

DET KONGELIGE DEPARTEMENT
FOR HANDEL, SJØFART, INDUSTRI, HÅNDVERK OG FISKERI

NORGES SVALBARD- OG ISHAVS-UNDERSØKELSER
LEDER: ADOLF HOEL

SKRIFTER OM SVALBARD OG ISHAVET

Nr. 76

LICHENS FROM JAN MAYEN

COLLECTED ON NORWEGIAN EXPEDITIONS
IN 1929 AND 1930

BY

B. LYNGE

WITH 1 MAP AND 2 PLATES



OSLO

I KOMMISJON HOS JACOB DYBWAD

1939

RESULTS OF THE NORWEGIAN EXPEDITIONS TO SVALBARD 1906—1926 PUBLISHED IN OTHER SERIES

(See Nr. 1 of this series.)

The results of the Prince of Monaco's expeditions (Mission Isachsen) in 1906 and 1907 were published under the title of 'Exploration du Nord-Ouest du Spitsberg entreprise sous les auspices de S. A. S. le Prince de Monaco par la Mission Isachsen', in *Résultats des Campagnes scientifiques*, Albert I^{er}, Prince de Monaco, Fasc. XL—XLIV. Monaco.

ISACHSEN, GUNNAR, Première Partie. Récit de voyage. Fasc. XL. 1912. Fr. 120.00.

With map: Spitsberg (Côte Nord-Ouest). Scale 1:100 000. (2 sheets.) Charts: De la Partie Nord du Foreland à la Baie Magdalena, and Mouillages de la Côte Ouest du Spitsberg. ISACHSEN, GUNNAR et ADOLF HOEL, Deuxième Partie. Description du champ d'opération. Fasc. XLI. 1913. Fr. 80.00.

HOEL, ADOLF, Troisième Partie. Géologie. Fasc. XLII. 1914. Fr. 100.00.

SCHETELIG, JAKOB, Quatrième Partie. Les formations primitives. Fasc. XLIII. 1912. Fr. 16.00.

RESVOLL HOLMSEN, HANNA, Cinquième Partie. Observations botaniques. Fasc. XLIV, 1913. Fr. 40.00.

A considerable part of the results of the ISACHSEN expeditions in 1909 and 1910 has been published in *Videnskapsselskapets Skrifter. I. Mat.-Naturv. Klasse. Kristiania (Oslo)*.

ISACHSEN, GUNNAR, Rapport sur l'Expédition Isachsen au Spitsberg. 1912, No. 15. Kr. 5,40.

ALEXANDER, ANTON, Observations astronomiques. 1911, No. 19. Kr. 0,40.

GRAARUD, AAGE, Observations météorologiques. 1913, No. 1. Kr. 2,40.

HELLAND-HANSEN, BJØRN and FRIDTJOF NANSEN, The sea west of Spitsbergen. 1912, No. 12. Kr. 3,60.

ISACHSEN, GUNNAR, The hydrographic observations. 1912, No. 14. Kr. 4,20.

With chart: Waters and anchorages on the west and north coast. Publ. by the Norw. Geogr. Survey, No. 198.

HOEL, A. et O. HOLTEDAHL, Les nappes de lave, les volcans et les sources thermales dans les environs de la Baie Wood au Spitsberg. 1911, No. 8. Kr. 4,00.

GOLDSCHMIDT, V. M., Petrographische Untersuchung einiger Eruptivgesteine von Nord-westspitzbergen. 1911, No. 9. Kr. 0,80.

BACKLUND, H., Über einige Olivinknollen aus der Lava von Wood-Bay, Spitzbergen. 1911, No. 16. Kr. 0,60.

HOLTEDAHL, OLAF, Zur Kenntnis der Karbonablagerungen des westlichen Spitzbergens. I. Eine Fauna der Moskauer Stufe. 1911, No. 10. Kr. 3,00. II. Allgemeine stratigraphische und tektonische Beobachtungen. 1912, No. 23. Kr. 5,00.

HOEL, ADOLF, Observations sur la vitesse d'écoulement et sur l'ablation du Glacier Lilliehöök au Spitsberg 1907—1912. 1916, No. 4. Kr. 2,20.

VEGARD, L., L'influence du sol sur la glaciation au Spitsberg. 1912, No. 3. Kr. 0,40.

ISACHSEN, GUNNAR, Travaux topographiques. 1915, No. 7. Kr. 10,00.

With map: Spitsberg (Partie Nord-Ouest). Scale 1:200 000 (2 sheets).

GUNNAR ISACHSEN has also published: Green Harbour, in *Norsk Geogr. Selsk. Aarb.*, Kristiania, 1912—13, Green Harbour, Spitsbergen, in *Scot. geogr. Mag.*, Edinburgh, 1915, and, Spitsbergen: Notes to accompany map, in *Geogr. Journ.*, London, 1915.

All the above publications have been collected into two volumes as *Expédition Isachsen au Spitsberg 1909—1910. Résultats scientifiques. I, II. Christiania 1916*.

As the result of the expeditions of ADOLF HOEL and ARVE STAXRUD 1911—1914 the following memoir has been published in *Videnskapsselskapets Skrifter. I. Mat.-Naturv. Klasse*.

HOEL, ADOLF, Nouvelles observations sur le district volcanique du Spitsberg du Nord. 1914, No. 9. Kr. 2,50.

Expeditions of TH. VOGT 1925 and 1928:

STØRMER, LEIF, Downtonian Merostomata from Spitsbergen. — *Skr. Norske Vid.-Akad. I. Mat.-Nat. Kl.* 1934. No. 3. Kr. 3,00.

The following topographical maps and charts have been published separately:

Maps:

Bear Island. 1:25 000. 1925. Kr. 10,00.

Bear Island. 1:10 000. (In six sheets). 1925. Kr. 30,00.

East Greenland. Eirik Raudes Land from Sofiasund to Youngsund. 1:200 000. 1932. Kr. 5,00.

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A. W. BRØGGERS BOKTRYKKERI A/S

Lichenological Investigation of Jan Mayen.

The first to collect lichens in Jan Mayen was the Norwegian North Atlantic Expedition (den Norske Nordhavs-Expedition) in 1876—78. Dr. D. C. Danielssen then collected a few lichens which were determined by Th. M. Fries, Upsala, and included into his paper on the results of the Austrian expedition.

These lichens are, with Th. Fries's determinations: *Gyrophora erosa* (Web.) Ach. **torrefacta* (Schrad.) Th. Fr., *Gyrophora proboscidea* (L.) Ach., *Parmelia lanata* (L.) Wallr., *Stereocaulon denudatum* Flk. *β pulvinatum* (Schaer.) Flk., and *Stereocaulon tomentosum* Fr. **alpinum* (Laur.) Th. Fr.

Next came the Austrian expedition in 1882—83 (Die Österreichische Polarstation Jan Mayen). Its physician, Regimentsarzt, Dr. Ferdinand Fischer, and the K.k. Linienschiffslieutenant Gustav Beer, collected some lichens. The collection was determined by Th. M. Fries who recorded 17 species in his paper: Lichenes, p. 5—8, in H. W. Reichardt: Flora der Insel Jan Mayen, Wien 1886 (Reprint from "Die Internationale Polarforschung, 1882—83, Die Österreichische Polarstation Jan Mayen, Vol. III").

During the French "La Manche" expedition to Jan Mayen (and Spitsbergen) in 1892 three lichens were collected in Jan Mayen, viz. *Stereocaulon denudatum* var. *pulvinatum* Schaer., *Lecidea geographica* f. *urceolata* Schaer., and *Lecidea chionophila* f. *decolorata* Vain., the two latter lichens are now referred to the genus *Rhizocarpon*. The lichens were determined by Abbé Hue, and mentioned twice in literature, viz. by M. Hariot: Note sur les collections cryptogamiques rapportées par La Manche, p. 239 in M. Bienaimé: Voyage de "La Manche" à l'île Jan Mayen et au Spitzberg (Juillet—Août 1892), Paris 1894, — and further by M. P. Hariot: Contribution à la flore cryptogamique de l'île Jan Mayen, Journal de Botanique, VII, 1893, p. 117.

Hariot recorded 18 different species of lichens as known from Jan Mayen, in addition to which came the 3 species, collected by the French expedition.

In 1896 the Danish cruiser "Ingolf" stopped for a few hours on the south coast of the island. Its botanist, C. Ostenfeld, collected some lichens, which were determined by J. S. Deichmann Branth. A list was published by him in the paper: C. Ostenfeld-Hansen: Contribution à la flore de l'île Jan-Mayen, p. 29, Botanisk Tidsskrift, vol. XXI, København 1897. The enumeration comprises all the lichens, then known from Jan Mayen, after Deichmann Branth in all 23 species, but only a few of them were collected by the Danish expedition.

In 1899 a Swedish expedition under the command of A. G. Nathorst went to North East Greenland in search of the ill-fated Swedish balloon expedition under Andrée. Nathorst also made a short visit to Jan Mayen, and his excellent botanical collector P. Dusén brought home 37 lichens, 7 of which were additions to the lichen flora of the island.

The collection had to wait long for its determination, but in 1929 it was submitted to Gust. O. A:n Malme, who published the following paper on it: Lavar hemförda av den svenska expeditionen till Jan Mayen och nordöstra Grönland 1899, Arkiv för Botanik, vol. XXII A, No. 14, Stockholm 1929.

During the Danish Amdrup expedition in 1898—1902 N. Hartz and Chr. Kruuse collected lichens in Jan Mayen (May 25th—29th, 1900), as well as in North East Greenland. These collections were identified by Vainio, who published the following paper on them: Lichenes expeditionis G. Amdrup (1898—1902), enumeravit Edv. A. Vainio, in Meddel. om Grönl., vol. XXX, p. 123—141.

This important expedition collected a considerable number of lichens, also in Jan Mayen. Vainio recorded no less than 52 different species of lichens, the most important collection of lichens, obtained in the island up to the present day. Vainio described *Placodium* (= *Caloplaca*) *verruculiferum* as a new species, and *Ochrolechia tartarea* var. *inspersa* as a new variety.

The Danish surveying ship "Islands Falk" visited Jan Mayen in August 1919. Its botanist Johannes Gandrup made remarkably large collections in spite of his very short visit.

His lichens were determined by Fr. J. Mathiesen, who identified 46 different species, and one fungus parasite on a lichen: Fr. J. Mathiesen: Lichens, p. 24—28, in Johs. Gandrup: A Botanical Trip to Jan Mayen, Dansk Botanisk Arkiv, vol. IV, København 1923. In his introduction Gandrup gives an account of the general conditions of life in this remarkable island, the more valuable, because he had made the observations himself.

The Norwegian expedition to North East Greenland in 1929 was equipped by Norges Svalbard- og Ishavs-undersøkelser, under the command of Dr. A. K. Orvin. It anchored for a few hours on the north coast of Jan Mayen, in Mary Muss Bay. The author of the present paper joined

the expedition. It was a bitterly cold day (July 19th), with a penetrating Arctic wind of the worst kind, and my results could not be particularly remarkable.

The beach near the Austrian house was literally covered with drift-wood. It was a great disappointment that not a single lichen could be detected on these logs, the surface of which was as hard and smooth as the glass of a bottle, for otherwise drift-wood is among the best localities for lichens in the Arctic. But on the walls of the Austrian house quite a number of lichens had settled, the most interesting of them being *Lecidea kolaensis* Nyl., *Buellia coniops* (Wbg.) Th. Fr., and some species of *Caloplaca*. No lichens covered the deep volcanic sand. But nearer to, and south of, the northern lagoon (Norw. Nordlaguna) I found rocks where the lichen vegetation was quite satisfactory. The work of collecting here occupied the rest of the few available hours, I just reached the pass height, from which I could see the radio station when we were called back to the ship.

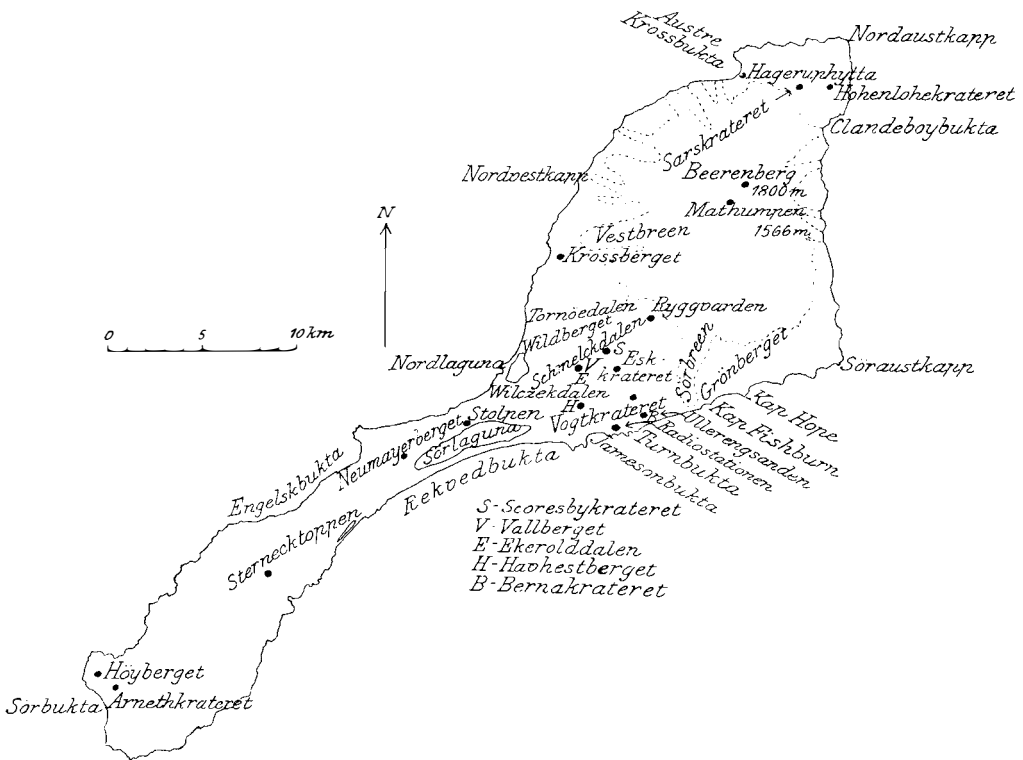
There was a bird-cliff between Mary Muss Bay and the northern laguna in which *Fulmarus glacialis* hatched in considerable numbers. But unfortunately the mountain walls were so steep that they were quite inaccessible to me, and I did not obtain a single lichen from them. This is much to be deplored, for in the Arctic such cliffs are by far the best localities for lichens. Anyhow I saw a lichen which was very abundant there, a *Caloplaca*, too yellow for *Caloplaca elegans*. Most probably it was *Caloplaca granulosa* (Müll. Arg.) Steiner, which is so characteristic of Arctic bird-cliffs, cfr. Lyngé Lich. Nov. Zemlya, 1928, p. 234.

In the next year, 1930, there was another Norwegian expedition to North East Greenland, equipped by Norges Svalbard- og Ishavs-undersøkelser, under the command of Mr. Adolf Hoel. The expedition called at Jan Mayen, and one of its botanists, Johannes Lid, of the Botanical Museum, Oslo, spent the whole summer there (July 14th—August 24th). His chief interest was the Vasculares, not the Lichenes, but fortunately he also collected a considerable number of lichens, and the greater part of the present collection, at least of the Macrolichenes, is due to him.

A memoir on the Vasculares is expected from him, and he will there record his course in detail. Lichens were collected at the following localities, which will be found on the map of the island in the present paper. Unfortunately he brought home but few lichens from the interesting bird-cliffs, but nevertheless I am very thankful for his contribution, which alone made it justifiable to publish the present report.

Lichen localities from 1930:

- | | |
|--------------------|----------------------|
| I. Sørbukta | Radio Stationen |
| Arnethkrateret | Jamesonbukta |
| Høyberget | Turnbukta |
| II. Sternecktoppen | Ullerengsanden |
| III. Engelskbukta | Bernakrateret |
| IV. Neumayerberget | Havhestberget |
| Stolpen | Majatoppen, |
| Wildberget | west of Vogtkrateret |
| Schmelckdalen | Vogtkrateret |
| V. Wilczekdalen | Sørbreen |
| Nordlaguna | Mathumpen, 1566 m |
| Tornøedalen | above sea-level |
| VI. Krossberget | Beerenberg, 1800 m |
| Vestbreen | above sea-level |
| Nordvestkapp | VIII. Grønberget |
| VII. Ryggvarden | Kapp Fishburn |
| Scoresbykrateret | X. Hohenlohekrateret |
| Eskkrateret | Hageruphytta |
| Vallberget | Krossbukta |
| Ekerolddalen | |



A few undetermined lichens from the Danish Gandrup expedition in 1919 were sent to me from the Botanical museum of Copenhagen.

During the work it was found that some critical lichens gave me unexpected difficulties, which delayed the completion of the manuscript for years. There was a *Stereocaulon* which looked intermediate between *Ster. denudatum* and *Ster. alpinum*, a most unexpected combination. At last I found it necessary to establish a new species, *Stereocaulon arcticum* Lyngé, published in my paper: Lichens from the West and North Coasts of Spitsbergen and the North-East Land, Vidensk.-Akad. Skr. I. Math.-Naturv. Kl. 1938, No. 6, p. 69, pl. XII, fig. 3, XIII, figs. 1—2, XIV, fig. 1). This species is widely distributed in the Arctic.

Next there were some *Aspiciliae*, which were still more difficult. My friend, Dr. A. H. Magnusson in Gothenburg (Göteborg), has finished a large monograph on this very difficult subgenus, the "crux licheno-logorum". The monograph is not yet out, but Mr. Magnusson has kindly examined my plants, and allowed me to discuss them with him during a personal visit to his home. I am glad to express my profound gratitude to him for this valuable help.

Verrucariaceae.

1. (1). *Verrucaria aethiobola* Wbg. var. *cataleptoides* (Nyl.) Vain.

Mary Muss Bay: near the Austrian house. — Beerenberg: Mathumpen, 1566 m above sea level.

At the former locality several plants were collected. The well developed thallus is rimoso-areolated. That excludes the type of *V. aethiobola*, var. *primaria* Vain. Lich. Fenn. I, p. 27, Malme Lich. Suec. No. 175, with a continuous thallus, only here and there with irregular cracks.

Zschacke has a very narrow limitation of his species in this section. In Die mitteleur. Verruc. V, p. 49—50 he bases his distinction between *V. aethiobola* and *V. margacea* on the size of their perithecia, 0.2—0.3 mm in the former, 0.4—0.6 mm in the latter, either of them has a continuous thallus ("Lager zusammenhängend, hier und da rissig").

Vainio's description of his *V. aethiobola* var. *cataleptoides* (Nyl.) Vain. in Lich. Fenn. I, p. 31, agrees to the point with the Jan Mayen plants from Mary Muss Bay. Its perithecia are more prominent than in many southern, well identified plants, such as Arnold Lich. Eur. No. 1133. Magnusson collected plants in northern Sweden (Torne Lappmark, Magn. No. 5625) which are intermediate. But in the Arctic the thallus is variable in thickness, often thinner than in southern plants, that may explain the difference.

In Rabenhorst Kryptogamenflora Zschacke refers *V. margacea* and *V. aethiobola* to the *Euverrucariae*, and *V. cataleptoides* to another of the chief sections of the genus, viz. *Lithoicea*. My own experience on this difficult genus is very limited, but it seems difficult to agree with the eminent German authority on this point. I must be unnatural to refer so nearly related species to different sections.

Verrucaria aethiobola s. l. is a very common species in the Arctic, rarely lacking in collections of representative size. It has repeatedly been collected in Jan Mayen: "ad lapidem vulcanicum in insula J. M.", to which is added: "ad formam atypicam pertinet thallo sordide albicante disperso sat tenui instructam, sp. $26 \times 13 \mu$ " (Vain., p. 140). — "On lava, Säule, sp. $24-26 \times 10-12 \mu$ " (Math., p. 24).

2. (2). *Verrucaria ossiseda* Lynge.

Lynge Lichens from Novaya Zemlya, 1928, p. 15.

Mary Muss Bay: near the Austrian house, on stone.

Thallus tenuissimus, membranaceus, continuus, nigrescens. — Perithecia in foveolis lapidis semiimmersa, apicibus protuberantia, parva, diam. 0.1—0.15 mm. Excipulum amphithecio atro, crasso (usque 50μ) in tertia parte superiori tectum. Excipulum quam amphithecio pallidius, fuscenscens, (in parte inferiori mihi ignotum). Asci anguste pyriformes, sporae anguste oblongae, subcylindricae vel leviter fabiformes, interdum altero apice leviter angustiores et eam ob causam subpyriformes videntur, in apicibus tamen semper rotundatae, $8-10 \times 2,5-3 \mu$ (vulgo $9 \times 3 \mu$).

The thallus of the present plant is considerably darker than in the type plant, this may be due to the different substratum, the type plant was found on a bird's bone. Otherwise I am unable to find distinguishing characters of specific importance. The very characteristic spores agree entirely, as does also the thick dark amphithecium, covering the upper part of a paler excipulum. On account of the minute size of the perithecia I was unable to obtain a section, covering also the lower part of the excipulum which was always left with the underlying stone, suggesting a soft lower excipulum.

The biology of the two plants also agree, for either of them is distinctly nitrophilous, found with *Buellia coniops*.

3. (1). *Polyblasta hyperborea* Th. Fr.

Majatoppen.

The plant is so poorly developed that a quite certain determination is difficult, if possible. — No thallus whatever is visible. Only a few perithecia were detected, hidden into the cavities of the lava. The spores are uncoloured, muriform, $22-30 \times 15-18 \mu$, with 5—7 transversal and 3 longitudinal septa.

Polyblastia terrestris which was not detected by us, has been recorded by Mathiesen, p. 24: "Säule on lava, thallus feebly developed, sp. $48-52 \times 21-24 \mu$, colourless to pale yellowish-brown, material very scanty".

Dermatocarpaceae.

4. (1). *Dermatocarpon daedaleum* (Krempelh.) Th. Fr.

Above Bernakrateret, a minute, sterile plant, not unlike the squamules of a *Cladonia pyxidata* var. *pachythallina*.

Sphaerophoraceae.

5. (1). *Sphaerophorus globosus* (Huds.) Vain.

Arnethkrateret, summit of Høyberget. — Neumayerberget. — Nordlaguna, Tornøebekken: Galteryggen. — Near Vestbreen. — Turnbukta: Vetlagrytekrateret, summit of Vogtkrateret.

It is common and widespread. The best plants were found immersed into the tufts of *Grimmia (Racomitrium) lanuginosa* and other mosses, as was to be expected in this wind-beaten island.

Sphaerophorus globosus has been recorded from Drivvedbukten (= Rekvedbukta) by Malme, p. 2.

Sphaerophorus fragilis which was not found in our collections has been recorded from "Ad rupem in monte Hoyberg" (Vainio, p. 139), and from Guinea Bay (Math., p. 25). The latter plant has the medullary reaction "J. caerulea", it is accordingly *S. globosus*.

Graphidaceae.

No *Xylographa* was found in the present collections, but *Xylographa abietina* (Pers.) Zahlbr., syn. *Xylographa parallela* (Ach.), has been recorded from "lignum vetustum" by Vain. (p. 139), who described a f. *difformis* n. f. Furthermore Mathiesen recorded *Xylographa parallela* from drift-wood near the station (Math., p. 25).

Chrysothricaceae.

6. (1). *Crocynia neglecta* (Nyl.) Hue.

Near the Austrian house. Vestbreen. Beerenberg, 1800 m above sea level.

We cannot conclude anything from these few finds, but most probably the species is quite as common here as in other Arctic regions.

Collemaceae.

7. (1). *Polychidium muscicola* (Sm.) S. Gray.

Between the Austrian house and Nordlaguna.

It was quite plentiful, and the plants were well fertile.

Pannariaceae.

8. (1). *Parmeliella arctophila* (Th. Fr.) Malme.

Vallberget, only a few apothecia, but quite typical, growing with *Psoroma hypnorum*. The spores are simple, uncoloured, scabrous, $16-20 \times 10-20 \mu$.

Parmeliella lepidiota (Sommerf.) Vain. f. *tristis* Th. Fr., not found in our collections, has been recorded by Vainio from Høyberget: "in hoc specimine apothecia (microscopio visa) lecideina, margine proprio tenui, excipulo proprio thallo immersa, in parte exteriori e stratis pluribus sat grosse cellulosis parenchymaticis formato, at demum habitu lecanorina aut zeorina, thallo marginem thalldem crenulatam, discum superantem formante cincta. Sp. simplices".

9. (1). *Pannaria pezizoides* (Web.) Lightf.

South side of Nordlaguna. — Ekerolddalen.

In the former locality it was quite plentiful.

Formerly recorded from "Säule". Sp. $20-28 \times 10-12 \mu$, hym. deep blue with iodine (Math., p. 26).

10. (1). *Psoroma hypnorum* (Dicks.) Hoffm.

Between the Austrian house and Nordlaguna. — The Radio Station. — Near Vestbreen. — Vallberget, Ekerolddalen, Scoresbykrateret, Bernakrateret, Majatoppen, Vogtkrateret. — Hageruphytta.

On mosses, often immersed into the mosses.

This common and plentiful lichen has been recorded by Vainio, p. 135, from Høyberget, and by Math., p. 26, from Mohn's Bjerg, Guinea Bay and Bären Gat.

Peltigeraceae.

11. (1). *Solorina bispora* Nyl.

South of Nordlaguna. — The Radio Stat. — Vallberget, Ekerolddalen, Grønna, Majatoppen, Vogtkrateret.

Common and plentiful, as usual in arctic regions.

Formerly recorded by Vainio from Sydlaguna (p. 134), and by Mathiesen from Blytts Bjerg and from Wildberg: "Sp. $93-114 \times 39-42 \mu$, red-brown, a little constricted in the middle" (Math., p. 26-27).

12. (2). *Solorina crocea* (L.) Ach.

Scoresbykrateret, 451 m above sea-level, only collected once.

Recorded by Th. Fr., p. 5: "An felsigen Stellen des Hochplateaus auf dem Südteile der Insel", and by Vainio, p. 134, from Høyberget.

13. (1). *Nephroma arcticum* (L.) Torssell.

Sørbukta, on the sand.

Only a few plants, they are of no specially arctic type and cannot be referred to f. *complicata*.

Recorded by Vainio, p. 134, from Høyberget, "supra muscos destructos rupium".

14. (1). *Peltigera leucophlebia* (Nyl.) Gyelnik.

Cfr. Gunnar Nilsson (Degelius) Flechtenflora von Ångermanland, 1931, p. 37—39.

Syn. *P. variolosa* (Mass.) Gyelnik.

Between the Austrian house and Nordlaguna. — Summit of Neumayerberget. — Ekerolddalen. — Grønberget.

Evidently common and widespread. All the plants had distinct veins on the under side, suggesting this species and not *P. aphthosa* sensu strict. with its *malacea*-like under side. No apothecia were found. The plants are more or less crisp: f. *complicata* (Th. Fr.).

Formerly recorded, as *Peltigera aphthosa*, from Mohns Bjerg (Math., p. 27, under side venose: *P. leucophlebia*), and from Mary Mussbukta (Malme, p. 2).

15. (2). *Peltigera venosa* (L.) Hoffm.

Nordlaguna. — Scoresbykrateret, Vallberget, Ekerolddalen 344 m above sea-level, summit of Vogtkrateret. — Vestbreen.

Common and plentiful. It is often severely attacked by a parasitic fungus. Dr. Keissler was kind enough to determine it: *Scutula epiblastematica* Rehm.

Formerly only recorded by Malme from Drivvedsbugten (p. 2).

16. (3). *Peltigera malacea* (Ach.) Fr.

Between the Austrian house and Nordlaguna.

There is only one small plant. It is not typically developed, but I have referred it to this species, and not to *P. rufescens*, on account of its thick cracked thallus, and its under side where no distinct nerves are visible. The plant is of the "complicata"-type, so common in arctic *Peltigerae*. It was found between mosses on volcanic ash and sand.

17. (4). *Peltigera canina* (L.) Hoffm.

Arneth (var. *membranacea*). — Neumayerberget, Wildberget (ad *P. rufescentem*), and Schmelckdalen. — Between the Austrian house and Nordlaguna (ad *P. rufescentem*). — Vestbreen. — Vallberget, Ekerolddalen, Havhestberget, Sørbreen. — Grønberget, Kap Fishburn. — Hageruphytta (var. *membranacea*).

Peltigera canina is the best represented species of its genus in these collections which are supposed to be large enough to be representative for lichens of this conspicuous kind.

P. membranacea was represented by several plants, large, flat, pale thalli. Other plants considerably approached *P. rufescens* on account of their more crisp margins (cfr. Norrl. et Nyl. Herb. Lich. Fenn., cont., No. 569, b). Only a few plants could be referred to *P. rufescens* itself. This is interesting, for in the adjacent parts of North-East Greenland the inverse is the case. We had no plant of the typical *P. canina* in the large Norwegian collections from North-East Greenland in 1929 and 1930. *Peltigera canina* is one of several relatively southern plants in the flora of Jan Mayen.

Peltigera canina was first recorded from the island by Deichmann Branth (p. 29, as "*Peltigera* sp. (*canina*)?"), next by Vainio from Sydlaguna (p. 134), by Mathiesen (p. 27) from Mohn's Bjerg and from Säule, f. *membranacea*, by Malme (p. 2) from Drivvedsbukten and Mary Muss-bukten.

18. (5). *Peltigera rufescens* (Weiss) Humb.

The Radio Station, Ekerolddalen, Sørbreen. — Grønberget.
Typically developed *P. rufescens* is not supposed to be common.

19. (6). *Peltigera erumpens* (Tayl.) Vain.

f. *leptoderma* (Nyl.) Schol. comb. nov.

The Radio Station, Scoresbykrateret, 451 m above sea-level, Vallberget, Havhestberget, summit of Vogtkrateret, Beerenberg: Mathumpen, 1566 m above sea-level.

All of these localities are situated on the south-west slope of Beerenberg. There are not many plants, but the numerous localities suggest it to be common, perhaps not really plentiful.

Scholander has studied the difference between the *leptoderma* and the type of *P. erumpens*. The former has a glabrous upper side, the latter is more or less tomentose. This excellent investigation has fully convinced me that there is no specific difference between them (Notes on *Peltigera erumpens* (Tayl.) Vain., Nyt Magazin for Naturvidenskaberne, vol. LXXIII, p. 19—54).

The type of *P. erumpens* was not found in our Jan Mayen collections. The plants were not infested by *Illosporium carneum*, otherwise so common on *P. erumpens*.

The species name *erumpens* was proposed by Taylor as early as in 1847, Nylander's *leptoderma* in 1860. The combination *P. erumpens* f. *leptoderma* was not mentioned in Scholander's paper.

20. (7). *Peltigera scabrosa* Th. Fr.

Wildberget. — Vallberget, Ekerolddalen.

There were but a few plants, they have the typical scabrous surface, and the "complicata"-habitus, so common in arctic *Peltigerae*.

Lecideaceae.

21. (1). *Lecidea atrobrunnea* (Ram.) Schaer.¹

Between the Austrian house and Nordlaguna, in considerable abundance.

An extremely coprophilous species, here as elsewhere, and generally found associated with *Buellia coniops*. — Its thick areolae are not a little variable, more or less convex to turgid, often greyish-white, on account of a destroyed upper cortex. Its apothecia are very large, up to 2 mm in diameter, such old apothecia are very convex. The internal structure of the apothecia is much the same as in *L. Helsingforsiensis*, but its spores are much smaller (narrower), I have measured $7-10 \times 5-5.5 \mu$ in these plants. The paraphyses are thicker and distinctly clavato-incrasated at their apices.

22. (2). *Lecidea Helsingforsiensis* Nyl.

Flora 1881, p. 4 and 186, 1882, p. 457. Vainio Lich. Fenn. IV, 1934, p. 102, ubi syn.

Norrl. et Nyl. Herb. Lich. Fenn. VII, 1882, No. 335.

Vogtkrateret, summit.

Thallus areolatus, areolae subdiscretae vel contiguae, angulatae, 0.3—0.8 mm latae, planae, crassitudine mediocri, pallide fusciscentes, albomarginatae, hypothallo nigro affixae.

Apothecia numerosa, congesta et mutua pressione angulata, supra thallum elevata, plana, epruinosa, atra, persistente elevate marginata. Excipulum fusco-atrum, *hypothecium superne incoloratum et in hymenium transiens*, inferne fusciscentes. Hymenium superne haud intense aeruginosum. Paraphyses arcte conglutinatae, superne non incrasatae, *spora late ellipsoideae*: $12-15 \times 7-9 \mu$.

¹ The species of *Lecidea* have been arranged after Vainio Lich. Fenn. IV, 1934.

Medulla J. caerulescens, etiam cum partibus incoloratis apotheciorum.

It is well separated from *L. atrobrunnea* by its plane areolae which are, however, thicker than in *L. paupercula*. As stated by Vainio (Lich. Fenn. IV, p. 103) it is nearest related to *L. paupercula*, but distinct from that species by the uncoloured upper part of its hypothecium. This part is not at all distinct from the hymenium, and it is easily included in it after a superficial investigation. But a "Quetschpräparat" will reveal its true structure, and there are no asci in it. The hymenium and this uncoloured part of the hypothecium together are about 125—130 μ high. I have examined a Norwegian plant of *L. paupercula*, and I can only confirm Vainio's statement, there was a low hymenium, 80—90 μ high, resting directly on the black hypothecium. The very broad spores of *L. Helsingforsiensis* are well developed, in *L. atroocarpoides* they are still broader: 12—16 \times 9—12 μ . In *L. paupercula* the spores are rare, and if found they are narrower: 10—12 \times 5—6 μ (Th. Fr. Lich. Scand., p. 482: 9—12 \times 4—6 μ). *Lecidea paupercula* has a more intensely coloured upper part of the hymenium, it is smaragdine, uppermost part almost black.

Lecidea Helsingforsiensis is supposed to be widely distributed in the Arctic. In my Lich. Bear Island, 1926, p. 18, a *Lecidea* was referred to the nearly allied *L. atroocarpoides* Vain. It now seems to me that *L. Helsingforsiensis* would have been a better determination, on account of the spore size and the "high" hymenium, i. e. the hymenium verum and the uncoloured upper part of the hypothecium.

Lecidea paupercula has repeatedly been recorded from Jan Mayen, by Vain. (p. 138): "in insula Jan Mayen«, by Mathisen (p. 25) from Blytts Bjerg, and by Malme (p. 2) from Drivvedsbukten. Mathisen has given the spore size: 10—12 \times 5—6 μ , which suggests the true *L. paupercula*. I have seen his plant, and I can only confirm his statement of the spore size. The hymenium is rather low, about 90 μ , resting directly on the dark hypothecium. I would also refer Mathiesen's plant to the true *L. paupercula*. — I have not seen Vainio's plant.

23. (3). *Lecidea solediza* Nyl.

North of Arneth.

The plants are sterile, but they look fully typical.

24. (4). *Lecidea pantherina* (Ach.) Th. Fr.

Between the Austrian house and Nordlaguna.

Vainio has called this species *L. cyanea* (Ach.) Vain., based on *Lecidea lapicida* β *L. cyanea* Ach. Meth. Lich., 1803, p. 38. But this is not in accord with the present rules of nomenclature which only acknow-

ledge species names as the basis for nomenclature. To avoid undesirable confusion it is, perhaps, quite as well to leave it as *L. pantherina*, a well known name. *Lecidea lactea* Floerk. might be a better name, but I cannot check Floerke's determination.

It has been recorded from Blytt's Bjerg and between Mohn's Bjerg and Wildberg (Mathisen, p. 25), and from Drivvedsbukten (Malme, p. 2).

25. (5). *Lecidea Swartzioidea* Nyl.

Nylander Ad vegetat. lichen. Hels. etc., Not. ut Sällsk. pro Fauna et Flora Fenn. Förh. vol. IV, 1858/59, p. 240. — Lyngé Lich. Nov. Zemlya, 1928, p. 72. — Zahlbr. Cat. Lich. III, p. 705, ubi syn. — *Lecidea peralbida* Th. Fr. Lich. Scand. II, 1874, p. 494. — Zahlbruckner wrote *Lecidea Swartzioidea*, which is inaccurate. Th. M. Fries rejected the name *Swartzioidea* on the reason that it was "nomen barbarum". Unfortunately such names are very common.

Mohnfjellet, from the edge of the stone plain, on lava, leg. Johannes Gandrup (herb. Copenhagen where an undetermined specimen was found in the mus.).

Thallus 4—6 cm latus, crassitudine mediocri, albissimus, eburneus, nitidus, in centro plus minusve continuus et irregulariter ruptus, praeterea in ramulis divergente ramosis dissolutus, sorediis isidiisque destitutus. Rami maturi aequilati: 0.7 mm, ambitum versus sensim in hypothallum albidum tenuissimum, sed distinctum, radiantem, transiens, thallus eam ob causam ambitu non abrupte limitatus. Rami marginem versus nodulosi, deinde transverse rupti et (maturi) fissuris transversis regulariter areolati, areolae depresso convexae.

Apothecia centrum versus numerosa, sed vulgo dispersa, rotundata, majuscula, diam. usque ad 1.5 mm, sed vulgo minora, supra thallum bene elevata et centro plus minusve constricta. Discus ater, (in specim.) epruinosis, nitidiusculus, planus et margine concolori, integro, crasso, pernitido circumdatus, deinde magis convexa, margine evanescenti. Excipulum fuscescens, in parte exteriori obscurius coloratum, hyphae granulis minutis valde adpersae, in margine flabelliformiter radiantes; hypothecium incoloratum vel dilute flavo-fuscescens. Hymenium angustum, circ. 65 μ altum, superne valde inspersione, obscure caeruleofuliginum, praeterea incoloratum. Paraphyses apicibus cohaerentes, praeterea facile discretas, indivisae vel hinc inde raro furcatae, indistincte septatae, satis validae, 2 μ crassae (HCl+ C₂H₅OH si addit.), et apice haud incrassatae. Asci immaturi et sporae parce visae, ellipsoideae, 7—10 μ longae (ob matura?).

Medulla J caerulescens, KOH rubescens, crystallae praecipituntur.

26. (6). *Lecidea lapicida* Ach.

Between the Austrian house and Nordlaguna. — Vogtkrateret, summit.

Vainio recorded *L. lapicida* var. *declinans* Nyl., with description, "ad rupem in insula Jan Mayen (p. 138).

27. (7). *Lecidea theiodes* Somrft.

The Radio Station.

28. (8). *Lecidea auriculata* Th. Fr.

West of Bernakrateret.

Only one small plant was obtained of this species which is otherwise fairly common and widely distributed in the Arctic. The apothecia are fine, but there are only a few inconspicuous maculae of a thallus.

Previously recorded from Drivvedsbukten (Malme, p. 2).

29. (9). *Lecidea brachyspora* Th. Fr.

Havhestberget.

Only a little developed thallus with a few apothecia: excipulum violet with KOH, hymenium narrow, bluish-black above, paraphyses not very coherent, rather stoutish, clavate, spores very scarce, only a few ones seen, almost globose, $5-7 \times 4-5 \mu$. Medulla bluish with J.

It is difficult to say whether these spores were quite ripe, if not, they may have been juvenile spores of *L. auriculata*, the spores of which are narrow and oblong: $6-11 \times 2.5-3 \mu$. But my observations suggest *L. brachyspora*.

30. (10). *Lecidea pelobotrya* (Wbg.) Leight.

Vallberget (and possibly a plant from Turnbukta: Vetlagrytekrateret).

In one plant the cephalodia are rather scarce, in the other very abundant. As is so often the case the reaction with CaCl_2O_2 gave me some difficulties. In one plant it was very distinct, in the other not, even with the same solution, but with a better solution I obtained a very faint reddish colour. One gets the impression that the substance which is the cause of this reaction is not always present in the same quantity in all plants.

I have considered the possibility of *Lecidea consentiens*. But it seems to me that the habitus agrees with *Lecidea pelobotrya*. The apothecia are so distinctly aspicilioid, and the spores rather short for *Lecidea consentiens*: $(17-20) \times 26$ (-29) $\times 10-15 \mu$.

In my Iceland collection I have a very large material of *Lecidea pelobotrya*. A few plants which at the first test were found to be CaCl_2O_2 -,

gave a positive reaction with a better solution. It is doubtful whether *Lecidea consentiens* is really found in this part of the Arctic.

Previously recorded by Mathiesen from Mohn's Bjerg and from the stony plain near Wildberg (Math., p. 27). I have seen these plants, and I had the same difficulty with the CaCl_2O_2 reaction: distinct in one plant, and no reaction in the other. Yet I regard Mathiesen's determination to be correct, my solution was evidently not sufficiently effective.

31. (11). *Lecidea macrocarpa* (DC.) Th. Fr. p. p.

Syn. *Lecidea steriza* (Ach.) Vain., cfr. Vain. Lich. Fenn., IV, 1934, p. 154.

Between the Austrian house and Nordlaguna, in considerable quantity.

The plants have a well developed, rimoso-areolated thallus with almost plane, angular areoles, here and there with black hypothalline lines. The colour is ashgrey, but apart from the marginal parts many areoles are whitish-grey, evidently due to a damaged cortex. The numerous apothecia are epruinose, middle-sized, generally 0.8—1.5 mm in diameter, in youth with a thick margin and a plane disk, later more convex with a more or less evanescent margin. The hymenium is very high, up to 125 μ or more, but the lower part contains no asci, and it has a more intricate texture than the upper part. Vainio would have referred this uncoloured part to the hypothecium.

In his Lich. Fenn. IV, 1934, p. 154—167 Vainio enumerates more than 20 different formae, many of which are evidently quite confluent. A careful comparison with his descriptions, and with plants determined by him, eliminated the greater part of them, leaving the ff. *subconvexa*, *caesiiconvexa*, *praetoria* and *hydalea* for a closer comparison.

In the Jan Mayen plants the thallus is better developed than in f. *subconvexa* which has an evanescent or fairly thin thallus, evidently his f. *caesiiconvexa* has also a thinner thallus. — It is difficult to find a good difference between the two remaining formae, *praetoria* and *hydalea*. Perhaps my plants agree best with f. *hydalea* Vain., they lived together with an *Aspicilia* and with *Verrucaria aethiobola*, suggesting a moist locality.

Vainio followed his own rules of nomenclature, he was quite inaccessible to the arguments and the rules, accepted by several botanical congresses. His species name *Lecidea steriza* dates from 1909 as a species name, but as a subspecies, *Lecidea confluens* **L. steriza* is the oldest name, dating from Acharii Meth. Lich., 1803, p. 40. *Patellaria macrocarpa* DC. apud Lam. et DC. Flore franç. ed. III, 1805, p. 347 is the oldest species name. The combination *Lecidea macrocarpa* dates from Th. Fries Lich. Scand. II, 1874, p. 505, but in a much wider limitation than in the works of modern authors.

32. (12). *Lecidea melinodes* (Kbr.) Magn. comb. nov.

Magnusson apud Lynge Lichens from Eastern Arctic Canada (in print). *Aspicilia* (?) *melinodes* Kbr. Lich. Spitsb. Sitzber. der Akad. der Wiss., I Abt., vol. LXXI, Wien 1875, p. 3. *Lecidea contigua* β . *flavicunda* Th. Fr. Lich. Spitsb., 1867, p. 38. Non *Lecidea flavicunda* Ach. Lich. Univ. 1810, p. 166 (vide infra).

On rocks south of Nordlaguna. — Summit of Vogtkrateret, 282 m above sea-level.

Thallus plus minusve expansus, interdum plagas latas tegens, rimis atris reticulatis areolatus, areolae angulatae, 0.5—1.0 (—1.5) mm latae, *thallus hydrate ferrico tinctus et eam ob causam ochraceus vel hinc inde cortice denudato magis cinerascens*. *Thallus sorediis crateriformibus, rotundatis*, ut videtur inefficientibus, *sat crebre instructus*. — Thallus 175—200 μ altus.

Apothecia sparsa (thallus vulgo sterilis), rotundata, majuscula, diametro 1.5 mm. Discus ater, epruinosis, leviter convexus, margo indistinctus. Excipulum atrum, etiam hypothecium in parte majore interiore atrum, in parte superiore incoloratum et sensim in hymenium transiens. Hymenium ca. 100 μ altum, guttulis oleosis instructum, in parte superiore olivaceo-fuligineum, epithecium plus minusve granulosum. Paraphyses conglomeratae, in apice haud vel non incrassatae. Sporae parvisime evolutae, 16×10 —11 μ .

Pycnides a me non visae, sec. Th. Fr. l. c. "Spermatia acicularia, recta, 10 μ longa".

Thallus J non caerulescens, etiam KOH non mutatus, hymenium J e caeruleo nigrescens.

Lecidea melinodes is distinguished from *L. flavocaerulescens* by its soredia. It cannot be identified with *Lecidea flavicunda* Ach., for Acharii type plant has no soredia whatever (Linkola in litt.). A section, studied under the microscope, showed that the young soralia really contained small soredia, though in no great abundance. The soralia are small, soon blackened, and then supposed to be inefficient.

A chemical test with "Kaliumrhodanid" proved that the ochraceous colour is due to an incrustation with a ferri-substance. A cross section under the microscope showed that the ferrous substance is found in the upper cortex, and in the fissures, from which latter it sometimes spreads along the under side of the thallus.

This species is widely distributed in the Arctic:

Franz Josef Land: Cape Harmsworth (Lynge, 1931, p. 8, s. n. *Lecidea flavocaerulescens*). — Novaya Zemlya: Serebryanka Bay: Alkeberget, and Mashigin Bay: Solbugten, Lynge 1928, p. 78, s. n. *Lecidea albo-caerulescens* var. *flavocaerulescens*).

Spitsbergen, evidently common. There were several plants in Malmgrens's collection (Th. Fries, 1867, p. 38, s. n. *Lecidea contigua* β . *flavocunda* Ach.). In the Norwegian collections from Spitsbergen it is well represented (Lynge, 1924, p. 14, s. n. *Lecidea flavocaerulescens*, also in unpublished collections. — Bear Island, many plants (Lynge, s. n. *Lecidea flavocaerulescens*).

Lecidea melinodes is also found in North East Greenland (unpublished Norwegian collections). — It has previously been collected in Jan Mayen by Gandrup, for in the Copenh. Herb. I found a fine, undetermined plant.

On the whole it is doubtful whether the true *L. flavocaerulescens* is found in the Arctic. I have now seen much material of the present species from so many different localities that I am convinced of its specific difference from the esorediated *L. flavocaerulescens*.

On the thallus there are numerous black, slightly prominent points, looking like large pycnides. A microscopical examination revealed a parasitic fungus, a Pyrenomycete with dark two-celled spores, about $7.5 \times 5 \mu$ large.

33. (13). *Lecidea*, cfr. *albosuffusa* Th. Fr.

The Radio Station.

The single, poorly developed plant is of the common arctic type: small, scattered areolae of a whitish to ash-grey colour, small apothecia, rarely attaining 0.5 mm in diameter, smaller and less nitidous than in Norway. The internal parts agree well: a rather high hymenium, 90—100 μ , bluish in its upper part, and uppermost bluish-black, spores $17.5\text{--}22.5 \times 9\text{--}12 \mu$. The empty asci were not found transversely striped, but this character is, perhaps, not quite constant.

The disk is epruinose, suggesting var. *inferior* (Nyl.) Vain.

34. (14). *Lecidea Dicksonii* (Gmel.) Ach.

Between the Austrian house and Nordlaguna. — Ekerolddalen, Vogtkrateret. — Beerenberg, east of Ryggvarden 725 m above sea-level.

An ubiquitous plant in the Arctic, common here as elsewhere.

Previously recorded from "Jan Mayen" (Vainio, p. 138), Blytt's Bjerg and stony plain between Mohn's Bjerg and Wildberg (Mathiesen, p. 25), and from Drivvedsbukten (Malme, p. 2).

35. (15). *Lecidea luteoatra* Nyl.

Hill south of Nordlaguna.

The thallus is "virescenti-stramineus", agreeing fairly well with Havås Lich. Norv., No. 212, the colour is often darker, cfr. Malme Lich. Suec., No. 170 and Norrl. et Nyl. Herb. Lich. Fenn., No. 333.

The plants are well fertile, the black apothecia are at first small, semiimmersed or appressed, but soon growing out over the thallus and then very convex, or even bullate, rugose, crenate or irregularly limited, immarginated. They are larger and more elevated than in Scandinavian plants in our herb. The hymenium is aeruginose in its upper part, spores not well developed, $12 \times 6 \mu$, pycnides very numerous, pycnoconidia arcuated, long, 15—20 μ or more between the apices.

The species name *viridiatra* Stenh. from 1831 is older than *luteoatra* Nyl. from 1873, but the species name *Lecidea viridiatra* had already been used for another species (now *Rhizocarpon viridiatrum* (Flk.) Kbr.) as early as in 1829, and was therefore unavailable for the present species.

36. (16). *Lecidea lulensis* (Hellb.) Th. Fr.

Vogtkrateret at the summit, only one small plant.

37. (17). *Lecidea sorediata* Lynge.

Lynge Lich. from Novaya Zemlya, 1928, p. 117 and pl. II, fig. 17—18, IX, fig. 2.

Sørлагuna on drift wood. — On the Austrian house.

The plants agree well with the type plants from Novaya Zemlya. It is a widely distributed arctic species, found also in Spitsbergen in my collections (unpublished).

38. (18). *Lecidea kolaënsis* Nyl.

On the Austrian house, in considerable abundance.

The plants agree perfectly with the plants which Dusén collected in Mary Muss Bay on drift wood (Malme, p. 3). — Collected also by Gandrup (hb. Copenh., undetermined).

39. (19). *Lecidea stigmatea* Ach.
f. *granulosa* (Arn.) Vain.

Cfr. Vain. Lich. Fenn. IV, 1934, p. 252, ubi syn. — *Lecidea goniophila* var. *granulosa* (Arn.) Vain., Lynge Lich. Nov. Zemlya, 1928, p. 99.

Near the Radio Station. — Between the Austrian house and Nordlaguna.

Thallus mediocriter incrassatus, areolatus, areolae cinerae, planae vel plus minusve verrucosae, subcontiguae vel hinc inde magis dispersae. — Excipulum leviter obscuratum, hypothecium pallidum, hymenium superne olivaceum vel aeruginosum, paraphyses facillime liberae, haud incrassatae vel apicem versus leviter solum incrassatae. — Asci in apice J caerulescentes, thallus J, KOH et CaCl_2O_2 immutatus.

In Lich. Fenn. IV, p. 258, Vainio reserves the name *Lecidea goniophila* Flk. for the species which we are wont to call *Lecidea pungens* (Kbr.) Nyl., based on a remark by Nylander: "*L. goniophila* Flk. est prius nomèn *L. pungentis*". It is not clear whether Nylander really saw a type plant from Floerke's herbarium.

Previously recorded from Mary Muss Bay by Malme (p. 3), as *Lecidea goniophila* var. *incongrua*.

40. (20). *Lecidea subcongrua* Vain.

Lich. Fenn IV, 1934, p. 21 et 263, ubi syn.

Vogtkrateret, summit.

Areolae very sparingly developed, more or less dispersed. — Apothecia adpressed to the stone, diameter up to 1 mm, disk plane, somewhat shining, in age disappearing. Hypothecium uncoloured, hymenium bluish or bluish-black in its upper part. Paraphyses coherent, not incrassated at their tips, asci very broad, spores broadly elliptical, $8-10 \times 5 \mu$, with a few narrower spores immixed (immature?).

The chemical reaction of the thallus is J, KOH and CaCl_2O_2 —, hymenium J bluish-black. If KOH is applied the excipulum is almost uncoloured, the darker colour of the unprepared section is due to air between the hyphae.

Referred to this species, and not to *L. goniophila* (Flk.) Vain. Lich. Fenn., p. 258 (= *L. pungens* (Kbr.) Nyl.), on account of its coherent paraphyses. *Lecidea subcongrua* is a plant of a wide distribution. Vainio recorded plants from Finland, Siberia, and even from the Antarctic (l. c. p. 263). In this connection it is of special interest that Vainio identified it in the Amdrup collection from Turner Sound in East Greenland. It was, therefore, not unexpected to find it in a collection from Jan Mayen.

41. (21). *Lecidea glomerulosa* (DC.) Steud. f. *euphorea* Flk.

Sørlaguna, on drift wood. — Austrian house, in great abundance with *Buellia coniops*, *Lecanora polytropa*, *Caloplacae*, a. o.

Paraphyses easily discrete, hypothecium uncoloured, hymenium olive-coloured in its upper part, spores broadly elliptical. Thallus CaCl_2O_2 —.

Formerly detected "ad lignum vetustum in insula Jan Mayen" (Vain., p. 138), and in Mary Muss Bay, lignicola (Malme, p. 3). — *F. Laureri* "ad lignum vetustum in insula Jan Mayen" (Vain., p. 138). — Curiously enough the muscicolous *L. Wulfenii* (Hepp) Arn. (= *L. glomerulosa* var. *muscorum* (Wulf.) Vain.) has never been recorded from this island, otherwise it is quite ubiquitous in the Arctic.

The synonymy of the species in this section of *Lecidea* is quite hopeless, I really do not understand how we should arrive at definite decisions. Vainio (Lich. Fenn. IV, 1934, p. 267), and also Magnusson (Förteckn. över Skand. . . . Lavar, 1936, p. 29) give preference to the name *Lecidea euphorea*. Having no access to the type plants, I cannot do anything to clear up the question.

If the species names *glomerulosa* and *euphorea* really cover identical species, the former dates from Lamarck et Dec. Flore Franç., edit. III, 1815 (In Cat. Lich. III, p. 588, Zahlbr. writes 1805, which is inaccurate), the latter name from Nylander Enumérat. générale &c, 1857, p. 126. A formal consideration on the nomenclature seems to be in favour of the name *glomerulosa*.

De Candolle's description is, however, very diffuse.

42. (22). *Lecidea aglaea* Sommerf.

Vogtkrateret, sparingly at the summit.

43. (23). *Lecidea arctogena* Th. Fr.

Vogtkrateret, summit.

44. (24). *Lecidea elata* Schaer.

Majatoppen, only a fragment of a sterile thallus, but its thin pale sulphur-whitish colour suggests this species.

45. (55). *Lecidea coarctata* (Sm.) Nyl.
var. *trapelia* (Ach.) Vain.

Vain. Lich. Fenn. IV, 1928, p. 331. — Syn. var. *ornata* (Somrft.) Th. Fr.

Turnbukta: Vetlagrytekrateret.

Only one plant. It has a rather thick, white thallus with crenate areolae. The apothecia are immersed with slightly protruding convex, almost black disk and no visible margin. They are rather large for the species, 0.8—1.0 mm in diameter. The excipulum is brownish, the hypothecium yellowish-brown, the hymenium dark olive-blackish above and about 80—100 μ high. The paraphyses are not coherent, the spores 17—22 \times 6—7 μ . Pycnides were not detected.

Medulla J — and KOH —. I was unable to obtain any reaction with Ca Cl₂O₂ or with KOH + CaCl₂O₂.

Evidently rare in the Arctic. Darbshire records several plants from Ellesmereland, none of which bears any resemblance to this species.

46. (26). *Lecidea Berengeriana* (Mass.) Th. Fr.

Hill south of Nordlaguna, very sparingly.

47. (27). *Lecidea assimilata* Nyl.

var. *irrubata* Th. Fr.

Between the Austrian house and Nordlaguna. — Vogtkrateret, summit.

The plants have a dark, rather thick thallus. The colour of the hypothecium is reddish-brown, more or less dark, this colour often spreads over the lower part of the hymenium. The upper part of the hymenium is fuliginous, or bluish-black, and impurely smaragdine to fuliginous if KOH is added. The spores are quite variable, short (12—15 μ) or longer, up to 20 μ , 3—4 (—4.5) μ broad, ovoid, ellipsoidal or ellipsoidal-oblong.

Lecidea alpestris has a more white thallus, a paler hypothecium, and more “cylindrico-oblong” spores which are, on an average, longer: 14—25 \times 3—4 μ (Th. Fr. Lich. Scand., p. 536).

Recorded by Malme (p. 3), “nova civis florae hujus insulae”.

48. (28). *Lecidea pallida* Th. Fr.

Hills south of Nordlaguna. — Vallberget. Near Ryggvarden, 750 m above sea-level, and Ryggvarden, 725 m above sea-level.

On naked soil and on lava rocks. — The plants have entirely the habitus of this species, as seen in Malme Lich. Suec. No. 891. Its spores are very variable in size, from 20—28, rarely up to 33 μ long, and 7—7.5 (—10) μ broad, almost fusiform, the longest spores are not quite straight. — Th. Fr. Lich. Scand., p. 539: 14—22 \times 6—9 μ , Vain. Lich. Fenn. IV, p. 382: 16—22 \times 6—9 μ , on the whole shorter than in the Jan Mayen plants.

49. (29). *Lecidea vernalis* Ach.

Nordlaguna. — Near Vestbreen.

In literature there is a record of one species of *Lecidea*, not found in these collections, viz.:

Lecidea dilabens Th. Fr., l. c., p. 5: “Crusta primum areolato-diffracta, cinereo-vel glaucoalbida, mox in pulverem pallide ochraceum dilabente, hyphis amyloideis, apotheciis innato-emergentibus, dein adpressis, disco planiusculo nudo, margine elevato, sporis mediocribus.

In rupibus basalticis montis “Vogelberg”. Duo tantum specimina, neque admodum eximia sunt reportata, novem describere speciem tamen audeo, quum ab omnibus mihi cognitis satis recedat. Ad stirpem *Lecideae*

confluentis Fr. (Lich. Eur., p. 318, Th. Fr. Lich. Scand., p. 484) potissimum pertinet.

Crusta maculas format suborbiculares, 0.5—0.8 cm latas (interdum confluentes), ambitu tantum ex areolis integris formatas, ceterum in pulverem dissolutas. Apothecia ad 0.8 mm lata. Hypothecium violaceofuscum vel nigricans, paraphyses distinctae, gelatinam percurrentes, apice clavato-incrassatae et caerulescentes vel fuligineo-caerulescentes, asci clavati, sporae ellipsoideae, $11-13 \times 5-6 \mu$. Jodo intense persistenterque coerulecit. — Leg. Beer.”

50. (1). *Bacidia*, cfr. *alpina* (Schaer.) Vain.

Hill south of Nordlaguna. — Majatoppen.

The entirely sterile plants cannot be determined with certainty. According to Vain. Lich. Fenn II, p. 221—2 *B. flavovirescens* has a thallus which is “ambitu haud effiguratus” and “soredioso-leprosus”. The thallus in the Jan Mayen plants which look entirely identical is verrucose, not sorediaed, and sharply limited. It seems to me that such plants cannot belong to *B. flavovirescens*.

The two species *B. alpina* (Schaer.) Vain. and *B. Anziana* Lynge Lich. Nov. Zeml., 1928, p. 125, are distinguished by their spores, the Jan Mayen plants have an intensely citrine thallus which is favour of the former species, but the question cannot be settled, until fertile plants have been detected.

51. (1). *Toninia squalescens* (Nyl.) Th. Fr.

Hill south of Nordlaguna, one small plant, with *Lecidea Berengeriana*.

Spores uncoloured, one-septated, constricted at the septum, $7 \times 3.5-4 \mu$.

Habitually the plant differs considerably from the usual habitus in Scandinavia. In the latter the thallus is dissolved into “verruculas minutissime granuliformes” (Th. Fr. Lich. Scand., p. 340), the Jan Mayen plant has coarse thick crenate thalline squamules, and the colour is paler than usual, pale yellowish-grey with a tinge of brown. My plants from Novaya Zemlya have quite a similar bullato-verrucose thallus, though more ash-grey in colour, and similar plants are found in our herb., collected by Almquist at Handöl in Jemtland, Sweden. It is quite probable that such plants which habitually resemble a small *Toninia caeruleonigricans* ought to be distinguished specifically from the minutely granular plants, but my material is rather scanty for a decision. — The latter type is represented by Malme Lich. Suec. No. 314.

52. (1). *Lopadium fuscoluteum* (Dicks.) Mudd.

Between the Austrian house and Nordlaguna, in great abundance.

Asci with one spore each, spores $75-95 \times 32-37 \mu$.

Lopadium fecundum Th. Fr. which was not found in our collections has been recorded by Mathiesen (p. 25): "over decaying mosses, Mohn's Bjerg. Spores 6—8 in each ascus, $22-45 \times 10-18 \mu$, attenuated towards the one end. Hymenium deep blue with iodine".

53. (1). *Rhizocarpon Hochstetteri* (Kbr.) Vain.

Lynge *Rhizocarpon* in Greenland, 1932, p. 25, ubi syn.

Hill south of Nordlaguna. — Ekerolddalen, Havhestberget.

The thallus is very poorly developed, the spores are one-septated, uncoloured, $16-17 \times 7-9 \mu$.

54. (2). *Rhizocarpon Copelandii* (Kbr.) Th. Fr.

Vogtkrateret, summit.

Previously recorded by Mathiesen (p. 25): "Thallus dirty red-brown with KOH, spores $20-24 \times 10-12$, halo broad and distinct".

55. (3). *Rhizocarpon geographicum* (L.) DC.

Between the Austrian house and Nordlaguna. — Ekerolddalen. Vogtkrateret.

Supposed to be equally common here as elsewhere. Previously recorded from the island by Vain., p. 137, and by Deichman Branth, p. 29, furthermore from Rekvedbukta (Malme, p. 3), and from Blytts Bjerg (Math., p. 25).

56. (4). *Rhizocarpon disporum* (Naeg.) Müll. Arg.

Between the Austrian house and Nordlaguna. — Beerenberg, 1800 m above sea level. — Previously recorded by Vainio, p. 137, from the island (s. n. *Lecidea concreta* f. *geminata*).

57. (5). *Rhizocarpon obscuratum* (Ach.) Mass.

Hill south of Nordlaguna. — Ryggvarden, 775 m above sea level.

The latter plant is morbid and badly developed, but the internal parts agree fairly well: excipulum and hypothecium very black, hymenium $110-120 \mu$ high, with a broad, black upper part, sometimes extending far down, spores rarely developed, $25-35 \times 12-13 \mu$. The small apothecia are appressed to a thin, hardly visible thallus. The plant was found together with *Lecanora gelida*.

Two other *Rhizocarpons* have been recorded from Jan Mayen, viz.:

Rhizocarpon postumum (Nyl.) Arn. by Deichmann Branth, p. 29. I have been able to examine this plant. Deichmann Branth wrote on the label: "spor. 16—20 μ , 3-sept.". I measured $20 \times 10 \mu$ as the usual size, and one spore measured 25 μ . The apothecium examined was young, with many unripe asci and few ripe spores. The spores of *Rhizocarpon obscuratum* are "(20—) 24—30 \times (9—) 11—13 (—15) μ , loculis vulgo paucis, haud raro diu tetrablastae" (Malme Jämtl. Rhizoc., p. 279), in *Rhizocarpon postumum* they are small: 11—16 \times 6—8 μ (Th. Fr. Lich. Scand., p. 634). The spores of the Jan Mayen plant were not "subfusiformi-ellipsoideae", but broadly elliptical and constricted at the 3 septa.

I have no plant of *Rhizocarpon postumum* for comparison. But habitually this Jan Mayen plant agrees so well with *Rhizocarpon obscuratum* (e. g. Malme Lich. Suec. No. 16) that I am quite inclined to regard it a young *Rhizocarpon obscuratum*.

Rhizocarpon chionophilum Th. Fr. has been recorded by Deichmann Branth after the French expedition (D. B., p. 29), as *Lecidea chionophila* f. *decolorata*.

Cladoniaceae.

58. (1). *Cladonia rangiferina* (L.) Web.

Summit of Høyberget. — Hohenlohekrateret.

Evidently much less common than *Cladonia mitis*, as is usual in the Arctic. It has previously been recorded from Høyberget by Vainio (p. 135), Rekvedbukta by Malme (p. 3), and from Mohnberget by Mathiesen (p. 25).

59. (2). *Cladonia mitis* Sandst.

East of Arnethkrateret. — Summit of Høyberget. — Summit of Neumayerberget. — Tornøebekken. — Vestbreen. — Ekerolddalen.

A considerable number of plants proves it to be common and widespread. It is chiefly found in the moss-tufts. All the plants were tested with paraphenylendiamin and found to have a negative reaction.

Malme recorded it from Drivvedbukten (Norw. Rekvedbukta), the plant was tested and found to be P —.

60. (3). *Cladonia sylvatica* (L.) Rabh.

Hill south of Nordlaguna. — East of Hohenlohekrateret.

These plants were stained intensely by paraphenylendiamin, as did also the plant which Gandrup collected at Mohnberget (Math., p. 25). — Th. Fries recorded "*Cladonia rangiferina* β . *sylvatica*" from Sydbukta and from Stolpen near Sørlaguna (Th. Fr., p. 7). Furthermore "*Cladonia sylvatica*"

tica var. *sylvestris*" was recorded from Høyberget by Vain. (p. 135). I have not seen the latter plants. After this it is hardly possible to state the relative frequency of *Cladonia silvatica* and *Cladonia mitis*, the material is not sufficient.

61. (4). *Cladonia coccifera* (L.) Willd.
var. *stematina* Ach.

East of Arnethkrateret. — Wildberget. Vestbreen. — Summit of Scoresbykrateret, 451 m above sea level. Ekerolddalen. Summit of Vogtkrateret.

Var. *pleurota* was not found, but var. *stematina* is supposed to be equally common in Jan Mayen as in other Arctic regions. Curiously enough there is no previous record of it.

62. (5). *Cladonia uncialis* (L.) Web.

Arnethkrateret. Summit of Høyberget. — Summit of Neumayerberget. — Hill south of Nordlaguna. — Ekerolddalen. Turnbukta. — East of Hohenlohekrateret.

One of the commonest *Cladoniae* in Jan Mayen, as it is in other Arctic regions. The best plants are found between the mosses, such as *Rhacomitrium*, and the like. Here they find shelter against the severe Arctic gales which are so characteristic of this island. In protected places of this kind the plants develop long podetia, sometimes resembling *Cladonia amaurocraea*. But no trace of scyphi was found.

Cladonia uncialis has been recorded by several previous authors, as was to be expected: Stolpen near Sørlaguna (Th. Fr., p. 7), Rekvedbukta and Engelskbukta (Malme, p. 3), and Blyttberget and Mohnberget (Math., p. 26).

63. (6). *Cladonia crispata* (Ach.) Flot.
var. *gracilescens* (Rabh.) Vain.

East of Arnethkrateret.

There are several plants, evidently derived from a large tuft. The axillae are distinctly perforated. The plants are very slender, grey at their lower half, between the mosses, brownish and slightly maculated at their upper half where the podetia are more sunburnt. There are a few, very indistinct scyphi, otherwise the plants are subulated.

Cladonia Delessertii was not found, it is a coarser plant, with a more distinctly maculated surface, and the uppermost branches more divergent.

64. (7). *Cladonia cariosa* (Ach.) Spreng.

Beerenberg, 1800 m above sea-level.

A plant of the usual Arctic development. There are no podetia, but the basal squamules are very characteristic, with their distinctly positive reaction with KOH. The plants agree exactly with pl. II, fig. 5, in Lynge—Scholander Lichens from North East Greenland.

65. (8). *Cladonia elongata* (Jacq.) Hoffm.

Summit of Neumayerberget. — Nordlaguna. — Vestbreen. — Summit of Scoresbykrateret. Eskkrateret. Ekerolddalen. Bernakrateret. Vogtkrateret.

Quite as common in Jan Mayen as elsewhere in the Arctic. Lid's plants from Neumayerberget were long and slender and much resembled *Cladonia gracilis* var. *chordalis*. But Sandstede referred them to the present species.

It has previously been recorded from Jan Mayen by Th. Fr. (p. 7).

66. (9). *Cladonia lepidota* Nyl.

var. *stricta* (Nyl.) DR.

Wildberget. — Hill south of Nordlaguna. — Vestbreen. — Pass west of Eskkrateret. Vallberget. Ekerolddalen. Majatoppen.

One plant from Ekerolddalen is well squamulose (f. *phyllophora*), all the others are esquamulose. Some of the plants from Nordlaguna resemble *Cladonia degenerans*, there are a few minute scyphi with lateral branches. But the reaction is so distinctly KOH yellow that I have referred them to the present species.

Previously collected by the Amstrup-expedition at Sørlaguna (Vain., p. 136). I would refer the *Cladonia gracilis* var. *chordalis* of Mathiesen (p. 26) from Blytts berg and from Bären gat to the present species, on account of their habitus, as well as their positive reaction with KOH.

67. (10). *Cladonia cervicornis* (Ach.) Flot.

Vestbreen.

There is a low podetium with flat scyphi which have a central proliferation. The basal squamules are coarse. The plant is greenish, KOH —.

68. (11). *Cladonia*, cfr. *subcervicornis* (Vain.) DR.

Ekerolddalen.

Only a minute fragment, much too poor to allow of an unobjectionable determination. It was isolated from a tuft of *Stereocaulon alpinum*.

69. (12). *Cladonia pyxidata* (L.) Fr.

Between the Austrian house and Nordlaguna. — Vestbreen. — Summit of Scoresbykrateret. Vallberget. Ekerolddalen. Summit of Vogtkrateret. — Grønberget. — Hageruphytta.

The plants from Vogtkrateret and Vallberget have been referred to var. *neglecta*, the plants from Nordlaguna have the thick squamules of var. *pachythallina*. The other plants are not so well developed that a more detailed determination would be justifiable.

Undoubtedly *Cladonia pyxidata* must be common, it has also been recorded by several previous authors. Not located (Th. Fr., p. 7), Sørlaguna (var. *chlorophaea*, Vain., p. 136), Rekvedbukta (var. *neglecta*, Malme, p. 3), Blyttberget and Guineabukta (var. *chlorophaea*, Math., p. 26).

Three other *Cladoniae*, not found in the present collections, have been recorded from Jan Mayen, viz.:

Cladonia amaurocraea (Flk.) f. *oxyceras* from Sørlaguna and Høyberget (Vain., p. 136).

Cladonia furcata (Huds.) Schrad. from Mohnberget (Math., p. 26). A mighty, coarse plant, 13 cm long. There are no squamules. The dark, brown cortex suggests var. *palamaea* (Ach.) Nyl. Stained cinnabar by paraphenylendiamin. — The divergent branches prevent a confusion with *Cladonia Delessertii*.

Cladonia gracilis (L.) Willd. var. *chordalis* (Flk.) Schaer. from Høyberget (Vain., p. 136), and from Rekvedbukta (Malme, p. 3).

70. (1). *Stereocaulon botryosum* Ach.

Syn. *Stereocaulon fastigiatum* Anzi.

Nordlaguna. — Near Ryggvarden, 750 m above sea-level.

It has not previously been recorded from Jan Mayen, and it is supposed to be less common than the other *Stereocaulons*.

71. (2). *Stereocaulon alpinum* Laur.

Lyngelichens from Spitsbergen, Vid.-Akad. Skr. I, Math.-Naturv. Kl. 1938, No. 6, p. 68, p. XII, fig. 2.

Hill south of Nordlaguna. Tornøebekken. — Scoresbykrateret. Vallberget. Ekerolddalen. Grønberget. Vogtkrateret. — Cape Fishburn. — Hohenlohekrateret.

The great number of plants shows us that *Stereocaulon alpinum* is quite as common in Jan Mayen as in other Arctic regions. It has previously been recorded by several expeditions, viz.: "an moosreichen

Stellen der Insel" (Th. Fr., p. 7), "locis numerosis" (Vain., p. 128), Rekvedbukta (Malme, p. 3), Blytts Bjerg and Mohns Bjerg, the latter as *Stereocaulon tomentosum* (Math., p. 26).

72. (3). *Stereocaulon arcticum* Lynge.

Lynge Lich. from Spitsbergen, Vid.-Akad.Skr. I, Math.-Naturv. Kl. 1938, No. 6, p. 69, pl. XII, fig. 3, XIII, figs. 1—2, XIV, fig. 1.

Sørbukta. Arnekrateret. Summit of Høyberget. — Between the Austrian house and Nordlaguna. — Vestbreen. — Scoresbykrateret. Vallberget. Ekerolddalen. The Radio Station. Turnbukta. Bernakrateret. Near Ryggvarden, 750 m above sea-level. Ryggvarden, 775 m above sea-level. Sørbreen. — Hageruphytta (typus).

Stereocaulon arcticum is one of the commonest lichens all over Jan Mayen. The cephalodia were examined in one plant from each locality, and only *Nostoc* was found. The common *Stereocaulon denudatum*, as seen in Scandinavia, with *Stigonema* in its cephalodia, is hardly found in Jan Mayen. I may refer to my above mentioned account, to which I have nothing to add.

It is probable, or at least possible, that all the previous records of *Stereocaulon denudatum* stand for the present species. They are: Sydbukta (Th. Fr., p. 7), *β pulvinatum* "gemein auf der Insel, namentlich schön auf dem Südabhänge des Bärenberges" (Th. Fr., p. 7), Rekvedbukta (Malme, p. 3).

73. (4). *Stereocaulon rivulorum* Magn.

Nordlaguna. — Near Ryggvarden, 750 m above sea-level. Mathumpen, 1566 m above sea-level. Beerenberg, 1800 m above sea-level.

Fertile plants were not found. Sterile plants are not always easy of identification, but it is evidently a common species.

South of Nordlaguna I found plants, infested with "*Catillaria Stereocaulorum*".

Stereocaulon paschale (L.) Hoffm. was not found in the present collections. But it has been recorded from "moosreiche Stellen am Rande von Süßwassermulden nächst der Südbucht in Gesellschaft von *St. denudatum*" (Th. Fr., p. 7), and also from "Bären Gat" (Math., p. 26).

Umbilicariaceae.

74. (1). *Omphalodiscus virginis* (Schaer.) Schol.

Scholander On the Lichen Family Umbilicariaceae, Nyt Mag. for Naturv., vol. LXXV, p. 23, textfig. 3, pl. I, fig. 4, IV, fig. 6. — *Umbilicaria virginis* Schaer. — *Gyrophora rugifera* (Nyl.) Th. Fr. Lich. Scand. I, 1871, p. 156. — Cfr. Zahlbr. Cat. Lich. IV, p. 684, No. 9020, and p. 753, No. 9074, vol. VIII, p. 495, No. 9061.

Beerenberg.

I was astonished at finding this species but once in the collection. But it is an interesting find, for it was collected 1800 m above sea-level, to my knowledge the highest find in the Arctic.

75. (1). *Gyrophora torrefacta* (Lightf.) Cromb.

Syn. *Gyrophora erosa* (Web.) Ach.

Neumayerberget. — Between the Austrian house and Nordlaguna. — Vestbreen. — Summit of Scoresbykrateret, 451 m above sea-level. The Radio Station. Bernakrateret. Beerenberg, at Ryggvarden, 775 m above sea-level.

One find from each station was tested with CaCl_2O_2 , the result was always negative. A plant from Scoresbykrateret is distinctly trabeculated on the under side, and much more rigid than the species usually is, but I was unable to obtain any reaction with CaCl_2O_2 .

Gyrophora erosa var. *torrefacta* has been recorded from "Felsen der Insel Jan Mayen (Th. Fr., p. 6).

76. (2). *Gyrophora hyperborea* Ach.

Summit of Høyberget. — Neumayerberget. — Hill south of Nordlaguna. Nordvestkapp. Ekerolddalen. The Radio Station. Bernakrateret. Majatoppen. Beerenberg: Ryggvarden, 775 m above sea-level.

Evidently a common species, and previously recorded from Jan Mayen by Vain. (p. 125), Rekvedbukta (Malme, p. 3), and from Blyttberget (Math., p. 26).

77. (3). *Gyrophora arctica* Ach.

Neumayerberget. Mountain south of Stolpen. — Between the Austrian house and Nordlaguna. — Vestbreen. Nordvestkapp. — Ekerolddalen. The Radio Station. Turnbukta. Bernakrateret. Majatoppen. — Hageruphytta. Krossbukta.

This coprophilous species is common and plentiful all over Jan Mayen where birds are so abundant. It has previously been recorded from Sørlaguna (Vain., p. 125), Rekvedbukta and Mary Mussbukta (Malme, p. 3), and from Blyttberget and Wildberg (Math., p. 26).

78. (4). *Gyrophora proboscidea* (L.) Ach.

Summit of Høyberget. — Neumayerberget. — Between the Austrian house and Nordlaguna. — Tornøbekken. — Vestbreen. Nordvestkapp. — Scoresbykrateret, 451 m above sea-level. Eskkrateret. Turnbukta. Bernakrateret. Vogtkrateret.

There was a great number of fine and typical plants, it must be quite common. Previously recorded from Jan Mayen (Th. Fr., p. 6, and Vain., p. 125, f. *subnuda* Vain.), Rekvedbukta (Malme, p. 3), and from Mohnberget (Math., p. 26).

79. (5). *Gyrophora cylindrica* (L.) Ach.

Neumayerberget. — Between the Austrian house and Nordlaguna, p.p. var. *Delisei*. — Nordvestkapp, var. *Delisei* — Bernakrateret, var. *Delisei*, Beerenberg at Ryggvarden, 775 m above sea-level, and on the south west side, 1800 m. — Hageruphytta, var. *Delisei*.

A common and widespread species. Var. *Delisei* is well represented in the material, some plants are mighty, up to 15 cm in diameter. The other plants are of a more moderate size, but even they are coarser than the common var. *fimbriata*, as seen in Norway.

Previously recorded from the foot of Beerenberg, var. *Delisei* (Th. Fr., p. 6), Sørlaguna, var. *Delisei* (Vain., p. 125), Mary Mussbukta (var. *Delisei* (Malme, p. 3), and Blyttberget, var. *Delisei* (Math., p. 26).

Acarosporaceae.

80. (1). *Acarospora smaragdula* (Wbg.) Th. Fr.

Hill south of Nordlaguna (with var. *Lesdainii*). — The Radio Station.

The plants were determined by Dr. A. H. Magnusson in Gothenburg. The species is evidently not rare in Jan Mayen, for it has previously been recorded twice, viz. "ad lapidem vulcanicum in insula Jan Mayen" (Vain., p. 139), and from "Blytts Bjerg and stony plains between Mohns Bjerg and Wildberg" (Math., p. 26).

No *Biatorrella* was found in the present collection, but Malme recorded *Biatorrella cinerea* (Schaer.) Th. Fr., syn. *Sporastatia cinerea* (Schaer.) Kbr. from Rekvedbukta, "at haud omnino certa" (Malme, p. 3).

Pertusariaceae.

81. (1). *Pertusaria oculata* (Dicks.) Th. Fr.

Summit of Vogtkrateret.

A well developed plant, growing over a dead *Stereocaulon*. Previously recorded from Høyberget (Vain., p. 130).

82. (2). *Pertusaria coriacea* Th. Fr.

Hill south of Nordlaguna. — Near Turnbukta.

This species, which is so common in the western Arctic, has not previously been recorded from Jan Mayen. It is easily recognized by its nitidous surface and its intensely blood-red reaction with KOH.

83. (3). *Pertusaria lavicola* Erichs. n. sp.

Pl. II, fig. 1.

Summit of Vogtkrateret, 282 m, on lava.

“Thallus pallide cinereus, modice tenuis, irregulariter verruculosus, opacus, cartilagineus, ex parte contiguus, aut plus minusve disjuncte verruculosus, isidiis sorediisque destitutus, margine indistincto, thallo quasi concolore, prothallo tenuissimo nigro cinctus. Pars thalli contigua ambitu radiate plicata. Verrucae particulatim bene evolutae hemisphaericae, 0.5—0.7 mm latae, sed plerumque plus minusve irregulares et interdum intricato-confluentes. KOH extus et intus immutatus, CaCl_2O_2 extus —, intus +, P extus et intus immutatus. Medulla J—. Gonidia pleurococcoidea.

Apothecia desunt. Pycnoconidia anguste bacillaria, recta, circiter 7μ longa et 1μ crassa.

Der Beleg wurde mir von Dr. B. Lyngé, Oslo, zur Untersuchung übersandt. Da keine Früchte und Sorale vorhanden waren, ist die Zugehörigkeit des einzigen vorliegenden Lagers zur Gattung *Pertusaria* nicht unbedingt sicher, der Tracht nach aber höchst wahrscheinlich.

Der roten C-Reaktion wegen gehört *Pertusaria lavicola* zur Sektion *Lacteae* der Untergattung *Variolaria* und in die Nähe der *Pertusaria lactea* (L.) Arn., die meistens auch steril vorkommt. Von letzterer unterscheidet sie sich durch das Fehlen der Sorale, das stark warzige, z. T. aufgeteilte Lager und das negative Verhalten der Lagerrinde gegen KOH. Zwar kommt auch von *Pertusaria lactea* eine seltene var. *esorediata* Erichs. vor, die aber habituell durchaus abweicht und ein geschlossenes, am Rande nicht radial faltiges Lager hat.

Auffällig und bei europäischen *Pertusarien*lagern selten beobachtet ist die Auflösung des Lagers in einzelne, von einander getrennte Lagerwarzen. Doch ist das eine Erscheinung, die bei arktischen steinbesiedelnden Flechten, wohl infolge ungünstiger Wachstumsbedingungen, auch bei solchen Flechtenarten häufig zu beobachten ist, die in südlicheren Gegenden ein zusammenhängendes Lager bilden.” (C. F. E. Erichsen in litt.).

The reaction with CaCl_2O_2 is not always easily ascertained in this genus. I had tested the plant before I sent it to Mr. Erichsen, and found “cortex C rubescens, medulla C —”. Having received the plant from him, I submitted it to Dr. Magnusson, who found “cortex C rubescens, med. C —”. After which it was again sent to Mr. Erichsen, who maintained his observation, “einwandfrei”.

The explanation is, perhaps, that the reaction may be due to the stratum gonidiale.

Lecanoraceae.

84. (1). *Lecanora verrucosa* (Ach.) Laur.

Hill south of Nordlaguna. — Rock near Bernakrateret.

Previously recorded by Vainio “ad terram arenosam loco haud indicato in insula Jan Mayen” (Vain., p. 129).

85. (2). *Lecanora lacustris* (With) Nyl.

Between the Austrian house and Nordlaguna. — Havhestberget.

The thallus is very reduced, the areolae often dispersed, there are but a few apothecia, spores rather small: $11-12 \times 8 \mu$, gonidia $10-11 \mu$ in diameter.

86. (3). *Lecanora cratericola* Lynge n. sp.

Pl. II, fig. 2.

Summit of Vogtkrateret, 282 m above sea-level, on lava.

Thallus continuus, crassus, *verrucosus vel papillatus, olivaceo-badius, nitidus, hypothallus non visus.*

Apothecia numerosa vel numerosissima, dispersa vel contigua, hinc inde etiam congesta, haud parva, diameter 0.5—1.0 mm, ab initio immersa, *deinde magis elevata* et in aetate etiam basi constricta. Margo elevatus, persistens, integer, nitidus, thallo concolor, epruinus, crassitudine mediocri (circ. 50μ). Discus e concavo planiusculus, ater, etiam madefactus, epruinus. Cortex excipuli circ. 25μ altus, hyphae flabelliformiter radiantes, constrictae septatae et eam ob causam subplectenchymaticae videntur. Hypothecium incoloratum, 25μ altum. Hymenium circiter 100μ altum, superne subfuligineum ($20-25 \mu$), strato amorpho tenui incolorato tectum. Paraphyses in aqua cohaerentes, in KOH facilius discretas, ramosas, apice haud incrassatas, constrictae septatae et moniliformiter articulatae (KOH). Sporae late ellipsoideae, $12-18 \times 10-12 \mu$.

Pycnides frustra quaesitae.

Hymenium J mox (flavo-)rubescens, hypothecium J haud tingitur, medulla J non caerulescens. *Thallus* KOH *rubescens*, crystallae brevia ($4-5 \mu$ longa), haud fasciculata praecipituntur.

Its rather elevated apothecia might suggest a *Eulecanora*, but the anatomical structure is in favour of an *Aspicilia*. It should be compared with *Lecanora mastrucata*, but its thallus is much thicker and more nitidous than in that species, and its apothecia larger and more elevated. In *Lecanora mastrucata* the small apothecia, rarely more than 0.35 mm in diameter, are so immersed as the thin thallus will allow them to be.

The chemical reaction with KOH is red in either species, but more intensely so in *Lecanora mastrucata*, and in that species the crystals

precipitated are the usual fasciculate (or stellate) needles, in the present species the crystals are shorter (4—5 μ), and I did not observe the tendency to form fasciculi.

In *Lecanora cratericola* the thalline cortex is about 25 μ thick, as is also the case in the excipulum. It looks more plectenchymatous than in the apothecia, at least near to the hymenium the hyphae are distinctly flabelliformous.

87. (4). *Lecanora (Aspicilia) Johanna*e Lyng. n. sp.

Pl. I, fig. 1.

Between the Austrian house and Nordlaguna, on lava.

Thallus magnitudine mediocri, in specim. 4—6 cm latus, abrupte limitatus et linea angusta hypothallina circumdatus, sat crassus, irregulariter et profunde rimosus et eam ob causam bene areolatus. Areolae 0.5—0.7 (—1.0) mm latae, fertiles latiores, usque ad 1.0—1.2 mm, vulgo angulatae, vel hinc inde ob marginem levissime elevatum subconcaevae. Thallus laevigatus, mollis, opacus, sorediis isidiisque destitutus, *sat obscure cinereo-fuscescens* vel hinc inde pallidius maculatus et ibi cinereo-albidus (madefactus!).

Cortex thallinus altus, circ. 50 μ , hyphae non plectenchymaticae, sed superficiem versus plus minusve irregulariter directae et constrictae septatae, corpusculis angulatis (ob semper?) valde adpersae et indistinctae.

Apothecia numerosa vel numerosissima, areolis immersa et thallum subaequantia vel in aetate margine tumidulo eo plus minusve superantia, in areolis vulgo singularia, rarius bina. Discus subanguloso-rotundatus vel irregulariter ellipsoideus, interdum etiam fere linearis, ater, epruinosis, bene concavus. Discus (incl. marg.) 0.35—1.0 mm. Cortex valde indistinctus, gonidia fere usque ad superficiem progressa sunt. Hypothecium incoloratum, circ. 40 μ altum. Hymenium altum, 140—175 μ , granulis et guttulis oleosis impellucidum, superne dilute olivaceo-fuscescens, strato incolorato rupto tectum. Hymenium interdum columnis excipularibus instructum. Paraphyses cohaerentes, increbre ramosae et interdum ramoso-connexae, tenues et apice non incrassatae, septatae (sed non moniliformiter!), articuli 3—5 μ longi. Asci 25—40 μ crassi, membrana superne modice solum incrassata (5—6 μ). Sporae sat late ellipsoideae vel pyriformes, 20—27 (—30) \times (13—) 15—18 μ .

Pycnoconidia 13—17.5 μ .

Medulla J —, KOH — (vel dilutissime flavescens). Hymenium J e caeruleo mox obscure vinosum.

It is apparently related to *Lecanora heteroplaca* Zahlbr. (*Lecanora* from Novaya Zemlya, 1928, p. 18, tab. IV, fig. 1), especially to its var. *vaginans*, regarded a proper species by Magnusson in his paper on the

subgenus *Aspicilia* (not yet out). But it differs in its dark (greyish-) brown colour (*heteroplaca*: "alutaceo-cinerascens v. albido-expallens"), its dense cracks, resulting in a distinctly areolated thallus (*heteroplaca*: "fere continuus, rarius minute et tenuissime areolato-rimosus"), and in its considerably larger spores (*heteroplaca*: "15—21 × 11—12 μ"). A control measurement of *Lecanora heteroplaca* gave me 19—22 μ in length.

Its hyphae are densely adspersed by angular and irregular substances, which I was unable to remove by mineral acids. I got the impression that they were minute particles of volcanic ashes that had been fixed to the hyphae and sunk into the thallus, eventually been overgrown by the hyphae during their slow growth.

The species has been named in honour of my wife, Mrs. Johanne Krafft Lynge, who has drawn the map of Jan Mayen, and otherwise given me so much valuable assistance during my work.

It must be carefully considered whether this species is distinct from all the *Aspiciliae*, mentioned or described in my paper on the Lichens from West Greenland.

Lecanora mastoidea Lynge, l. c. p. 130, has a verrucose or even papillate thallus, very distinct from the present species.

Lecanora arctica Lynge, l. c. p. 132 and pl. VIII, fig. 2, was not uniform in the material, as is also evident from my paper. Magnusson has divided it into two species, *Lecanora arctica* Lynge, from Storøen, and a n. sp. *Lecanora pergibbosa* from Mellemfjorden (not yet published).

Lecanora arctica Lynge, s. ang. differs in its much more elevated apothecia, its expanded disk, almost resembling an *Eulecanora*, its shorter spores, 15—20 μ long, and in its greyish-white, almost white thallus.

Lecanora pergibbosa has quite another structure of the thallus, it is thin, and its apothecia are raised above it like verrucae, constricted at the base. Its spores are 17—20 × 10—12 μ. One gets the impression that a spore length of 20 μ is of some importance as a limit between *Aspiciliae* with small spores, and other species with larger spores.

The other *Aspiciliae*, mentioned in my Greenland book under the head "Medulla KOH immutata" are so obviously different from the Jan Mayen plants that they are quite out of consideration.

88. (5). *Lecanora (Aspicilia) cinereoides* Lynge n. sp.

Pl. I, fig. 2—3.

Between the Austrian house and Nordlaguna, on lava.

Thallus ut videtur parvus, thalli sing. in specimen. 1—1.5 cm lati, thallus uniformis, non radiatus, abrupte limitatus, tenuis, *rimis profundis regulariter areolatus*. Areolae angulatae, subtesselatae, planae, laevigatae, *cinereae vel cinereo-fuscescentes*, subnitidae, sorediis isidiisque destitutae,

steriles circiter 0.7 mm latae, fertiles majores, usque ad 1.5 mm. Hypothallus haud visus.

Cortex altus, 45—50 μ , hyphae non plectenchymaticae.

Apothecia numerosissima, in areolis vulgo singularia, *areolis bene immersa*, in aetate thallum subaequantia, approximata vel subconniventia. Discus rotundatus vel subellipsoideus, ater, epruinosis, concavus, margine crasso integro circumdatus. *Apothecia* (discus + marg.) diameter 0.7—1.5 mm. Hyphae excipuli in margine flabelliformiter radiantes et constrictae septatae, sed non plectenchymaticae. Hypothecium incoloratum, crassum, 75—80 μ altum. Hymenium 125—140 μ altum, superne obscure olivaceo-fuligineum, granulose. Paraphyses cohaerentes, in aqua indistinctae, in HCl + C₂H₅OH tenues, apice non incrassatae, transverse et haud constrictae septatae, in parte superiori interdum divergente ramosae. Asci saccati vel pyriformes, 30—35 μ crassi, membrana superne 10—12 μ crassa. Sporae bene evolutae, magnitudine parce variantes, 20—26 \times 12—17.5 μ .

Pycnoconidia frustra quaesita.

Medulla J —, hymenium J rubescens, *medulla KOH rubescens, etiam cum excipulo*, crystallae fasciculatae praecipitantur.

Var. *partialis* Lynge nov. var.

Differt a typo excipulo solum KOH rubescenti, crystallae fasciculatae vel stellatae praecipitantur. Medulla KOH immutata, cortex thallina KOH dilute flavescens. — Sporae (saepe male evolutae) 20—33 \times 13—16 μ . Pycnoconidia recta vel subrecta, 16—23 μ longa.

Found on volcanic rocks in the same place as the species itself, and also together with *Lecanora Johanna*.

Lecanora cinereoides differs from *Lecanora cinerea* in its paraphyses, which are not incrassated at their apices, and not moniliformly constricted, as in the latter species. Hue writes on *Lecanora cinerea*: "Paraphyses sursum . . . 5—6 μ crassae, articulatae, articulis sphaericis" (Lich. Morph. et Anat., No. 615). Magnusson also found the paraphyses of *Lecanora cinerea* to be "submoniliform", and I have myself made the same observation in Malme Lich. Suec. No. 248, and in a plant, collected by Magnusson in Upland, and regarded by him as very near to the Linnéan type plant. This important difference quite suggests two different sections for the present species, and for *Lecanora cinerea*.

In the Jan Mayen plant the individual thallus is smaller than in *Lecanora cinerea*, the apothecia more immersed, and the spores larger, in *Lecanora cinerea* 12—20 \times 8—10 μ , after Hue, l. c., 15—22 \times 8—14 μ , after Th. Fries Lich. Scand., p. 281. In Malme Lich. Suec., No. 248, I measured 15—18 \times 10—11 μ . This difference in spore size is noteworthy.

It is difficult to find morphological or anatomical differences that could justify a specific distinction between *Lecanora Johanna*e and *Lecanora cinereoides*. The difference is chemical, and it is a matter of tact whether they should really be distinguished as different species. Their interest is on another line: Have we here caught a species in the act of a recent differentiation?

89. (6). *Lecanora polytropa* (Ehrh.) Rabh.

Sørlaguna, on drift wood. — The Austrian house, in great abundance on the house. — The Radio Station. Beerenberg: Near Ryggvarden, 750 m above sea-level, and Ryggvarden, 775 m.

This common species has been recorded from Mary Mussbukta, lignicola (Malme, p. 3), and from Säule (Norw. Stolpen) by Mathiesen (p. 27).

90. (7). *Lecanora subtorrida* Zahlbr.

Zahlbr. Die Gattung Lecanora, Rep. Scient. Res. Norw. Exped. to Novaya Zemlya, No. 44, p. 23, Oslo 1928.

Havhestberget.

A coprophilous lichen here, as it was in Novaya Zemlya. Lid only collected one stone with this lichen. It was not so well developed on the lava, as it was in my Novaya Zemlya plants, but it seems to me that it is identical with the type plants.

91. (8). *Lecanora gelida* (L.) Ach.

Arnethkrateret. — Between the Austrian house and Nordlaguna. — Ekerolddalen. Summit of Vogtkrateret. Scoresbykrateret, 451 m above sea-level. Beerenberg: Mathumpen, 1566 m.

Very common in Jan Mayen, and previously repeatedly recorded: "Sur les pierres de basalt" (Deichm. Branth, p. 29), "ad lapides vulcanicos" (Vain., p. 129), Blytts Bjerg and stony plain between Mohns Bjerg and Wildberg (Math., p. 27).

Some other species of *Lecanora* have been recorded from the island, viz.:

Lecanora albescens (Hoffm.) Flk. from "Säule" (Norw. Stolpen) by Mathiesen, p. 27.

Lecanora atrosulphurea (Wbg.) Ach. var. *normalis* Th. Fr. from "lignum vetustum", fert. (Vain., p. 129).

Lecanora intricata (Schrud.) Ach. from "stones at Säule" (Norw. Stolpen), by Mathiesen (p. 27).

Lecanora subdepressa Nyl. var. *obscurata* Th. Fr. from Rekvedbukta (Malme, p. 3—4, with the remark: "A Fries Exs. n. 343 non recedit nisi

apotheciis sporisque paullulo majoribus, his 18—22 μ longis, 12—14 μ crassis). Most probably Vainio recorded the same species from “rupe in insula Jan Mayen, fert., thallus KOH non reagens” s. n. *Lecanora gibbosa* var. *subdepressa* (Vain., p. 129).

92. (1). *Ochrolechia frigida* (Sw.) Lyng.

Hill south of Nordlaguna. Tornøedalen. — Vestbreen. — Summit of Scoresbykrateret, 451 m above sea-level. Ekerolddalen. Summit of Vogtkrateret. — Hageruphytta.

Very common in Jan Mayen as in other Arctic regions. Several plants can be referred to f. *theleporoides*.

Ochrolechia tartarea has been recorded from Jan Mayen by Vainio (Vain., p. 130), who distinguished between 3 var.s, viz. var. *saxorum*, var. *inspersa* (perhaps the same as my *Ochrolechia Grimmiae*), and var. *frigida*.

93. (2). *Ochrolechia Grimmiae* Lyng.

Lyng Lich. from Novaya Zemlya, 1928, p. 184, pl. XI, fig. 4.
Summit of Høyberget.

No *Lecania* was found in the present collections, but Malme recorded an interesting find of *Lecania Nylanderiana* Mass. “in ossibus ejectis vetustis balaenarum”, without indication of locality (Malme, p. 3).

94. (1). *Candelariella vitellina* (Ehrh.) Müll. Arg.

Between the Austrian house and Nordlaguna. — Vogtkrateret.

Found on the walls of the Austrian house, as well as on rocks. It is not supposed to be rare, but there is no previous record of it.

95. (2). *Candelariella epixantha* (Ach.) Sandst.

Havhestberget, only one specimen.

There is a previous record “on lava at Säule” (Norw. Stolpen) by Mathiesen (Math., p. 27).

96. (3). *Candelariella placodizans* (Nyl.) Magn.

Vide Lyng: Lich. 5th Thule Exped., 1935, p. 23.

Hill south of Nordlaguna, in considerable abundance. — At the Radio Station.

Parmeliaceae.

97. (1). *Parmelia pubescens* (L.) Vain.

Summit of Høyberget. — Between the Austrian house and Nordlaguna. Tornøebekken. — Bernakrateret. Summit of Vogtkrateret. The Radio Station.

There were so many plants that it must be quite common. It has previously been recorded by Th. Fries ("Säule nächst der Südlagune", p. 6), "ad rupem in ins. Jan Mayen" (Vain., p. 128), and from Drivvedbukten (Norw. Rekvedbukta) by Malme, p. 4. *Parmelia minuscula* was absolutely lacking.

98. (2). *Parmelia saxatilis* (L.) Ach.

Neumayerberget. Mountain near Stolpen. — Nordvestkapp. — East side of Jamesonbukta. — Hageruphytta, c.fr.

Common and plentiful, some of the plants are quite magnificent, with well developed isidia. — Previously recorded from Mohnberget (Math., p. 27), and "ad rupem in ins. Jan Mayen" (Vain., p. 128).

99. (3). *Parmelia omphalodes* (L.) Ach.

Turnbukta: Vetlagrytekrateret.

This species, which is not common in Arctic regions, has previously been recorded from Jan Mayen by Vainio, p. 128 ("var. *panniformis*, in rupe et supra alios lichenes rupium et ad lignum"), and from Rekvedbukta and Mary Mussbukta (Malme, p. 4). I found an undetermined specimen from Mohnberget in herb. Copenh.

The *Parmelia* flora is very poor in Jan Mayen, only these three species being known from the island.

100. (1). *Cetraria islandica* (L.) Ach.

Summit of Høyberget. — Summit of Neumayerberget. — Hill south of Nordlaguna. — Vestbreen. — Scoresbykrateret. Ekerolddalen. Turnbukta, at Vetlagrytekrateret. Ullrenglaguna, at Kreklingkrateret.

Cetraria islandica is very common. The broadly-leaved, typical forms are evidently rare, only at Scoresbykrateret Lid found such plants. The whole rest of the material consisted of narrowly-lobed plants, habitually hardly to be distinguished from *Cetraria crispa*. But the reaction with paraphenylendiamin was positive in all of them. It is doubtful whether the typical *Cetraria crispa* is found in Jan Mayen.

Cetraria islandica has been recorded from Sydlaguna by Th. Fries (p. 7), and from the island without indication of locality by Deichmann Branth (p. 29), *Cetraria crispa* from Sydlaguna by Vain. (p. 127), and from Rekvedbukta by Malme (p. 4). The chemical reaction of these plants was not stated.

101. (2). *Cetraria Delisei* (Bory) Th. Fr.

Engelsbukta. — Vestbreen. — Ekerolddalen north of Majatoppen. Kreklingkrateret at Ullerenglaguna.

Supposed to be fairly common. This is also supported by several previous finds: Danielssenberget (Th. Fr., p. 6), Engelsbukta (Malme, p. 4), Guineabukta and Blyttberget (Math., p. 27), and Jan Mayen without indication of locality (Vain., p. 126).

102. (3). *Cetraria nivalis* (L.) Ach.

Summit of Høyberget. — Turnbukta, at Vetlagrytekrateret. A valley in the mountain west of Losbåten.

Previously recorded from Jan Mayen by Vainio (Vain., p. 127), Rekvedbukta (Malme, p. 4), and from Guineabukta (Math., p. 27).

*Usneaceae.*103. (1). *Cornicularia aculeata* (Schreb.) Ach.

Summit of Høyberget. — Hill south of Nordlaguna. — Vestbreen. Eskkrateret. Ekerolddalen. Turnbukta at Vetlagrytekrateret. — East of Hohenlohekrateret.

Common and plentiful. Previously recorded from Sydlaguna (Vain., p. 127), Rekvedbukta (Malme, p. 4), and from Blyttberget (Math., p. 27).

104. (1). *Alectoria cincinnata* (Fr.) Lyngé.

Summit of Høyberget.

Var. *veaxillifera* Nyl. was found on the sandy beach at Sørbukta.

It is perhaps not rare, for it has been recorded twice: Sørbukta (Th. Fr., p. 8), and "pr. lagunas meridionales" (Vain., p. 126).

105. (2). *Alectoria ochroleuca* (Ehrh.) Nyl.

Summit of Høyberget.

Vainio recorded it from Sørlaguna (p. 126).

106. (3). *Alectoria nigricans* (Ach.) Nyl.

Summit of Høyberget. — Hill south of Nordlaguna. — Vestbreen. — Turnbukta at Vetlagrytekrateret. Summit of Vogtkrateret.

This species is common in Jan Mayen, as it usually is in Arctic regions. It could not escape the attention of previous collectors: "über die ganze Insel verbreitet", Danielssenberget, Stolpen, and Sørbukta (Th. Fr., p. 8), and without indication of localities: Vain., p. 126, and Deichm. Br., p. 29.

Alectoria chalybeiformis was not detected by the Norwegian botanists, but its f. *intricans* Vain., has been recorded from Sørslaguna by Vainio (p. 126).

107. (1). *Neuropogon sulphureus* (König) Hellb.

Neumayerberget. — Hill south of Nordlaguna. — Eskkrateret.

Lid found it rather plentiful. It has previously been recorded from Sørslaguna by Vain. (p. 126) and by Math. (p. 27).

Caloplacaceae.

108. (1). *Blastenia tetraspora* (Nyl.) Rehm.

Between the Austrian house and Nordlaguna.

It was very scarce in the collection, but we cannot conclude from this that it should be rare. It has previously been recorded by Vainio from Sørslaguna (Vain., p. 131).

109. (2). *Blastenia leucoraea* (Ach.) Th. Fr.

Between the Austrian house and Nordlaguna, very scarce.

110. (1). *Caloplaca subolivacea* (Th. Fr.) Lynge.

Near Vogtkrateret, a very small specimen.

111. (2). *Caloplaca cinnamomea* (Th. Fr.) Oliv.

The Austrian house, in great abundance on the walls of the house. — Vogtkrateret, on decayed plants, scarce.

Previously collected in Mary Mussbukta, lignicola, perhaps on the Austrian house (Malme, p. 4), and "on rotten wood at the station" (Math., p. 28).

112. (3). *Caloplaca amniospila* (Ach.) Oliv.

Summit of Vogtkrateret, scarce.

There is a distinct, rather thick, white thallus, the apothecia are plane, with a very distinct thalline margin. I am not quite convinced that it is specifically distinct from *Caloplaca cinnamomea*.

113. (4). *Caloplaca*, cfr. *discoidalis* (Vain.) Lynge.

On the walls of the Austrian house, rather plentiful.

The thallus is very thin, only a film over the wood. The apothecia are rather large, 1—1.5 mm in diameter, in age crenate, with a thick, shining margin, a little paler than the disk. The spores are narrow,

11—13 \times 4.5—5 μ . It apparently belongs to the same section of *Caloplaca ferruginea* as the saxicolous *Caloplaca fraudans* and the lignicolous *Caloplaca discoidalis*. My Novaya Zemlya plants of the latter species, which were identified by Vainio, have a more brilliant colour of the apothecia, which are so numerous as to cover the thallus, in the present plants they are more dispersed and less conspicuous.

114. (5). *Caloplaca cerina* (Ehrh.) Th. Fr.

On the walls of the Austrian house, evidently scarce.

Malme recorded "*Callopisma cerinum* var. *Ehrhartii* (Schaer.) in ossibus ejectis vestustis balaenarum" from Mary Mussbukta (Malme, p. 4). The muscicolous *Caloplaca stillicidiorum* was not found in the collections, but is little probable that it should be missing in Jan Mayen.

115. (6). *Caloplaca elegans* (Link) Th. Fr.

Beerenberg, 1800 m above sea-level. Havhestberget. The Radio Station.

I do not understand why there were so few plants of this species which is certainly common. Have we neglected collecting it? It has previously been collected in Engelsbukta (Malme, p. 4), and "on lava at Säule" (Norw. Stolpen) (Math., p. 28).

Th. Fries described a β *discopa* from Sydlaguna (Th. Fr., p. 6).

116. (7). *Caloplaca granulosa* (Müll. Arg.) Steiner.

In a bird-cliff between Mary Mussbukta and Nordlaguna.

This rock had so precipitous sides that it was inaccessible to me, and the species was identified on account of its characteristic colour, which could be distinguished from the sea.

Vainio recorded two other species of *Caloplaca* from Jan Mayen, viz.: *Caloplaca verruculifera* (Vain.) Zahlbr. "ad lapidem vulcanicum in insulo Jan Mayen (Vain., p. 131), with dignosis). I have not seen this species.

Caloplaca vitellinula (Nyl.) Oliv., also "ad lapidem vulcanicum" (Vain., p. 131).

Buelliaceae.

117. (1). *Buellia coniops* (Wbg.) Th. Fr.

Mary Mussbukta, very plentiful as well on the rocks as on the walls of the Austrian house.

This coprophilous lichen is undoubtedly very common all over the island where birds are so abundant. But unfortunately the bird-cliffs were not explored lichenologically, that would have brought many interesting additions to the flora of the island.

118. (2). *Buellia*, cfr. *stigmatea* Kbr.

Between the Austrian house and Nordlaguna.

Thallus tenuissimus, irregulariter ruptus vel subgranulosus, sat obscure cinerascens.

Apothecia supra thallum tenuissimum elevata, minutissima, diametro 0.2 mm, subplana, epruinosa, ab initio margine elevato tenui nitidulo cincta, deinde depresso convexa, emarginata. Excipulum plus minusve plectenchymaticum, in parte exteriori crasso carbonaceum, in parte centrali dilute flavofuscenscens, etiam cum parte centrali hypothecii. Hymenium 75—80 μ altum, superne fuscenscens, strato irregulari incolorato tectum. Paraphyses arcte conglutinatae, in apice capitato-incrassatae, 2.5 μ . Asci inflato-saccati. Sporae in apice late rotundatae, in medio constrictae, saepe corrugatae, 13—15 \times 7.5—8 (—9) μ . Episporium aequaliter incrassatum, sed haud crassum, lumen rotundatum, porus in sporis juvenilibus tenuis, sat distinctus.

Hymenium J e caeruleo sordide vinosum. Thallus J—, KOH—.

I was fortunate enough to obtain a good, central section of one of these minute apothecia, and found a pale hypothecium, at least in the central part. Another sectioned apothecium gave the same result. This fact is against the determination. I sectioned an apothecium of Malme Lich. Suec. No. 972, the hypothecium was dark brown, but perhaps not equally dark everywhere. My plant agrees so well with the *stigmatea* in all other respects that I have not ventured to distinguish it from that species. If specifically distinct it is supposed to be an undescribed species.

Buellia punctiformis f. *stigmatea* has been recorded from "lapides vulcanicos" (Vain., p. 133), and *Buellia myriocarpa* from "Säule" by Mathisen (Math., p. 28).

119. (3). *Buellia (Diplotomma) beerenbergiana* Lynge n. sp.

Pl. II, fig. 3.

Beerenberg: East of Ryggvarden (the Rygg cairn), 775 m above sea-level, on a very rugged lava.

Thallus areolatus, areolae subdispersae vel magis contiguae, crassiusculae, irregulariter rotundatae, diametro 0.7—1.0 mm, depresso convexae, cinerascens, *mox omnino in sorediis albidis granulato-furfuraceis erumpentes*. Hypothallus ater, irregularis, hinc inde visus.

Apothecia numerosa (sed in specimine saepe male evoluta), dispersa, diametro 0.7—1.5 mm, supra thallum plus minusve elevata et basi constricta. Discus ater, epruinosis, rugulosus, margine concolori, integro, elevato et -ut videtur-persistenti circumdatus. Excipulum obscure fuscum, etiam cum hypothecio, hyphae excipuli marginem versus flabelliformiter radiantes. Hymenium circiter 100 μ altum, superne obscure fuscum,

hypothecio concolor. Paraphyses haud concretæ, simplices vel rarissime ramosæ, in KOH fusco-capitatae, in apice 4—5 μ crassæ. Asci angusti, sporæ (vulgo male evolutæ) tetrablastæ vel nonnihil murales, ellipsoideæ vel subapiculatæ, subincoloratæ, episporium tenue et halone omnino destitutæ. Gonidia viridia.

Asci J pulchre persistenterque caerulescentes, gelatina J haud colorata, medulla J—. Hymenium flavofuscenscens, medulla KOH immutata.

A remarkable, but rather mysterious plant, which put grey hairs into my head. I have hardly ever seen anything resembling its thallus, which very soon breaks up into granular soredia, covering the whole areoles. Only very young areoles are intact.

The plant can hardly be a *Rhizocarpon*, I was unable to find any trace of a halo around the spores, the somewhat apiculated spores also suggest a *Diplotomma*, rather than a *Rhizocarpon*. — In *Buellia* (*Diplotomma*) *alboatra* the spores are often very pale.

In this section there is another sorediated (corticolous) species, *Buellia betulina* (Hepp) Th. Fr. Th. Fries writes on its spores: "adultæ nigricantes", suggesting them to be rather pale when young (Lich. Scand., p. 610).

Buellia disciformis var. *insignis* has been recorded from Høyberget by Vainio (Vain., p. 132). It was not found in the present collections.

120. (1). *Rinodina turfæa* (Wbg.) Kbr.

The Radio Station.

Previously recorded from "muscos destructos" by Vainio (p. 132), and from Mohnfjellet (Math., p. 28). Our plant is entirely typical, with spores up to 35 μ .

121. (2). *Rinodina laevigata* (Ach.) Malme.

Beerenberg: Vogtkrateret, on decaying mosses, with *Caloplaca subolivacea*. Nordlaguna, parasitic on *Psoroma hypnorum* and a dead *Peltigera*.

We would rather have expected *Rinodina turfæa* here and on a substratum of that kind, but the examination must exclude that species. The apothecia are small, not exceeding 0,5 mm in diameter, the disk is slightly convex, the margin thin persistent, entire. The hymenium is low, about 80 μ in height, the spores 14—20 (—23) \times 8—10 μ , and they look well developed, they are hardly constricted at the septum, with an unequally incrassated spore-wall, agreeing entirely with Malme's illustration (*Rinodina sophodes*, etc., 1895, tab. I, fig. 12—20).

Physciaceae.

122. (1). *Physcia muscigena* (Ach.) Nyl.

Rock near Bernakrateret.

There was but this single plant of the genus. That cannot be representative of the flora of Jan Mayen, we must expect some other species, at least in the bird-cliffs.

Physcia tribacia (Ach.) Nyl., syn. *Physcia dubia* (Hoffm.) Lyngé has been recorded, "on lava at Säule" (Norw. Stolpen, Math., p. 28). I have seen the plant. It is a very miserable one, hardly to be determined with certainty. But its soredia are rather of the *caesia*-type, and I also succeeded in obtaining a positive reaction with KOH in its medulla. I find *Physcia caesia* a more probable determination.

Lichenes Imperfecti.

123. (1). *Thamnomia vermicularis* (Sw.) Ach.

North of Sternektoppen. — Hill south of Nordlaguna. — Krossberget. — Turnbukta. — Grønberget.

Undoubtedly a common species. We are astonished to find but a single previous record of it from Jan Mayen: Sørlaguna (Vain., p. 128).

Parasite.

Mathiesen recorded *Endococcus gemmifer* Tayl., "parasitic on a white crustaceous undeterminable thallus; Blytt Bjerg on lava. Spores dark-coloured, uniseptate, $8 \times 4 \mu$ " (Math., p. 28).

Summary.

The following lichens have been recorded from Jan Mayen: (lichens found by the Norwegian expeditions are marked with an asterisc (*)).

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|---|--|
| <ul style="list-style-type: none"> * 1. <i>Verrucaria aethiobola</i> Wbg. * 2. — <i>ossiseda</i> Lyngé. * 3. <i>Polyblastia hyperborea</i> Th. Fr. 4. — <i>terrestris</i> Th. Fr. * 5. <i>Dermatocarpon daedaleum</i>
(Krpplh.) Th. Fr. 6. <i>Sphaerophorus fragilis</i> (L.) Pers. * 7. — <i>globosus</i> (Huds.) Vain. 8. <i>Xylographa abietina</i>
(Pers.) Zahlbr. * 9. <i>Crocynia neglecta</i> (Nyl.) Hue. | <ul style="list-style-type: none"> *10. <i>Polychidium muscicola</i>
(Sm.) S. Gray. *11. <i>Parmeliella arctophila</i>
(Th. Fr.) Malme. 12. — <i>lepidiota</i> (Somrft.) Vain. *13. <i>Pannaria pezizoides</i>
(Web.) Lightf. *14. <i>Psoroma hypnorum</i>
(Dicks.) Hoffm. *15. <i>Solorina bispora</i> Nyl. *16. — <i>crocea</i> (L.) Ach. |
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| *115. <i>Parmelia saxatilis</i> (L.) Ach. | *131. <i>Caloplaca elegans</i> (Link) |
| *116. <i>Cetraria Delisei</i> (Bory) Th. Fr. | Th. Fr. |
| *117. — <i>islandica</i> (L.) Ach. | *132. — <i>granulosa</i> (Müll. Arg.) |
| *118. — <i>nivalis</i> (L.) Ach. | Steiner. |
| *119. <i>Cornicularia aculeata</i> | *133. — <i>subolivacea</i> (Th. Fr.) Lyngé |
| (Schreb.) Ach. | 134. — <i>verruculifera</i> (Vain.) |
| 120. <i>Alectoria chalybeiformis</i> (L.) | Zahlbr. |
| *121. — <i>cincinnata</i> (Fr.) Lyngé | 135. — <i>vitellinula</i> (Nyl.) Oliv. |
| *122. — <i>nigricans</i> (Ach.) Nyl. | *136. <i>Buellia beerenbergiana</i> |
| *123. — <i>ochroleuca</i> (Ehrh.) Nyl. | Lyngé n. sp. |
| *124. <i>Neuropogon sulphureus</i> | *137. — <i>coniops</i> (Wbg.) Th. Fr. |
| (König) Hellb. | 138. — <i>disciformis</i> (Fr.) Mudd. |
| *125. <i>Blastenia leucoraea</i> | *139. — <i>stigmatea</i> Kbr. |
| (Ach.) Th. Fr. | *140. <i>Rinodina laevigata</i> |
| *126. — <i>tetraspora</i> (Nyl.) Rehm. | (Ach.) Malme. |
| *127. <i>Caloplaca amniospila</i> | *141. — <i>turfacea</i> (Wbg.) Kbr. |
| (Ach.) Oliv. | 142. <i>Physcia caesia</i> (Hoffm.) Hampe. |
| *128. — <i>cerina</i> (Ehrh.) Th. Fr. | *143. — <i>muscigena</i> (Ach.) Nyl. |
| *129. — <i>cinnamomea</i> (Th. Fr.) Oliv. | *144. <i>Thamnomia vermicularis</i> |
| *130. — <i>discoidalis</i> (Vain.) Lyngé | (Sw.) Ach. |

We find, accordingly, that at the present day 144 different species of lichens have been recorded from Jan Mayen. The Norwegian collections contained 122 different species, and 1 species (*Lecidea Swartzioidea*), not found in our collections, is due to an undetermined plant in the herb. Copenhagen, leg. Gandrup. It is possible that a few of the 22 species, which we did not find, are synonyms of our plants. That can only be decided by an examination of the plant in question, I have seen but a few of them.

This number is, of course, far from being exhaustive, it is doubtful whether it can be said to be representative. It is generally recognized that a thorough lichenological examination of a region can only be done by a trained lichenologist, who knows also the Microlichens. Apart from my short visit of a few hours (if I may be allowed to mention my own name) Jan Mayen has never been visited by a lichenologist. As is seen from the preface all the other botanists who have worked there have only collected lichens more occasionally. The largest collection, by far, is due to our Mr. Johannes Lid, who collected lichens in addition to his principal study, the Vascular plants. Unfortunately there were but few lichens from the bird-cliffs which are here very precipitous and little accessible.

Jan Mayen is of much the same size as Bear Island (Norw. Bjørnøya). In 1868 Th. M. Fries worked in Bear Island a few days, resulting in nearly 190 species of lichens. The geological substratum is much more uniform in Jan Mayen than in Bear Island, and we should therefore expect more lichens from the latter island.

The number of Vasculares is much the same in either island (nearly 60 species).

Jan Mayen is known for its very severe climate, fog and rain alternate with penetrating, bitterly cold winds, often hurricanes. The window glass is opaque after one season, on account of the wind-blown sand. This also influences the development of many lichens. I have hardly ever found so many miserable plants in a collection. Several of them were beyond identification, and simply had to be left aside. In others I attempted an identification, but several "cfr."s suggest my difficulties. As usual the thalline development was more influenced than the apothecia and their structure.

It is generally supposed that Jan Mayen was subjected to an integral glaciation during the Glacial Epochs. Whether this really was the case, or not, is difficult to say. If it was, every plant in Jan Mayen must have immigrated after the last integral glaciation.

Jan Mayen is a volcanic island, its highest point, the volcano Beerenberg, is nearly 2500 m high. It equals the highest mountains in Scandinavia. Jan Mayen is surrounded by deep waters on all sides, and it is very little probable that it should ever have been connected with any of the surrounding larger islands or continents. Its flora must either have immigrated from beyond the seas, or been developed in the island itself in recent time, geologically spoken.

Concerning the Vasculares hardly anything is known that could suggest a recent development (perhaps one species of *Taraxacum*).

With the lichens the case is different. — In Spitsbergen and the North-East Land there are several species which have suggested the idea of old, relic plants to me. I may refer to my two papers: On Dactylina and Dufourea, Skr. om Svalbard og Ishavet, No. 59, Oslo 1933, and Lichens from Spitsbergen and the North-East Land, I. The Macrolichens, Vid.-Akad. Skr., Oslo 1938, No. 6. In Jan Mayen I have not found a single lichen of that kind.

But there are other lichens that suggest a recent evolution. In the present small collection there are several species that have not (yet) been found outside of the island, viz. *Lecidea dilabens* Th. Fr., *Lecanora cinereoides* Lyngé, *Lecanora cratericola* Lyngé, *Lecanora Johanna* Lyngé, *Pertusaria lavicola* Erichsen, *Buellia beerenbergiana* Lyngé, and at last *Caloplaca verruculifera* Vain. (which latter I have not seen). My colleagues may judge differently of the specific value of these species, but anyhow they are more or less different from related types, known from the surrounding areas. One case, *Lecanora cinereoides* — *Lecanora Johanna*, is particularly interesting. The difference between them is chemical, rather than morphological or structural, and to me this has suggested an initiating differentiation.

All of the 3 *Lecanoras* belong to the subgenus *Aspicilia*, well known for its numerous species of a local, regional distribution. I may refer to Zahlbruckner's paper on my Novaya Zemlya *Lecanoras*, to my own paper

on Th. Fries's West Greenland lichens (Meddel. om Grøn., vol. 118, No. 8, Copenhagen 1937), and to Dr. Magnusson's large monograph on the *Aspicilliae* (not yet out). My large Spitsbergen collection of this genus has so far only been mounted, it is not yet known what it may contain.

The truly Arctic *Pertusariae* are soil lichens of no peculiar interest. But in Iceland the genus is profusely represented by a number of interesting saxicolous species. My friend, Mr. C. F. E. Erichsen in Hamburg, has identified a part of it, and the result was remarkably rich. He also described a new species in Mr. Polunin's collection from the Eastern Subarctic Canada. One gets the impression that also this genus is in a rich, recent evolution.

That the same is the case with the genus *Buellia* is well known. No less than 8 new species were described by Vainio from Pitlekai in Eastern Siberia, if the genus is limited in the usual sense (1909, the Vega material. I have myself described 3 new species from Novaya Zemlya (1928), 1 from Bear Island (1926) and 3 from West Greenland (1937). My Iceland collection from 1937 (not yet fully identified) is very rich in *Buelliae*, and most probably there are several new species.

We find that the novelties from Jan Mayen concentrate in some genera, which are evidently in a rich development, here as elsewhere, and it seems to me that this fact is in favour of a recent development, at least in Jan Mayen where the flora must be so young.

During the reading of the proofs I received a letter from Mr. I. Mackensie Lamb, London, with information on recent British collections of lichens from Jan Mayen.

I. Mr. C. G. Byrd, Esq., collected 7 (common) species of lichens there in 1934.

II. Mr. R. S. Russell, Esq., collected 28 lichens and 1 lichen parasite in 1938. Two species of lichens, viz. *Toninia leucophaeopsis* (Nyl.) Th. Fr. var. *hyperborea* Lamb n. var. and *Stereocaulon solutum* Lamb. n. sp., are new to the island. The parasite is *Illosporium roseum* Mart.

(By permission of Mr. Lamb.)

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<i>Lecidea</i>		<i>Ochrolechia</i>	39
<i>flavicunda</i> Ach.	18	<i>frigida</i> (Sw.) Lynge	39 , 47
<i>flavocaerulescens</i>	18, 19	— <i>f. theleporoides</i>	39
<i>geographica f. urceolata</i> Schaer. ...	3	<i>Grimmiae</i> Lynge	39 , 47
<i>glomerulosa</i> (DC.) Steud. ...	21 , 22, 47	<i>tartarea</i>	39
— <i>f. euphorea</i> Flk.	21	— <i>var. frigida</i>	39
— <i>f. Laureri</i>	21	— <i>var. dispersa</i> Vain.	4, 39
— <i>var. muscorum</i> (Wulf.) Vain. ...	21	— <i>var. saxorum</i> Vain.	39
<i>goniophila</i>	21	<i>Omphalodiscus</i>	30
— <i>var. granulosa</i> Vain.	20	<i>virginis</i> (Schaer.) Schol.	30 , 47
— <i>var. incongrua</i>	21	<i>Pannaria</i>	10
<i>Helsingforsiensis</i> Nyl.	13 , 47	<i>pezizoides</i> (Web.) Lightf.	10 , 46
<i>kolaensis</i> Nyl.	5, 20 , 47	<i>Pannariaceae</i>	10
<i>lactea</i> Flk.	15	<i>Parmelia</i>	40
<i>lapicida</i> Ach.	16 , 47	<i>lanata</i> (L.) Wallr.	3
— <i>β. L. cyanea</i>	14	<i>minuscula</i>	40
— <i>var. declinans</i> Nyl.	16	<i>omphalodes</i> (L.) Ach.	40 , 47
<i>lulensis</i> (Hellb.) Th. Fr.	20 , 47	— <i>var. panniformis</i>	40
<i>luteoatra</i> Nyl.	19 , 20, 47	<i>pubescens</i> (L.) Vain.	40 , 47
<i>macrocarpa</i> (DC.) Th. Fr.	17 , 47	<i>saxatilis</i> (L.) Ach.	40 , 48
— <i>f. caesiocconvexa</i>	17	<i>Parmeliaceae</i>	40
— <i>f. hydalea</i>	17	<i>Parmeliella</i>	10
— <i>f. praetoria</i>	17	<i>arctophila</i> (Th. Fr.) Malme	10 , 46
— <i>f. subconvexa</i>	17	<i>lepidiota</i> (Somrft.) Vain.	46
<i>melinodes</i> (Kbr.) Magn.	18 , 47	— <i>f. tristis</i> Th. Fr.	10
<i>pallida</i> Th. Fr.	23 , 47	<i>Patellaria</i>	
<i>pantherina</i> (Ach.) Th. Fr. ...	14 , 15, 47	<i>macrocarpa</i> DC.	17
<i>paupercula</i> Th. Fr.	14	<i>Peltigera</i>	11
<i>pelobotrya</i> (Wbg.) Leight.	16 , 47	<i>aphthosa</i>	11
<i>peralbida</i> Th. Fr.	15	<i>canina</i> (L.) Hoffm.	12 , 47
<i>pungens</i> (Kbr.) Nyl.	21	— <i>var. membranacea</i>	12
<i>sorediata</i> Lynge	20 , 47	<i>erumpens</i> (Tayl.) Vain.	12 , 13, 47
<i>sorediza</i> Nyl.	14 , 47	— <i>f. leptoderma</i> (Nyl.) Schol. 12 , 13	
<i>steriza</i> (Ach.) Vain.	17	<i>leucophlebia</i> (Nyl.) Gyeln.	11 , 47
<i>stigmathea</i> Ach.	20 , 47	— <i>f. complicata</i> (Th. Fr.)	11
— <i>f. granulosa</i> (Arn.) Vain.	20	<i>malacea</i> (Ach.) Fr.	11 , 47
<i>subcongrua</i> Vain.	21 , 47	<i>rufescens</i> (Weiss) Humb. 11 , 12 , 47	
<i>Swarzioidea</i> Nyl.	15 , 47, 48	<i>scabrosa</i> Th. Fr.	13 , 47
<i>Swarzioidea</i>	15	<i>variolora</i> (Mass.) Gyeln.	11
<i>theiodes</i> Somrft.	16 , 47	<i>venosa</i> (L.) Hoffm.	11 , 47
<i>vernalis</i> Ach.	23 , 47	<i>Peltigeraceae</i>	10
<i>viridiatra</i> Stenh.	20	<i>Pertusaria</i>	32
<i>Wulfenii</i> (Hepp) Arn.	21	<i>coriacea</i> Th. Fr.	32 , 47
<i>Lecideaceae</i>	13	<i>lactea</i> (L.) Arn.	33
<i>Lichenes Imperfecti</i>	46	— <i>var. esorediata</i> Erichs.	33
<i>Lithoidea</i>	8	<i>lavicola</i> Erichs. n. sp.	33 , 47, 49
<i>Lopadium</i>	25	pl. II, fig. 1	
<i>fecundum</i> Th. Fr.	25, 47	<i>oculata</i> (Dicks.) Th. Fr.	32 , 47
<i>fuscoluteum</i> (Dicks.) Mudd ...	25 , 47	<i>Pertusariaceae</i>	32
<i>Nephroma</i>	11	<i>Physcia</i>	46
<i>arcticum</i> (L.) Torss.	11 , 47	<i>caesia</i>	46, 48
<i>Neuropogon</i>	42	<i>dubia</i> (Hoffm.) Lynge	46
<i>sulphureus</i> (König) Hellb.	42 , 48	<i>muscigena</i> (Ach.) Nyl.	46 , 48

<i>Physcia</i>		<i>Sporastatia</i>	
tribacia (Ach.) Nyl.	46	cinerea (Schaer.) Kbr.	32, 47
<i>Physciaceae</i>	46	<i>Stereocaulon</i>	29
<i>Placodium</i>		alpinum Laur.	7, 29 , 47
verruculiferum Vain.	4	arcticum Lynge	7, 30 , 47
<i>Polyblastia</i>	8	botryosum Ach.	29 , 47
hyperborea Th. Fr.	8 , 46	denudatum Flk.	7, 30
terrestris Th. Fr.	9, 46	— β . pulvinatum (Schaer.) Flk. 3,	30
<i>Polychidium</i>	10	fastigiatum Anzi	29
musciola (Sm.) S. Gray	10 , 46	paschale (L.) Hoffm.	30, 47
<i>Psoroma</i>	10	rivulorum Magn.	30 , 47
hypnorum (Dicks.) Hoffm. 10 ,	45, 46	solutum Lamb	50
<i>Rhizocarpon</i>	25	tomentosum Fr.	30
chionophilum Th. Fr.	26, 47	— * alpinum (Laur.) Th. Fr.	3
Copelandii (Kbr.) Th. Fr.	25 , 47	<i>Thamnolia</i>	46
disporum (Naeg.) Müll. Arg. ..	25 , 47	vermicularis (Sw.) Ach.	46 , 48
geographicum (L.) DC.	25 , 47	<i>Toninia</i>	24
Hochstetteri (Kbr.) Vain.	25 , 47	caeruleonigricans	24
obscuratum (Ach.) Mass. ...	25 , 26, 47	leucophaeopsis (Nyl.) Th. Fr. var.	
postumum (Nyl.) Arn.	26	hyperborea Lamb	50
viridiatrum (Flk.) Kbr.	20	squaescens (Nyl.) Th. Fr.	24 , 47
<i>Rinodina</i>	45	<i>Umbilicariaceae</i>	30
laevigata (Ach.) Malme	45 , 48	<i>Usneaceae</i>	41
turfacea (Wbg.) Kbr.	45 , 48	<i>Verrucaria</i>	7
<i>Scutula</i>		aethiobola Wbg.	7, 8, 17, 46
epiblastematica Rehm	11	— var. cataleptoides (Nyl.) Vain. 7 ,	8
<i>Solorina</i>	10	— var. primaria Vain.	7
bispora Nyl.	10 , 46	margacea	7, 8
crocea (L.) Ach.	11 , 46	ossiseda Lynge	8 , 46
<i>Sphaerophorus</i>	9	<i>Verrucariaceae</i>	7
fragilis	9, 46	<i>Xylographa</i>	9
globosus (Huds.) Vain.	9 , 46	abietina	9, 46
<i>Sphaerophoraceae</i>	9	parallela	9
		— f. difformis Vain.	9

Plate I.

- Fig. 1. *Lecanora Johanna*e Lyng. n. sp. Between the Austrian house and Nordlaguna, leg. B. Lyng. July 19th, 1929.
- Fig. 2. *Lecanora cinereoides* Lyng. n. sp. and (right) *Rhizocarpon disporum* (Naeg.) Müll. Arg. Between the Austrian house and Nordlaguna, leg. B. Lyng. July 19th, 1929.
- Fig. 3. *Lecanora cinereoides* Lyng. n. sp. Between the Austrian house and Nordlaguna, leg. B. Lyng. July 19th, 1929.

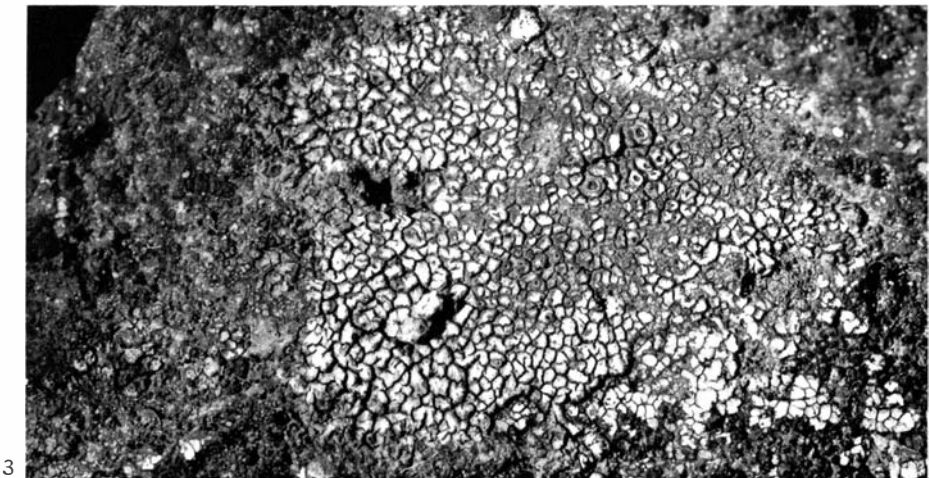
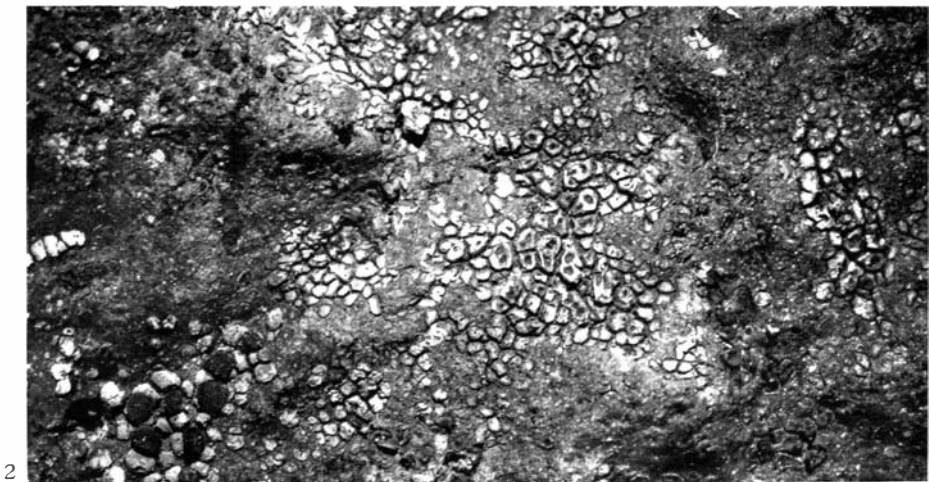
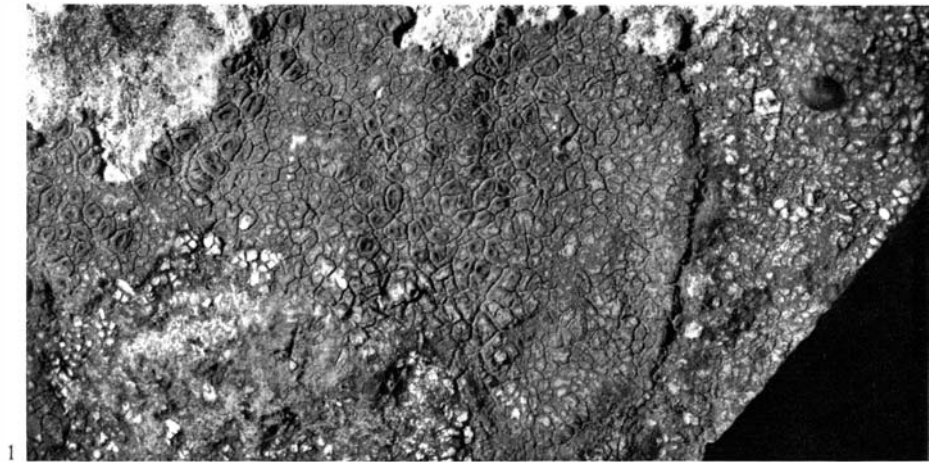
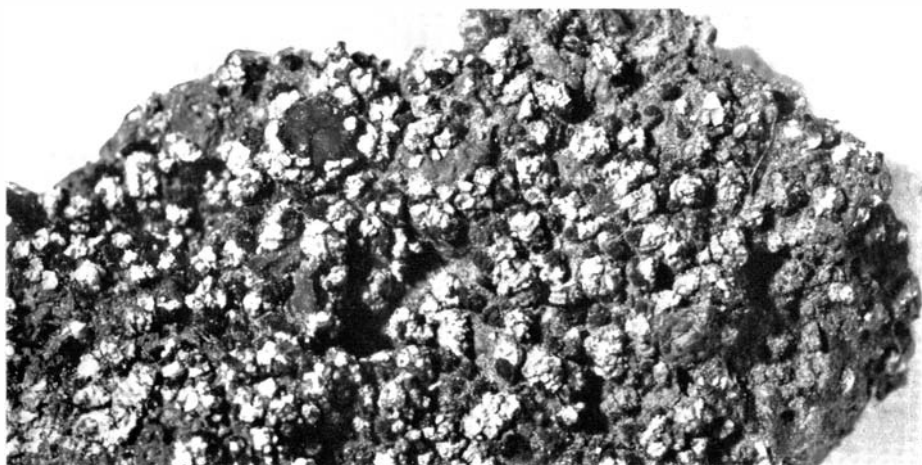
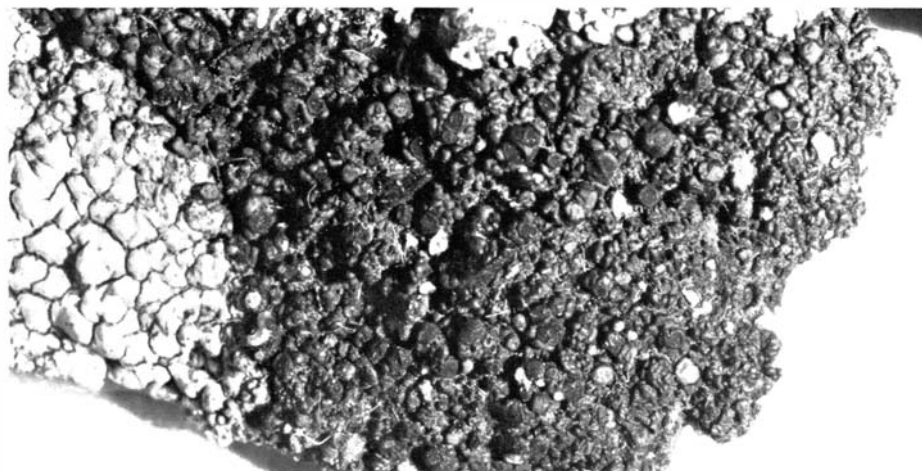
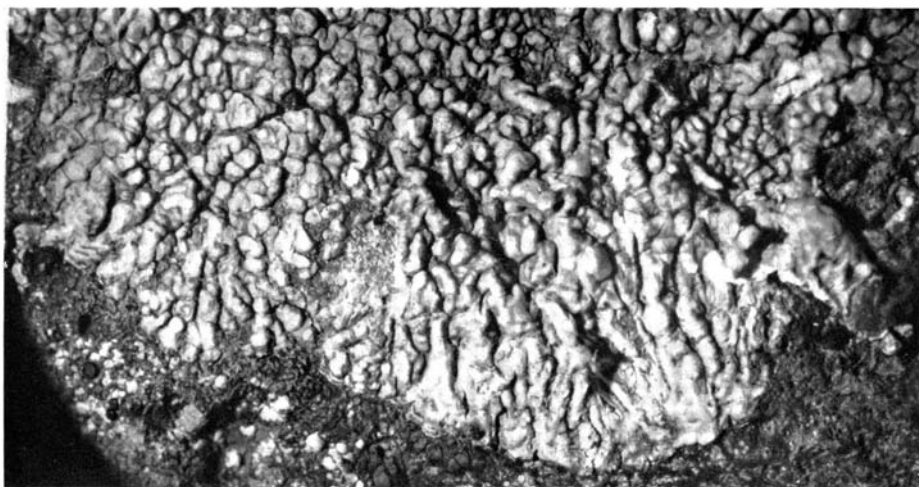


Plate II.

- Fig. 1. *Pertusaria lavicola* Erichsen n. sp. Summit of Vogtkrateret, leg. Johannes Lid July 28th, 1930.
- Fig. 2. *Lecanora cratericola* Lynge n. sp. Summit of Vogtkrateret, 282 m above sea-level, leg. Johannes Lid July 28th, 1930.
- Fig. 3. *Buellia beerenbergiana* Lynge n. sp. Beerenberg east of Ryggvarden, 725 m above sea-level, leg. Johannes Lid July 15th, 1930.



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