</i> Gerneck.	1.70%	(N 51°) (5'12—48'10, 11'1— 39%)	E.
<i>Monomastix opisthostigma</i> Scherffel.	3.41%	(N 47° 47'—52° 40') (5'23— 6'35%)	E.
<i>Monodus acuminata</i> (Gern.) Chodat.	4.27%	(N 47° 47'—69° 20') (5'12— 5'43, 8'8—39%)	E.
<i>Monodus Chodati</i> Pascher.	1.7 %	(N 48° 42'—52°) (4'65—6'02, 7'9—25'8%)	E.
<i>Monodus ovalis</i> Chodat.	0.85%	(N 66° 50') (5'11, 8'8%)	E.
<i>Mycotetraedron cellare</i> Hansg.	0.85%	(N 46° 30') (6'34, 12%)	E.
<i>Nannochloris bacillaris</i> Naumann.	3.41%	(N 35° 30'—52°, S 6° 40') (4'36—43'5%)	E. As. Af.
<i>Nannocloster belonophorus</i> Pascher.	0.85%	(N 35° 30')	Af.
<i>Nephrocythium Agardhianum</i> Naeg.	13.68%	(N 30° 20'—69° 20', S 37°) (3'48—6'09, 7'9—45'2%)	E. As. Af. Am.
<i>Nephrocythium atlantoideum</i> Bohlin.	0.85%	(S 24°) (5'90, 11%)	Au.
<i>Nephrocythium closterioides</i> Bohlin.	4.27%	(N 46° 15'—60° 17') (4'22— 7'11, 2'2—47'1%)	E.
<i>Oedogonium Boscii</i> (Le Clerc.) Witttr.	1.7 %	(N 60° 17'—66° 50') (5'24— 6'08, 20'2—23'3%)	E.

<i>Oedogonium platygynum</i> Wittr.	0.85%	(N 51°) (5'22, 39%)	E.
<i>Oedogonium spec.</i>	0.85%	(N 52° 40') (6'35, 37'8%)	E.
<i>Oocystis Borgei</i> Snow.	0.85%	(S 28°) (4'38, 1'2%)	Au.
<i>Oocystis crassa</i> Wittr.	1.7 %	(N 48° 10'—52° 40') (4'90—6'18, 8'3—14'1%)	E.
<i>Oocystis elliptica</i> West.	7.83%	(N 43° 30'—52°, S 6°) (5'10—7'11, 1'3—30'6%)	E. As. Am.
<i>Oocystis elliptica</i> var. <i>africana</i> G. S. West.	0.85%	(N 32°) (8'15—8'40, 1'5—3'5%)	Af.
<i>Oocystis elliptica</i> var. <i>minor</i> W. West.	0.85%	(N 48° 10') (5'23, 11'1%)	E.
<i>Oocystis Gigas</i> Archer.	0.85%	(N 51°) (5'43, 11'1%)	E.
<i>Oocystis lacustris</i> Chodat.	1.7 %	(N 38° 10'—51°) (5'43—5'54, 9'9—11'1%)	E.
<i>Oocystis Marsonii</i> Lemm.	6.0 %	(N 47° 47'—69° 30') (4'89—5'51, 8'3—36'2%)	E.
<i>Oocystis Naegelii</i> A. Br.	4.27%	(N 35° 30'—69° 20') (5'24—5'46, 9'5—67'8%)	E.
<i>Oocystis natans</i> (Lemm.) Wille.	4.27%	(N 35° 15'—47° 47', S 32°—40° 38') (4'58—5'90, 1'25—4%)	E. Am. Au.
<i>Oocystis pelagica</i> Lemm.	1.7 %	(N 60° 17', S 36°) (4'86—5'33, 2'4—28%)	E. Au.
<i>Oocystis pusilla</i> Hansgirg.	3.0 %	(N 51°—60° 17' S 31° 30'), (5'12, 6'52, 28'4—39%)	E. Am.
<i>Oocystis sp.</i>	0.85%	(N 52° 40') (6'35, 37'8%)	E.
<i>Oocystis solitaria</i> Wittr.	30.77%	(N 32°—69° 20', S 32° 31'—37°) (4'65—6'95, 1'3—47'1%)	E. Af. Am.
<i>Oocystis rupestris</i> Kirch.	0.85%	(N 41° 19') (4'56—45'6%)	As.
<i>Ophiocythium mucronatum</i> A. Br. Rabenh.	0.85%	(N 47° 47') (5'05, 18'5%)	E.
<i>Palmella miniata</i> (Leibl.)	12.00%	(N 35° 39'—66° 50', S 27°), (3'93—5'43, 0'2—19'1%)	Af. Au. E. As.
<i>Palmella hyalina</i> Rabenh.	1.7 %	(N 47° 47'—52° 40') (5'43—5'83, 9'5—11'4%)	E. Am.
<i>Palmella mucosa</i> Kützing.	0.85%	(N 41° 30')	E.
<i>Palmodyction varium</i> (Naeg.) Lemm.	0.85%	(N 47° 47') (5'43, 9'5%)	E.
<i>Palmodyction viride</i> Kütz.	2.56%	(N 46° 15'—59°) (5'41—7'11, 2'2—16'8%)	E.
<i>Pandorina morum</i> (Müll.) Bory.	6.0 %	(N 51°—69° 20') (4'70—6'52, 11'9—47'1%)	E.
<i>Phacotus lenticularis</i> Stein.	0.85%	(N 60° 17'), (4'70, 12'2%)	E.
<i>Phycopeltis epiphyton</i> Millardet	0.85%	(N 47° 47') (5'05, 18'4%)	E.
<i>Placosphaera opaca</i> Dangeard	1.7 %	(N 47° 47'—52° 40') (5'05—6'18, 18'4—47'1%)	E.
<i>Planophila assymetrica</i> (Gern.) Wille.	12.0 %	(N 32°—52° 40', S 37°), (3'93—8'80, 2'2—28'6%)	E. As. Af.
<i>Planophila laetevirens</i> Gern.	0.85%	(N 47° 47') (5'43, 9'5%)	E.
<i>Platymonas subcordiformis</i> (Wille.) Hazen.	1.7 %	(N 48° 10'—69° 20') (5'23—5'93, 11'1—23%)	E.
<i>Platymonas tetrahele</i> G. S. W.	0.85%	(S 37°) (5'40, 8'6%)	E.
<i>Pleurochloris commutata</i> Pascher.	34.0 %	(N 34° 06'—69° 30' S 31° 30') (3'48—8'55, 0'6—48%)	E. Au. Af. As. Am.
<i>Pleurococcus annulatus</i> Pascher.	4.27%	(N 32°—60° 50'), (4'23—8'53, 1'5—16'8%)	E. Af.
<i>Pleurococcus conglomeratus</i> Artari.	1.7 %	(N 47° 47') (5'05—5'23, 11'1—18'4%)	E.

<i>Pleurococcus aureovirides</i> Kütz.	2'56°/o	(N 30° 20'—52°) (5'10—5'58, 7'5—7'8%)	E. As.
<i>Pleurococcus vulgaris</i> Menegh.	55'72°/o	(N 46° 15'—69° 30') (3'48—7'16, 2'2—67'2%)	E. As. Af. Am.
<i>Polytoma caudata</i> Korsh.	0'85°/o	(N 43° 45') (5'56, 16'9%)	E
<i>Polytoma uvella</i> Ehrenb.	1'7 °/o	(N 30° 20'—47° 47'), (5'05—5'10, 7'5—18'4%)	E. As.
<i>Pteromonas angulosa</i> (Cart.) Lemm.	0'85°/o	(N 47° 47') (5'05, 18'4%)	E.
<i>Pyramidomonas tetrarynchus</i> Schmarda.	2'56°/o	(N 46° 15'—59°) (5'44—7'11, 2'2—47'1%)	E.
<i>Scenedesmus arcuatus</i> Lemm.	0'85°/o	(N 47° 47') (5'43, 9'5%)	E.
<i>Scenedesmus bijugatus</i> (Turpin) Kütz.	1'70°/o	(N 38° 10'—43° 30') (4'12—5'54, 1'7—17'9%)	E. Af.
<i>Scenedesmus brasiliensis</i> Bohlin	0'85°/o	(N 35° 30')	Af.
<i>Scenedesmus incrassatus</i> var. minor, Bohlin	1'7 °/o	(N 38° 10'—48° 10') (5'23—5'54, 9'9—11'1%)	E.
<i>Scenedesmus obliquus</i> (Turp.) Kütz.	4'27°/o	(N 38° 10'—66° 50') (5'23—6'18, 9'9—47'1%)	E.
<i>Scenedesmus quadricaudata</i> (Turp.) Bréb.	2'56°/o	(N 47° 47'—52° 40') (5'05—6'35, 18'4—39%)	E.
<i>Scenedesmus serratus</i> (Corda) Bohlin.	2'56°/o	(N 30° 20'—47° 47') (5'05—5'58, 7'8—18'4%)	E. As. Af.
<i>Scherffelia dubia</i> (Perty.) Pascher.	0'85°/o	(N 60° 17') (6'25, 32'1%)	E.
<i>Schizochlamys deliculata</i> West.	2'56°/o	(N 43° 30'—60° 17') (4'12—6'25, 1'9—32'1%)	E.
<i>Schizochlamys gelatinosa</i> A. Br.	32'5 °/o	(N 32°—69° 20', S 6°) (3'48—8'55, 0'6—54%)	E. As. Af. Am. Au.
<i>Schizochlamys hyalina</i> Fritsch.	1'7 °/o	(N 32°) (7'84—8'55) (0'6—2'6%)	Af.
<i>Sphenochloris urceolata</i> (Printz.) Pascher.	0'85°/o	(N 37°) (5'40, 8'6%)	E.
<i>Stichococcus bacillaris</i> Naeg.	31'62°/o	(N 30° 56'—69° 30', S 6°—6'40'), (3'48—8'55, 0'6—48%)	E. As. Af. Am.
<i>Stichogloea olivacea</i> Chod.	0'85°/o	(N 47° 47') (5'43, 9'5%)	E.
<i>Tetrabeptharis globulus</i> (Zacc) Senn.	0'85°/o	(N 30° 20') (5'10, 7'5%)	As.
<i>Tetracoccus natans</i> (Kirchn.) Lemm.	0'85°/o	(N 35° 30')	Af.
<i>Tetraedrom minimum</i> (A. Br.) Hansg.	2'56°/o	(N 48° 10'—57°) (3'48—5'83, 8'3—45'2%)	E.
<i>Tetraedrom muticum</i> (A. Br.) Hansg.	10'25°/o	(N 47° 47'—69° 20') (4'23—6'25, 16'1—67'8%)	E.
<i>Tetraedrom regulare</i> Kütz.	0'85°/o	(N 52° 40') (6'35, 37'8%)	E.
<i>Tetraspora cylindrica</i> (Wahlenb.) Ag.	0'85°/o	(N 51°) (3'50, 20'0%)	E.
<i>Tetraspora gelatinosa</i> (Vauch.) Desv.	0'85°/o	(N 51° 40') (6'18, 47'1%)	E.
<i>Tetraspora limnetica</i> W. G. S. West.	3'41°/o	(N 47° 47'—52°, S 37°) (5'05—6'18, 18'4—47'1%)	E. Au.
<i>Tetraspora lubrica</i> (Roth.) Ag.	24'78°/o	(N 30° 20'—66° 50') (4'56—8'80, 2'2—45'6%)	E. As. Af. Am.
<i>Trentopohlia aurea</i> (L.) Mart.	0'85°/o	(N 48° 42') (4'65—6'02, 7'9—25'8%)	E.
<i>Trentopohlia iolithus</i> (L.) Wallr.	10'25°/o	(N 43° 45'—60° 17', S 37°) (4'30—6'52, 8'3—39%)	E. Am.
<i>Trentopohlia lagenifera</i> (Hild.) Wille.	2'56°/o	(N 47° 47'—48° 10') (5'05—5'43, 9'5—18'4%)	E.
<i>Trentopohlia umbrina</i> (Kütz.) Born.	2'56°/o	(N 47° 47'—52° 40') (5'23—6'35, 9'5—39%)	E. Am.

<i>Tribonema elegans</i> Pascher.	2.56%	(N 43° 30'—60° 17') (5'08—6'25, 5'8—32'1%)	E. As. Am.
<i>Tribonema minutus</i> G./S. West.	7.7 %	(N 43° 45'—69° 30') (5'22—6'52, 9'5—39%)	E.
<i>Tribonema monochloron</i> Pascher u. Geitl.	2.56%	(N 51°—69° 20') (5'22—6'09, 18'9—39%)	E.
<i>Tribonema viride</i> Pascher.	0.85%	(N 69° 30') (5'31—6'09, 21'2—26'2%)	E.
<i>Trochiscia aspera</i> (Reinsch.) Hansg.	10.25%	(N 32°—60° 17', S 6° 40') (4'36—8'59, 0'4—43'5%)	E. As. Af. Am.
<i>Trochiscia hirta</i> (Reinsch.) Hansg.	4.53%	(N 30° 20'—69° 30') (4'12—8'55, 0'6—47'1%)	As. Af. Am.
<i>Trochiscia minor</i> Hansg.	0.85%	(N 32°) (8'52—8'80, 2'2—18'2%)	Af.
<i>Trochiscia pachiderma</i> (Reinsch.) Hansg.	0.85%	(N 51°) (3'50, 20'0%)	E.
<i>Trochiscia palustris</i> Kütz.	1.7 %	(N 32°—47° 47') (5'43—8'80, 2'2—18'2%)	E. Am.
<i>Trochiscia psammophila</i> Hansg.	0.85%	(N 47° 47') (5'05, 18'4%)	E.
<i>Ulothrix subtilissima</i> Rabenh.	0.85%	(N 52° 40') (6'18, 47'1%)	E.
<i>Ulothrix tenuissima</i> Kütz.	1.7 %	(N 51°—66° 50') (4'64—5'22, 11'2—39%)	E.
<i>Vaucheria aversa</i> Hass.	6.0 %	(N 52° 40'—66° 50') (5'24—6'35, 19'1—47'1%)	E.
<i>Vaucheria dichotoma</i> (L.) Ag.	0.85%	(N 51°) (3'50, 20'0%)	E.
<i>Vaucheria pachyderma</i> Walz.	1.7 %	(N 32°) (7'84—8'55, 0'6—2'6%)	Af.
<i>Vaucheria sessilis</i> (Vauch.) D. C.	0.85%	(N 52° 40') (6'35, 37'8%)	E.
<i>Vaucheria spec.</i>	0.85%	(N 47° 47') (5'05, 18'4%)	E.
<i>Westella botryoides</i> (West.) Wildemann.	6.83%	(N 30° 20'—69° 20') (4'74—8'80, 1'30—39%)	E. As. Af.
<i>Xanthodiscus Lauterbachii</i> Schweg.	0.85%	(S 37°) (5'40, 8'6%)	Au.

Flagellata.

<i>Ancremonas contorta</i> (Klebs.) Lemm.	0.85%	(N 47° 47') (5'05, 18'4%)	E.
<i>Bicoeca lacustris</i> J. Clark.	0.85%	(N 47° 47') (5'05, 18'4%)	E.
<i>Bodo caudatus</i> (Duj.) Stein.	0.85%	(N 47° 47') (5'43, 9'5%)	E.
<i>Bodo celer</i> Klebs.	0.85%	(N 47° 47') (5'43, 9'5%)	E.
<i>Bodo globosus</i> Stein.	0.85%	(N 52° 40') (6'18, 47'1%)	E.
<i>Bodo minimus</i> Klebs.	0.85%	(N 34° 06') (5'35, 17'2%)	Am.
<i>Bodo ovatus</i> Duj.	0.85%	(N 69° 20') (4'74, 15%)	E.
<i>Chilomonas paramaecium</i> Ehrenb.	0.85%	(N 60° 17') (5'24, 20'2%)	E.
<i>Chromulina flavicans</i> (Ehrenb.) Bütschli	2.56%	(N 47° 47'—51°, S 24°) (5'22—5'90, 9'5—39%)	E. Au.
<i>Chromulina ochracea</i> (Ehrenb.) Bütschli	8.55%	(N 30° 20'—69° 20') (4'12—6'18, 1'9—47'1%)	E. As. Af.
<i>Chromulina ovalis</i> Klebs.	0.85%	(N 30° 20') (5'08, 5'8%)	As.
<i>Chromulina verrucosa</i> Klebs.	0.85%	(N 35° 15') (5'11, 5'94%)	Am.
<i>Chrysamoeba radians</i> Klebs.	0.85%	(N 35° 15') (5'11, 5'94%)	Am.
<i>Chrysocapsa planctonica</i> Pascher.	0.85%	(N 48° 25') (3'93, 16'1%)	E.
<i>Chrysopyxis biceps</i> Stein.	0.85%	(N 52° 40') (6'35, 37'8%)	E.
<i>Euglena gracilis</i> Klebs.	1.70%	(N 48° 10'—63° 40') (5'23, 11'1%)	E.
<i>Eutreptia viridis</i> Perty.	0.85%	(N 63° 40') (4'12, 13'8%)	E.

<i>Monas vulgaris</i> (Cienk.) Senn.	1.7 %	(N 32°—48° 42') (4'65—6'95, 6'2—25'8%)	E. Af.
<i>Ochromonas crenata</i> Klebs.	0.85%	(N 34° 0'6') (5'35, 17'2%)	Am.
<i>Ochromonas variabilis</i> H. Meyer.	0.85%	(N 59°) (5'41, 16'8%)	E.
<i>Oicomonas mutabilis</i> Kent.	0.85%	(N 51°) (3'50, 20'0%)	E.
<i>Oicomonas termo</i> (Ehrenb.) Kent.	4.27%	(N 35° 30'—52° 40') (5'22— 6'35, 9'8—47'1%)	E. Af.
<i>Petalomonas angusta</i> (Klebs.) Lemm.	0.85%	(N 43° 30') (5'81, 30'6%)	Am.
<i>Pleuromonas jaculans</i> Periy.	0.85%	(N 48° 10') (5'23, 11'1%)	E.
<i>Rhynchomonas nasuta</i> (Stokes.) Klebs.	0.85%	(N 30° 20') (5'08, 5'8%)	As.

TABLE III.

The frequency of the most characteristic and leading species in % of their occurrence

C = Chlorophyceae, S = Schizophyta, Z = Zygomycota

Nr.	Systematic	Species	Occurrence %
1	C	<i>Chlorococcum humicolum</i>	86.32
2	C	<i>Pleurococcus vulgaris</i>	55.72
3	C	<i>Coccomyxa dispar</i>	45.30
4	S	<i>Microcystis pulvereae</i>	41.88
5	C	<i>Cystococcus humicola</i>	40.17
6	C	<i>Chlorobotrys polychloris</i>	35.90
7	S	<i>Nostoc humifusum</i>	35.30
8	C	<i>Pleurochloris commutata</i>	33.33
9	C	<i>Schizochlamys gelatinosa</i>	32.50
10	C	<i>Chlorella vulgaris</i>	31.62
11	C	<i>Stichococcus bacillaris</i>	31.62
12	C	<i>Oocystis solitaria</i>	30.77
13	C	<i>Botrydiopsis arrhiza</i>	28.20
14	C	<i>Chlorocloster terrestris</i>	28.20
15	C	<i>Eremosphaera viridis</i>	26.50
16	S	<i>Aphanocapsa testacea</i>	24.78
17	C	<i>Tetraspora lubrica</i>	27.78
18	C	<i>Chlorobotrys regularis</i>	23.93
19	S	<i>Pleurocapsa cuprea</i>	23.10
20	S	<i>Chroococcus minutus</i>	21.37
21	C	<i>Hormotila mucigena</i>	21.37
22	S	<i>Nostoc commune</i>	20.51
23	C	<i>Gloeocystis botryoides</i>	21.51
24	S	<i>Chroococcus turgidus</i>	18.80
25	C	<i>Eremosphaera viridis terricola</i>	17.95
26	C	<i>Protococcus viridis</i>	17.95
27	S	<i>Anabaena variabilis</i>	16.41
28	C	<i>Chlorosarcina minor</i>	16.41
29	C	<i>Dactylothece Braunii</i>	15.38
30	Z	<i>Navicula borealis</i>	15.38
31	C	<i>Botrydiopsis minor</i>	14.53
32	C	<i>Hormidium flaccidum</i>	14.53
33	C	<i>Trochiscia hirta</i>	14.53
34	C	<i>Botrydiopsis turfosa</i>	13.68
35	C	<i>Gloeococcus mucosus</i>	13.68
36	C	<i>Nephrocystium Agardhianum</i>	13.68
37	S	<i>Aphanocapsa montana</i>	12.8
38	Z	<i>Roya obtusa</i>	12.8
39	C	<i>Apiocystis Brauniana</i>	12.8
40	S	<i>Chroococcus limneticus</i>	12.—
41	S	<i>Nostoc carneum</i>	12.—
42	S	<i>Nostoc verrucosum</i>	12.—
43	C	<i>Carteria Klebsii</i>	12.—
44	C	<i>Chlamydomonas angulosa</i>	12.—
45	C	<i>Chlorobotrys neglecta</i>	12.—
46	C	<i>Palmella miniata</i>	12.—
47	C	<i>Planophila assymetrica</i>	12.—
48	Z	<i>Mezotaenium Endlicherianum</i>	11.11
49	S	<i>Microcystis firma</i>	10.25
50	Z	<i>Cylindrocystis Brebissonii</i>	10.25
51	Z	<i>Diatoma vulgare</i>	10.25
52	C	<i>Gloeotila protoconiza</i>	10.25
53	C	<i>Tetraedron muticum</i>	10.25
54	C	<i>Trentepohlia iolithus</i>	10.25
55	C	<i>Trochiscia aspera</i>	10.25

TABLE IV.

Soil algae found in 5 parts of the world.

Schizophyta: *Microcystis pulvereae*.

Chlorophyceae: *Chlorella vulgaris*, *Chlorococcum humicolum*, *Coccomyxa dispar*, *Cystococcus humicola*, *Eremosphaera viridis*, *Gloeotila protogenita*, *Pleurochloris commutata*, *Pleurococcus vulgaris*, *Schizochlamys gelatinosa*.

TABLE V.

Soil algae determined only in the soil samples of Asia.

Schizophyta: *Anabaena gelatinicola*, *Gloeocapsa atrata*, *Lyngbia perelegans*, *Microcystis protocystis*, *Sacconema rupestris*, *Schizothrix penicillata*, *Symploca cartilaginea*.

Chlorophyceae: *Cladophora fracta*, *Chlamidomonas alpina*, *Dactylothece macrococca*, *Desmatractum plicatum*, *Oocystis rupestris*, *Tetrabeptharis globulus*.

Zygophyta: *Achnanthes minutissima*, *A. longipes*, *Fragillaria brevistriata*, *F. capucina*, *F. pinnata*, *Mastogloia Grewillei*, *Mesotaenium macrococcum* var. *truncatum*, *Navicula globiceps*, *Onychonema filiforme*, *Pinnularia globiceps*, *Roya cambrica* var. *limnetica*, *Sphaerososma vertebratum*, *Spirotaenia acuta*, *Sp. eboracensis*, *Sp. truncata*.

Flagellatae: *Chromulina ovalis*, *Rhynchomonas nasuta*.

TABLE VI.

Species found only in the soil samples of Africa.

Schizophyta: *Anabaena* sp., *A. flos-aquae*, *A. Füllebornii*, *Aphanocapsa endolithica*, *A. Koordersi*, *A. sp.*, *Chamaesiphon africanus*, *Calothrix aeruginea*, *C. parietina* var. *africana*, *Chroococcus* sp., *Chr. schizodermaticus*, *Celosphaerium confertum*, *C. Goetzei*, *Gloeocapsa compacta*, *Gl. decorticans*, *Gl. gelatinosa*, *Gl. gigas*, *Gl. Küetzingiana*, *Gl. quaternaria*, *Gl. sabulosa*, *Holopedia bella*, *O. homogenea*, *O. jenensis*, *O. Meslini*, *Phormidium rubroterricola*, *Ph. uncinatum*, *Radaisia cornuana*, *Schizotrix elongata*, *Sch. Gomontii*, *Scytonema Archangelii* f. *minus*, *Sc. Bewsii*.

Chlorophyceae: *Athrocystis ellipsoidea*, *Botryococcus terricola*, *Chlamidomonas microscopica*, *Chlorococcum caldariorum*, *Chl. variabile*, *Gloeotila contorta*, *Leptosira mediana*, *Nannocloster belonophorus*, *Oocystis elliptica* var. *africana*, *Scenedesmus brasiliensis*, *Schizochlamys hyalina*, *Tetracoccus natans*, *Trochiscia minor*, *Vaucheria pachyderma*.

Zygophyta: *Mastogloia Braunii*, *M. pusilla*, *M. Macdonaldii*, *Rhopalodia musculus*, *Spirotaenia bryophila*.

TABLE VII.

Algae found only in the soil samples of America.

Schizophyta: *Anabaena sphaerica*, *Chroococcus aurantiifuscus*, *Chr. turicensis*, *Gloeocapsa aeruginosa*, *Microcystis pallida*, *Nostoc cuticulare*, *Symploca funicularis*, *Tolypothrix tenuis*.

Chlorophyceae: *Botryococcus Braunii*, *Chlamydomonas minima*, *Eremosphaera viridis*.

Zygophyta: *Achnanthes exigua*, *Caloneis latiuscula*, *Cymbella amphicephala*, *Navicula gastrum*.

Flagellatae: *Bodo minimus*, *Chromulina verrucosa*, *Chrysamoeba radians*, *Ochromonas crenata*, *Petalomonas angusta*, *Spironema multiciliatum*.

TABLE VIII.

Algae determined only in the soil samples of Australia.

Schizophyta: *Oscillatoria* sp., *Plectonema capitatum*, *Pl. tenue*, *Stigonema minutissimum*.

Chlorophyceae: *Eremosphaera minor* n. sp. *Nephrocystium atlantoideum*, *Oocystis Borgei*.

TABLE IX.

Soil algae determined in some hungarian alkali soils.

Short description of the experiment fields where the samples have been taken.

1. Pasture. Very, hard, dry, loamy alkali soil. Solontschaktyp.
2. Pasture. Very, hard, dry, loamy alkali soil. Solontschaktyp.
3. Pasture. Very, hard, dry, loamy alkali soil. Solontschaktyp.
4. Hard, loamy alkali soil. Solontschaktyp. forested with *Tamarix africana*.
5. Hard, loamy alkali soil. Solontschaktyp. forested with *Quercus robur*.

Species	Nr. of the origin	Ph	Total salt content ‰	Na ₂ CO ₃ ‰
Schizophyta — Schizophyceae				
<i>Anabaena cylindrica</i> Lemm	4	6'66	0'1‰	0'032
<i>Aphanocapsa salinarum</i> Hansg.	5	6'78	"	0'037
<i>Aphanocapsa testacea</i> Naeg.	1	6'96	"	0'027
<i>Chroococcus dispersus</i> (v. Keissl.) Lemm.	5	6'78	"	0'037
<i>Chroococcus pallidus</i> Naeg.	5	6'78	"	0'037
<i>Chroococcus turgidus</i> (Kütz.) Naeg.	5	6'78	"	0'037
<i>Gloeotheca coerulea</i> Geitler	3	7'08	"	0'032
<i>Microcystis flosaquae</i> (Wittr.) Kirchn.	5	6'78	"	0'037
<i>Microcystis holsatica</i> Lemm.	4	6'66	"	0'032
<i>Microcystis pulvereae</i> (Wood.) Mig.	1	6'96	"	0'027
<i>Myxosarcina chroococcoides</i> Geitler	5	6'78	"	0'037
<i>Nostoc Linckia</i> (Roth.) Born.	5	6'78	"	0'037
<i>Nostoc minutissimum</i> Kütz.	1	6'96	"	0'027
<i>Oscillatoria nigra</i> Vauch	1	6'96	"	0'027
<i>Oscillatoria sancta</i> Kütz.	1	6'96	"	0'027
<i>Pleurocapsa cuprea</i> Hansg.	4	6'66	"	0'032
<i>Pleurocapsa fluviatilis</i> Lagerh.	5	6'78	"	0'037
<i>Pleurocapsa minor</i> Hansg.	5	6'78	"	0'037
<i>Pseudocapsa dubia</i> Ercegović	3	7'08	"	0'040
<i>Synechococcus elongatus</i> Naeg.	5	6'78	"	0'037
Zygophyta — Zygothryceae				
<i>Bacillaria paradoxa</i> Gmel.	1	6'96	"	0'027
<i>Cylindrocystis Brebissonii</i> Menegh.	1'3	6'97—7'08	"	0'027—0'040
<i>Cylindrocystis crassa</i> de Bary.	2	6'93	"	0'027
<i>Diatoma hiemale</i> (Lyngb.) Heib.	1,2,3,5	6'78—7'08	"	0'027—0'040
<i>Gomphonema constrictum</i> Ehrenb.	1	6'96	"	0'027
<i>Mesotaenium caldariorum</i> (Lagerh.) Hansg.	3	7'08	"	0'032
<i>Mesotaenium de Greyi</i> var. <i>tenuis</i>	1	6'96	"	0'027
<i>Navicula Brebissonii</i> Kütz.	1	6'96	"	0'027
<i>Navicula bacillum</i> Ehrenb.	2	6'93	"	0'027
<i>Navicula cardinalis</i> Ehrenb.	5	6'78	"	0'037
<i>Navicula cryptocephala</i> Kütz.	5	6'78	"	0'037
<i>Navicula sculpta</i> Ehrenb.	5	6'78	"	0'037
<i>Navicula terricola</i> Bristol	2	6'93	"	0'027
<i>Pinnularia viridis</i> Nitsch.	1	6'96	"	0'027
<i>Roya obtusa</i> (Bréb.) West.	1	6'96	"	0'027

Species	Nr. of the origin	Ph	Total salt content %	Na ₂ CO ₃ %
Euthallophyta — Chlorophyceae				
Botrydiopsis arrhizo minor n. sp.	2.5	6'78—6'93	0'1	0'027—0'045
Botrydiopsis minor Schmidle.	1	6'96	"	0'027
Botryococcus terrestris n. spec.	3	7'08	"	0'032
Bumilleriopsis brevis (Gerneck.) Prinz.	4	6'66	"	0'032
Carteria Dangeardii Troitzkeja	2	6'93	"	0'027
Carteria Klebsii (Dang.) Francé	2.3	6'93—7'08	"	0'027—0'040
Carteria obtusa Dill.	4	6'66	"	0'032
Carteria quadrangulata Pascher	3	7'08	"	0'032
Chlamydomonas Cienkowski Schmidl.	2	6'93	"	0'027
Chlamydomonas Ehrenbergii Gorosch.	1	6'96	"	0'027
Chlamydomonas Reinhardi Dang.	1	6'96	"	0'027
Chlorobotrys limnetica G. M. Schmith.	2	6'93	"	0'027
Chlorobotrys minima	1.2	6'93—6'96	"	0'027
Chlorobotrys neglecta Pascher et Geitl.	1	6'96	"	0'027
Chlorobotrys polychloris Pascher	2.3.4	6'66—7'08	"	0'027—0'040
Chlorobotrys regularis (West.) Bohl.	5	6'78	"	0'037
Chlorobotrys viridis nova sp.	2	6'93	"	0'027
Chlorocloster terrestris Pascher	1.2	6'93—6'96	"	0'027—
Chlorococcum humicolum (Naeg.) Rabenh.	1.2.3.4.5	6'66—7'08	"	0'027—0'040
Chlorosarcina minor Gerneck.	2.3.4	6'66—7'08	"	0'027—0'040
Chlorosphaera angulosa (Corda) Klebs.	4	6'66	"	0'032
Coccomyxa dispar Schmidle.	2.3.4.5	6'66—7'08	"	0'027—0'040
Cystococcus humicola Naeg.	4	6'66	"	0'032
Dactylothece Braunii Lagerheim.	5	6'78	"	0'037
Eremosphaera viridis de Bary	1.4	6'66—6'96	"	0'027—0'032
Eremosphaera viridis minor G. T. Moore.	2.3.5	6'78—7'08	"	0'027—0'040
Gloetila protogenita Kütz.	3	7'08	"	0'038
Gonium pectorale Muell.	1.2	6'93—6'96	"	0'027
Hormidium flaccidum A. Br.	1.2.3.4.5	6'66—7'08	"	0'027—0'037
Hormotila gelatinosa	1	6'96	"	0'027
Microspora quadrata Hazen	2	6'93	"	0'027
Nephroclythium Agardhianum Naeg.	3	7'08	"	0'042
Oocystis elliptica West.	5	6'78	"	0'037
Oocystis crassa Wittr.	1.2.5	6'78—6'96	"	0'027—0'037
Oocystis natans (Lemm.) Wille.	3	7'08	"	0'032
Oocystis pelagica Lemm.	3—5	6'78—7'08	"	0'032—0'037
Planophila assymetrica (Gern.) Wille.	1.3.4	6'66—7'08	"	0'027—0'038
Pleurococcus annulatus Pascher.	2	6'93	"	0'027
Polytomella agilis de Beauverepaire.	5	6'78	"	0'037
Schizochlamys gelatinosa A. Br.	3.4.5	6'66—7'08	"	0'032—0'037
Stichogloea olivacea Chod.	3	7'08	"	0'032
Tribonema monochloron Pascher et. Geitl.	2.3	6'93—7'08	"	0'027—0'040
Tribonema viride Pascher.	1	6'96	"	0'027
Trochiscia hirta (Reinsch.) Hansg.	1.2.3.4.5	6'66—7'08	"	0'027—0'037
Flagellatae				
Chromulina flavicans (Ehrenb.) Bütschli	4	6'66	"	0'032
Chromulina ochracea (Ehrenb. Bütschli.)	1.2.4	6'66—6'96	"	0'027—0'036
Scytomonas pusilla Stein.	2	6'93	"	0'027

TABLE X.

Soil algae determined in the soils of the grand africain dessert Sahara. Situated between 32° and 16 degrees of the latitude N.

Short description of the ecological groups of the origins.

- I. Oasis.
- II. Typical dessert soils a) sand (arab: erg), b) loamy or clayey soils covered with little stones (arab: reg), c) loamy or clayey soils covered with great stones or rocks (arab: hamada), d) loamy or clayey grounds of dry salt lakes.
- III. Steppes and savannes.
- IV. Rocky grounds in the high mountains (Ahaggar, Atlas).
- V. Humid loamy soils.
- VI. Tropical loamy soils.
- VII. Forest soils (I. oam) in the high mountains Atlas.

Species	ph	Water content %	Ecological group	Frequ. %
Schizophyta. — Schizophyceae.				
Anabaena catenula (Kütz.) Bonn et Flah.	7.6	—	IIa III	18
Anabaena constricta (Szaf.) Geitl	7.6	1.6	II d	9
Anabaena flosaquae (Lyngb.) Bréb	7.3—7.7	0—1.3	IIa	9
Anabaena Levanderi Lemm.	7.6	0.0	IV	9
Anabaena oscillarioides Bory	7.3	1.3	IIa	9
Anabaena sp.	7.4	0.0	II d	9
Aphanocapsa elachista W. et G. S. W.	7.2	0.0	IV	9
Aphanocapsa Grevillei (Hass) Rabenh.	7.5	0.0	IIa	9
Aphanocapsa pulchra (Kütz.) Rabenh.	7.0—7.6	0—15.3	I	9
Aphanocapsa rivularis (Carmisch) Rabenh.	8.4	1.8	IIb	9
Aphanocapsa testacea Naeg.	7.2	0.0	IIa	9
Aphanothece microspora (Menegh.) Rabenh.	7.6	—	III	9
Aphanothece pallida (Kütz.) Rabenh.	7.0	—	I	9
Aphanothece stagnina (Spreng.) A. Br.	7.6	0.0	IIa	9
Chlorogloea microcystoides Geitl.	8.0	1.8	IIb	9
Chroococcus turgidus (Kütz.) Naeg.	7.6	—	IIa	9
Gloeocapsa dermochroa Naeg.	7.7	6.0	VI	9
Gloeocapsa Itzigsonii (Born) Hansg.	7.0	—		9
Syn. Gloeocapsa magma var. Itzigsonii (Born.) Hansg.			I	9
Syn. Gloeocapsa magma (Bréb.) Kütz.	7.7	0.0	VI	9
Microcystis elabens (Menegh.) Kütz.	7.0	—	I	9
Microcystis orissica W. et West.	7.0	—	I	9
Microcystis pseudofilamentosa Crow.	7.5	0.0	IIa	9
Microcystis pulvereae (Wood) Mig.	7.3—7.7	0—1.6	I, IIa	9
			IIb, II d	
			IV, V, VI	6
Mycoderma Götzei Schmidle	7.0—7.7	0	VI, I	18
Nostoc carneum Ag.	7.7	0.0	VI	9
Nostoc commune Vauch.	7.0—8.0	0—1.8	I, IIb, III	27
Nostoc elgonense Naum.	7.6	15.3	I	9
Nostoc ellipso sporum (Desm.) Rabenh.	7.0—7.6	15.3	I, IIa, III	27
Nostoc gelatinosum Schousboe	7.8	16.3	IIc	9
Nostoc humifusum Carm.	7.3—7.7	0	IIc, VI	18
Nostoc minutissimum Kütz.	7.2	0	IIc, VI	9
Nostoc muscorum Kütz.	7.6	—	III	9
Nostoc paludosum Kütz.	7.3	1.3	IIa	9
Nostoc repandum W. et G. S.	7.6	—	III	9
Oscillatoria articulata Gardner	7.6	5.0	I	9
Oscillatoria Meslini Frémy	7.6	—	III	9
Oscillatoria sancta Kütz.	7.0	—	V	9

Species	ph	Water content %	Ecological group	Frequ. %
Phormidium Hansgirgei Schmidle.	7.0	—	I	9
Pleurocapsa cuprea Hansg.	7.0—8.2	0—15.3	IIa, I, IIa	45
Pleurocapsa minor Hansg.	7.7	0.0	VI	9
Schizothrix purpurascens Gom. Kütz.	7.6	5.0	I	9
Scytonema myochrous (Dillw.) Ag.	7.3	0.0	VI	9
Tolypothrix rivularis Hansg.	7.2	—	I	9
Zygophyta.				
Achnantes linearis W. Sm.	7.0	—	I	9
Closterium rostratum Ehrenb.	7.2	—	I	9
Cylindrocystis Brebissonii Menegh.	7.0	—	I	9
Diatoma hiemale (Lyngb.) Heib.	7.0	—	I	9
Diatomella Balfouriana Grév.	7.0	—	I	9
Fragilaria intermedia Grunw. W. H. Sin.	7.6	15.3	I	9
Fragilaria leptostauron (Ehr.) Hustedt.	7.2	—	I	9
Fragilaria tenuicollis Heiberg.	7.0	—	I	9
Navicula anceps Ehrenberg.	7.2	—	I	9
Navicula viridula Kütz.	7.6	15.3	I	9
Netrium digitus (Ehrenb.) Itzigs.	7.2	—	I	9
Netrium interruptum (Bréb) Lütken.	7.2	—	I	9
Netrium oblongum Lütken.	7.6	15.3	I	9
Euthallophyta. — Chlorophyceae.				
Apiocystis Brauniana Naeg.	7.0	—	V	9
Apiococcus consociatus Korschikoff.	7.2—8.2	0—3.6	IIa, IIc, I	27
Botrydiopsis arrhiza Borzi.	7.6	15.3	I	9
Botrydiopsis arrhiza minor Schmidle.	8.2	—	IIa	9
Chlorococcum humicola (Naeg.) Rabenhorst.	7.0—8.2	0—3.6	IIb, IIa, I, IIa	54
Chlorobotrys polychloris Pascher Rabenh.	7.3—7.6	1.3—15.3	V, IIc	18
Cystococcus humicola Naeg.	7.3—7.4	0—1.3	I, IIa	9
Eremosphaera viridis de Bary.	7.6	5.0	IIa	9
Eremosphaera viridis terricola.	7.0—7.6	0—5.0	I	9
Gloeococcus mucosus A. Br.	7.2	—	IIb, I, V	27
Gloeocystis botryoides Naeg.	7.4—7.6	0	I	9
Gloeocystis ampla Kütz. gigas Kütz. Lager.	7.2—7.6	0	IIa, IIb	18
Gloeocystis rupestris Rabenh.	7.4—7.5	0	IIa	9
Hormidium flaccidum A. Br.	7.6	5.0	IIb, IIa	18
Oocystis rupestris Kirch.	7.0	—	I	9
Oocystis solitaria Wittr.	7.6	3.6	V	9
Palmella hyalina Rabenh.	7.4	0	I	9
Palmella miniata Leibl.	7.3—7.8	0—16.3	IIb	9
Planophyta asymetrica Wille. Gern. (Syn. Chlorotetras Gern.)	7.3—7.6	1.3—3.6	IIb, I, IIa, IV	36
Pyrospora mirabilis W. et. G. S.	7.6	3.6—5.0	I, IIa	18
Schizochlamys gelatinosa A. Br.	7.0—7.6	0—1.6	I	9
Tetraspora cylindrica Ag.	7.0	—	IIb, IIa, V	27
Tetraspora lubrica Ag.	7.0	—	V	9
Ulothrix zonata Kütz.	7.6	5.0	V	9





