ACT. BOT. ISL. 3: 21–35, 1974

The vegetation of Þjórsárver, Central Iceland.

I. The lichens.

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ABSTRACT: A list of 106 species of lichens from Þjórsárver, Central Iceland, is given with information on their distribution within the area. The most important lichen communities and lichen habitats are described.

An extensive biological research program has been carried out in Þjórsárver by Náttúrufræðistofnun Íslands (Museum of Natural History) 1970–1972 and is now being continued by the University of Iceland. The program is financed by Orkustofnun Íslands (National Energy Institute). The results have been published on Icelandic in annual, mimeographed reports by Orkustofnun. This paper summarizes the results obtained on the lichen vegetation of the area.

INTRODUCTION

Þjórsárver is a swamp area situated in the Central Highlands of Iceland, just south of the large Hofsjökull Glacier. The area considered in this paper also includes wide stretches of river flats, sandy deserts and mountains adjacent to the swamps. It is delimited by the river Hnífá in the southwest, the river Þjórsá in the southeast, and by the margin of the Hofsjökull Glacier to the north. It has an extension of

about 200 km², half of which are bogs and vegetated river flats of the elevation of 580–600 m.

The swamps are crossed by many glacier streams, and interrupted by several hills with dwarf shrubs or Salix heath and eroded on the top, exposing bare gravel or rocks. These hills arise about 10–40 m above the swamps or less. The river flats present a series of successional stages of colonization from bare gravel, intermixed with glacial clay and some particles of peat, to more or less continuous vegetation of Anthelia or Racomitrium heath.

Near the glacier margin are several mountains of 750–1140 m, some of which have rich vegetation in the slopes facing south (Arnarfell hið mikla). Large area along the glacier consists of moraines, which have become uncovered by the retreating glacier during the last 80 years.

AIMS AND METHODS

The lichenological parts of the Þjórsárver program centered about three main questions: Which species do occur in the area, how are they dstributed, and how are they associated in the various habitats and plant communities.

Records for the distribution maps were based on 1×1 km grid, a subdivison of the 10×10 km grid used for the distribution of plants in Iceland (KRISTINSSON & JÓHANNSSON 1970). All the squares were traversed on foot and the lichens either recorded on premade record cards, or collected for later identification. Informations on habitats were obtained from field notes and from special vegetation analyses made at another time. Crustose rock lichens were not included in this project. Distribution maps for all the lichens have been published by Orkustofnun (JÓHANNSSON, KRISTINSSON & PÁLSSON 1974) and are not reproduced here.

THE LICHEN HABITATS

The swamps.

Wherever the ground water level is obove or close to the ground surface, no lichens are present. For this reason large areas of the lower part of Þjórsárver are completely devoid of lichens and dominated by sedges and swamp mosses of the genera *Calliergon, Scorpidium* or

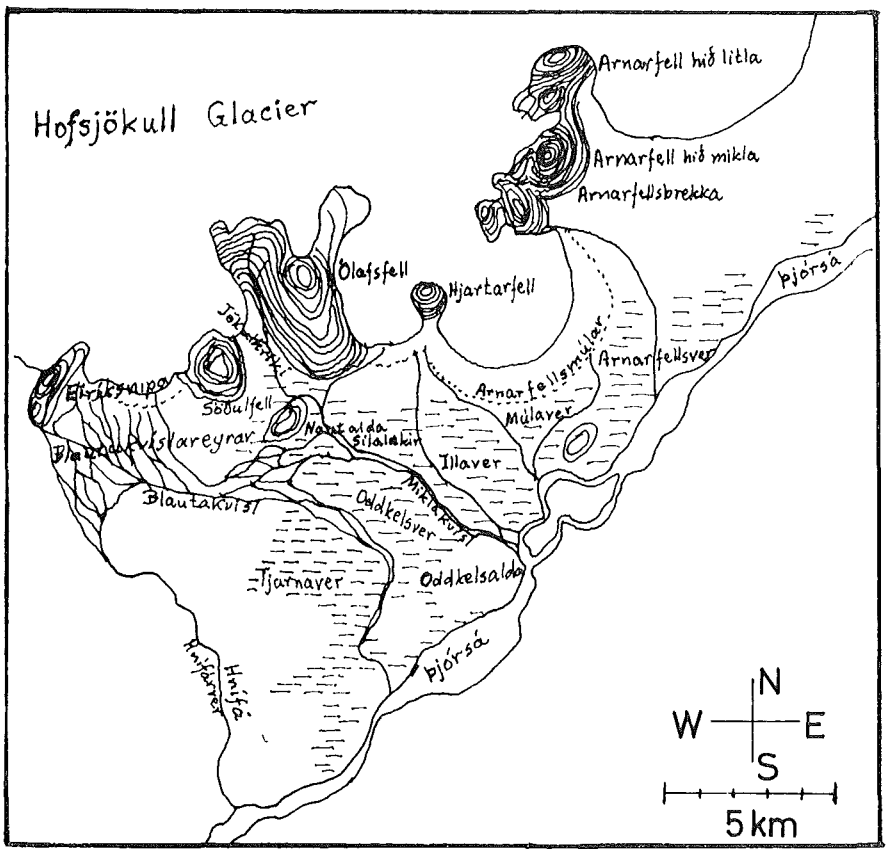

FIGURE 1. A sketch map of the Þjórsárver area, showing the localities referred to in the plant list.

Drepanocladus. Where the bogs are elevated well above the ground level, often in the form of hummocks or ridges (strings) extending through the bogs, a few lichens can get established. Those first appearing in such habitats are *Cladonia lepidota, C. pocillum, Peltigera erumpens* and *P. rufescens,* or even *Stereocaulon alpinum.* If the hummocks become eroded or disturbed through the activity of birds, *Pannaria pezizoides, Psoroma hypnorum* or *Lecidea vernalis* are likely to be found on the eroded spots. In areas dominated by *Drepanocladus uncinatus,* usually intermixed with *Spagnum teres,* either in flat and not to wet sites, or on recently elevated tundra mounds, a special community of crustoce lichens is found on the moss cover. The characteristic species are *Rinodina mniarea, Parmeliella arctophila, Lecanora castanea, L. verrucosa* and *Caloplaca tetraspora.*

The moss heath.

The vegetation changes towards a flat or knolly Racomitrium heath in better drained areas, or into an Anthelia heath. The Racomitrium heath is here dominated by *Racomitrium ericoides* and *Drepanocladus uncinatus,* usually accompanied by *Carex bigelowii* and *Salix glauca.* It is rather unsuitable for lichen growth, since only few lichens can compete with the relatively fast growing *Racomitrium ericoides* in the less exposed, flat land. Most successful are *Stereocaulon alpinum, Peltigera rufescens, P. erumpens* and *P. leucophlebia.* The vegetation of the Anthelia heath consists of *Anthelia juratzkana, Empetrum hermafroditum, Salix herbacea, S. glauca* and *Saxifraga hirculus* and other species. It is a much better suited habitat for lichens, leaving also free or sparcely vegetated spots for crustose species. Most common are *Stereocaulon arcticum,* growing directly on the soil, *Cladonia pocillum, C. lepidota, Stereocaulon alpinum, S. glareosum* and *Ochrolechia frigida. Rinodina mniarea* is frequent on mats of *Drepanocladus uncinatus* occurring between the *Anthelia* patches. On more exposed spots we find crustose species like *Pannaria pezizoides, Psoroma hypnorum, Lecidea vernalis* and sometimes *Lopadium fuscoluteum.*

The dwarf shrub heath.

On the lower hills in the bog area, knolly dwarf shrub heath dominates in the landscape. The lichens are more pronounced in this community than anywhere else in Þjórsárver. *Cladonia mitis* and *Stereocaulon alpinum* often dominate in the southern side of the hummocks (thúfur), *Cetraria islandica* around the top, and *Cetraria delisei* selects the depressions between the hummocks. The eroded northern side is mainly colonized by *Baeomyces rufus, Pannaria pezizoides* and *Pertusaria oculata. Psoroma hypnorum* and *Lopadium fuscoluteum* occur in similar habitats and also on the eroded sides of *Racomitrium ericoides* carpets. *Stereocaulon arcticum* selects spots with free soil. Other common species in the heathland are *Cladonia gracilis, C. lepidota* and *Peltigera leucophlebia.* Similar lichen composition as in the dwarf shrub heath is also found on the older tundra mounds (palsa). The sandy Salix heath with *Salix lanata* and *Salix glauca* is very poor in lichens because of the sand on the ground. *Stereocaulon alpinum* and *Peltigera rufescens* are among the lichens most resistant to this habitat.

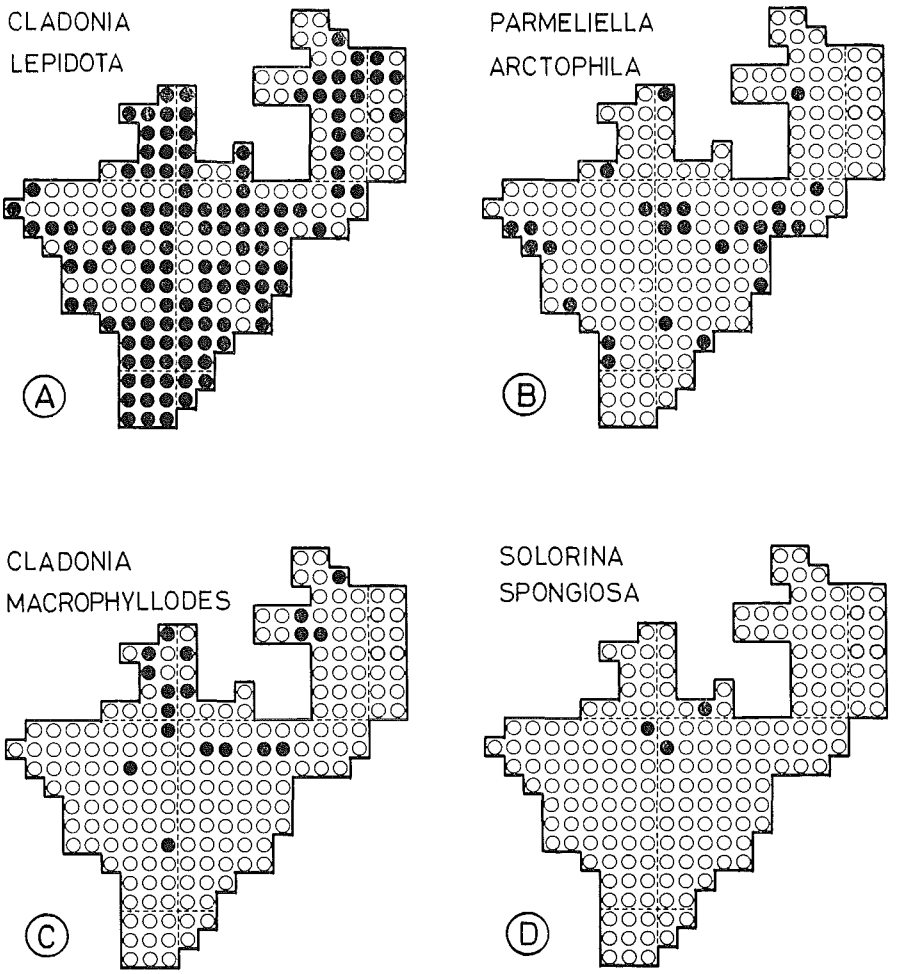

FIGURE 2. Four samples of distribution maps for lichens in Þjórsárver, to give some idea of the frequency classes used in the plant list. The first species (A) is classified as very common, and the last one (D) as rare.

The gravelly hills and the snowpatches.

On the higher hills the top is usually barren gravel. The sides of these hills are often rather steep, with snowpatch vegetation below the steepest part of the slope. The lichen vegetation varies greatly from the foot of the hill to the top. No peculiar lichens are limited to the snowpatches, except *Solorina crocea* and to a certain extent *Cladonia ecmocyna*. *Peltigera occidentalis* has also distinct preference for the lower part of the slope, but not necessarily among snowpatch vege-

tation. *Stereocaulon alpinum, S. glareosum* and *Peltigera rufescens* are frequent here too, but they occur also in other communities.

Several species are restricted to the steepest part of the hillside, facing south, southwest or southeast. These are *Cladonia acuminata, C. cariosa* and *C. dahliana.*

The twigs of Salix and the rhizomes of Sedum roseum are a suitable substrate for several crustose lichens. *Lecidea vernalis, Caloplaca cerina, C. cinnamomea* and *Lecanora dispersa* were found on this substrate.

On the edge of the hills similar vegetation is found as in the dwarf-shrub heath. *Cladonia mitis, Cetraria islandica, Cornicularia aculeata, Ochrolechia frigida* and *Stereocaulon alpinum* are characteristic for this site. On the exposed hilltops we find species like *Thamnolia subuliformis, Solorina bispora, Parmelia saxatilis, Ochrolechia frigida* and sometimes *Alectoria nigricans.* The gravel and the larger stones on the hilltops are colonized by various rock lichens. Most common are *Umbilicaria cylindrica, U. torrefacta, U. proboscidea, Alectoria minuscula* and *Stereocaulon vesuvianum.*

The river flats.

The glacier streams do frequently change their beds in the upper part of Þjórsárver. If such riverbeds are left free of water for years, they are soon colonized by vascular plants, mosses and lichens in a certain sequence, variable depending on some environmental factors. Most important of these are the waterstand and the proportions of gravel, glacial clay and peat particles, which are left on the surface by the river. The lichens are the last to appear. Their development is faster where the surface is well mixed up with glacial clay and small pebbles, which soon leads to the formation of Anthelia flats, suitable for many soil species. The most characteristic lichen species in the river flat is *Stereocaulon glareosum,* but other frequent species are *Solorina bispora, Peltigera rufescens, P. canina, Stereocaulon alpinum, Psoroma hypnorum* and *Solorina spongiosa.*

The mountains.

Several lichens are more frequent in the mountains than in other parts of the investigated area. *Cladonia macrophyllodes* and *Solorina crocea* are frequent in the mountains in slopes and other sites with prolonged snow cover, but rare outside them. *Alectoria nigricans* is frequent on the peaks, but also found on some hilltops. Many rare species in the

area are only found in the mountains, probably because they offer a greater variety of habitats. Examples of this are easily seen from the species list. The slopes of Arnarfell hið mikla are unique for the richness of species not seen elsewhere in the area.

ANNOTATED LIST OF SPECIES

Below are listed all species of lichens recorded in the Þjórsárver area, with the exception of crustose rock lichens. They are in a systematic arrangement by families, and the species are in alphabetic order within the families. The system is the one suggested by HENSSEN & JAHNS 1974.

SPHAEROPHORACEAE

Sphaerophorus fragilis (L.) Pers. Very rare, on postglacial lava rock. Jökulkriki.

COLLEMATACEAE

Collema ceraniscum Nyl. Rare, on soil. Two localities in Ólafsfell.

Collema undulatum Flot. var. **granulosum** Degel. Rare, among mosses on palagonite cliffs in the northeastern side of Arnarfell.

Leptogium lichenoides (L.) Zahlbr. Rather rare in mountains, among mosses on palagonite cliffs. Ólafsfell, Arnarfell hið mikla.

Leptogium sinuatum (Huds.) Mass. Very rare, among mosses on palagonite cliffs. Arnarfellsbrekka.

PARMELIACEAE

Alectoria minuscula Nyl. Rather common on rocks and gravel on hilltops, river flats and in the mountains.

Alectoria nigricans (Ach.) Nyl. Occasional on hilltops and mountain peaks, rather scarce.

Alectoria pubescens (L.) R. H. Howe. Rather common on basalt rock, especially on gravelly hilltops and in the mountains.

Cetraria delisei (Bory) Th. Fr. Very common on the ground throughout the area, apart from the bogs. In its habitats it prefers shallow

depressions and furrows of any kind, like between hummocks in the heathland.

Cetraria hepatizon (Ach.) Vain. Rather common on basalt rock on hilltops, glacier moraines and in the mountains.

Cetraria islandica (L.) Ach. Very common, especially plentiful in the dwarf shrub heaths and in the mountains. Races with fumarprotocetraric acid and races without it are here about equally frequent.

Cornicularia aculeata (Schreb.) Ach. Common, on the ground in hillsides, hilltops and in the mountains.

Neuropogon sulphureus (Kön.) Hellb. Very rare, found only once on outcrop of palagonite tuff in Arnarfell hið mikla at the elevation of 950 m.

Parmelia saxatilis (L.) Ach. Occasional on rock on hilltops. Not as plentiful here as in localities more close to the coast.

Parmelia sulcata T. Tayl. Very rare, on postglacial lava rock. Jökulkriki.

LECANORACEAE

Lecanora castanea (Hepp.) Th. Fr. Rather common in the lower part of the area along Þjórsá, on mosses on the ground.

Lecanora dispersa (Pers.) Röhl. Rare, on the rhizomes of *Sedum roseum*. Arnarfellsmúlar.

Lecanora epibryon Ach. Very rare, on mosses over rock in the mountainside of Arnarfell hið mikla.

Lecanora verrucosa (Ach.) Laur. Common throughout the area on the ground, as well in the mountains as in the flatland.

LECIDEACEAE

Arthroraphis citrinella (Ach.) Poelt var. **alpina** (Schaer.) Poelt. Rather common on bare soil.

Lecidea assimilata Nyl. Rather common on the ground, frequently on eroded hummocks.

Lecidea rubiformis (Ach.) Wg. Rare on bare soil over palagonite tuff. Ólafsfell.

Lecidea vernalis (L.) Ach. Very common on the ground and on twigs throughout the area.

Lopadium fuscoluteum (Dicks.) Mudd. Rather frequent on mosses and plant remains, especially in the dwarf shrub heath and on hilltops.

CANDELARIACEAE

Candelariella coralliza (Nyl.) H. Magn. Very rare, on bare soil on a peak of lava rock. Jökulkriki.

Candelariella placodizans (Nyl.) H. Magn. Rare in the mountains, on bare soil. Ólafsfell, Söðulfell.

Candelariella vitellina (Ehrh.) Müll. Arg. Rare on soil, but common on rocks. Eiríksnípa.

BAEOMYCETACEAE

Baeomyces rufus (Huds.) Rebent. Very common on soil on eroded hummocks and soil banks.

CLADONIACEAE

Cladonia acuminata (Ach.) Norrl. Rather frequent on vertical soil banks and steep slopes facing southwest to southeast. All collected samples from Þjórsárver contain atranorin and norstictic acid.

Cladonia cariosa (Ach.) Spreng. Rather common in the same habitats as *C. acuminata*. All samples from Þjórsárver contain atranorin only, the atranorin-norstictic acid race, which also is frequent in Iceland, seems to be lacking in Þjórsárver.

Cladonia chlorophaea (Flörke) Spreng. Rather rare, on the ground in slopes, soil banks and in the heathland.

Cladonia coccifera (L.) Willd. Common on soil in heathland, slopes and on moraine tops.

Cladonia dahliana Krist. Rather common in the lower part of the area on the ground, preferently in steep slopes and vertical soil banks facing southerly direction. This species contains atranorin and psoromic acid (H. KRISTINSSON 1974).

Cladonia ecmocyna Leighton. Common in the mountains and in other snowrich sites, occasionally in the lower part of Þjórsárver in snow-patches or between the hummocks in the heathland.

Cladonia furcata (Huds.) Spreng. Very rare, on hummocks in heath-land. Nautalda.

Cladonia gracilis (L.) Willd. Rather frequent, on hummocks in the dwarf shrub heath.

Cladonia imbricaria Krist. Very rare, on soil. Oddkelsalda. This is the

second locality of this species in Iceland. It reminds on *C. pyxidata,* but has unstalked cups and contains imbricaric acid (H. KRISTINSSON 1974).

Cladonia lepidota Nyl. Very common on the ground, more widespread than any other species of the genus in Þjórsárver. It extends further into the drier parts of the bogs than any other lichens. It is also equally common in the mountains.

Cladonia luteoalba Wheld. & Wils. Very rare, among mosses on bird-manured soil over rock. Between Hnífárver and Tjarnarver.

Cladonia macrophyllodes Nyl. Common on the ground in the mountains, otherwise rare and only in snowrich habitats.

Cladonia mitis Sandst. Rather common on hummocks in the dwarf shrub heath, on hills and in the mountains.

Cladonia phyllophora Hoffm. Vary rare, on the ground. Arnarfellsmúlar.

Cladonia pocillum (Ach.) O. Rich. Very common on mossy soil throughout the area.

Cladonia pyxidata (L.) Fr. Occasional to common, preferently on mossy soil over basalt rock.

Cladonia rangiferina (L.) G. Web. Rare, on hummocks in dwarf shrub heath. Nautalda, Arnarfell.

Cladonia turgida (Ehrh.) Hoffm. Rare, on the ground in snowrich habitats. Occurs in a limited area along the eastern side of Nautalda, and in a few localitis in the slopes of Arnarfell hið mikla.

Cladonia verticillata (Hoffm.) Schaer. Rare, among mosses over rocks. Hnífá.

STEREOCAULACEAE

Stereocaulon alpinum Laur. Very common in different habitats, in *Kobresia* heath, dwarf shrub heath including the *Salix* heath, as well as in the *Racomitrium* heath, in the river flats, gravelly hills and in the mountains.

Stereocaulon arcticum Lynge. Very common on soil in the heathland, on the tundra mounds and in the river flats.

Stereocaulon capitellatum Magn. Very rare, on lava rock. Jökulkriki. The specimen may possibly belong to. *S. farinaceum,* but it is referred to *S. capitellatum* on the basis of the substrate.

Stereocaulon glareosum (Sav.) Magn. Rather common on bare soil in the river flats, glacier moraines and in the *Anthelia* heath.

Stereocaulon rivulorum H. Magn. Rather common on gravel or gravelly soil in river flats and on the hills.
Stereocaulon vesuvianum Pers. Common on basalt rock.

UMBILICARIACEAE

Umbilicaria aprina Nyl. In a few localities on big boulders in glacier moraines. East of Arnarfell, near Hjartarfell, west of Söðulfell.
Umbilicaria arctica (Ach.) Nyl. Rather rare, on rock. Hnífá, Tjarnarver, Oddkelsver, Arnarfellsmúlar.
Umbilicaria cylindrica (L.) Del. Very common on basalt rock throughout the area.
Umbilicaria decussata (Vill.) Frey. Rare, on boulders. East of Arnarfell, near Hjartarfell, Blautukvíslareyrar.
Umbilicaria hyperborea (Ach.) Ach. Rather common on basalt rock, on hilltops and in the mountains.
Umbilicaria probocidea (L.) Schrad. Common on basalt rock.
Umbilicaria torrefacta (Lightf.) Schrad. Common on basalt rock.

PANNARIACEAE

Pannaria pezizoides (G. Web.) Trev. Very common throughout the area, on soil and eroded hummocks, frequent around the goose nests.
Parmeliella arctophila (Th. Fr.) Malme. Rather frequent in the lower part of Þjórsárver, rare in the mountains. On continuous moss cover, usually *Drepanocladus uncinatus* and *Sphagnum teres,* either on flat ground or on tundra mounds.
Parmeliella corallinoides (Hoffm.) Zahlbr. Very rare, on mosses over palagonite tuff in the mountainside of Arnarfell hið mikla.
Parmeliella praetermissa (Nyl.) P. James. Rare, on mosses over palagonite tuff in the mountainside of Arnarfell hið mikla.
Psoroma hypnorum (Vahl.) S. Gray. Very common on mossy soil and eroded hummocks throughout the whole area.

PLACYNTHIACEAE

Placynthium aspratile (Ach.) Henssen. Rare, on palagonite tuff in a ravine in the eastern side of Söðulfell.
Placynthium rosulans (Th.Fr.) Gyeln. Rare, in the same habitat and locality as *P. aspratile.*

PELTIGERACEAE

Massalongia carnosa (Dicks.) Koerb. Very rare, on mosses on palagonite tuff in the mountainside of Arnarfell hið mikla.

Nephroma expallidum (Nyl.) Nyl. Rare, on the ground. Arnarfellsbrekka, Nautalda.

Nephroma parile (Ach.) Ach. Very rare, on mosses on palagonite tuff. Arnarfellsbrekka.

Peltigera aphthosa (L.) Willd. Not frequent, in a few localities on vegetated soil, growing in large, dense mats. Arnarfellsbrekka, Jökulkriki, Hnífárver.

Peltigera canina (L.) Willd. Very common throughout the area in different habitats among mosses on the ground.

Peltigera erumpens (Nyl.) Vain. Rather common troughout the area on mossy ground, frequent on the tundra mounds. *P. spuria* was never seen. The specimen contain methylgyorophorate.

Peltigera lepidophora (Nyl.) Vain. Rather common, on soil.

Peltigera leucophlebia (Nyl.) Gyeln. Very common throughout the area on mossy ground, less tolerant to wet habitats than *P. canina* and *P. erumpens*. This species is much more frequent than the closely related *P. aphthosa*.

Peltigera malacea (Ach.) Funk. Rather rare, on the ground in dry habitats. Arnarfell, Arnarfellsver, Arnarfellsmúlar.

Peltigera occidentalis (Dahl) Krist. Rather common on the ground in slopes and hillsides.

Peltigera polydactyla (Neck.) Hoffm. Occasional throughout the area in heathlands and slopes.

Peltigera rufescens (Weiss.) Humb. Very common throughout the whole area in different habitats, slopes, snowpatches, on hummocks, in the bogs, on glacier moraines and gravelly hills.

Peltigera venosa (L.) Baumg. Rather common, preferently on the vertical side of moist soil banks, along creeks, and in ravines.

Polychidium muscicola (Sw.) S. Gray. Rather frequent, on mosses.

Solorina bispora Nyl. Common on bare soil and eroded hummocks. Occurs also in river flats and gravel hills.

Solorina crocea (L.) Ach. In snowpatches, common in the mountains, otherwise rare. Hnífárver.

Solorina spongiosa (Sm.) Anzi. Rare, on gravelly river flats and on warm soil around the Sílalækir springs.

THELOSCHISTACEAE

Caloplaca cerina (Hedw.) Th. Fr. Collected in two localities in Arnarfellsmúlar on *Salix* twigs and on the rhizomes of *Sedum roseum*. Perhaps overlooked, since these substrates were not carefully collected.

Caloplaca cinnamomea (Th. Fr.) Oliv. Found once on the rhizomes of *Sedum roseum* by Arnarfellsmúlar.

Caloplaca friesii H. Magn. One specimen seen on mosses. The identification needs to be verified. Múlaver.

Caloplaca tetraspora (Nyl.) Oliv. Rather common in the lower parts of Þjórsárver on flat moss carpets of *Drepanocladus uncinatus*. Two localities known from the mountains, Ólafsfell, Arnarfell.

Caloplaca tornoënsis H. Magn. Rare, on mosses over rock in Hnífárver.

PHYSCIACEAE

Buellia insignis (Hepp.) Th.Fr. Common on plant remains or mosses on the ground.

Buellia punctata (Hoffm.) Massal. Rare, on vegetated soil at the elevation of 700 m in Söðulfell.

Buellia scabrosa (Ach.) Koerb. Common on the thallus of *Baeomyces rufus* throughout the area.

Physcia caesia (Hoffm.) Hampe. Rather rare, on the top of boulders, hilltops and mountaintops.

Physcia dubia (Hoffm.) Lynge. Rather rare, in the same habitats as *P. caesia*.

Physcia wainioi Räs. Very rare, on rock. Illaver.

Physconia muscigena (Ach.) Poelt. Rather rare, on mossy soil on top of boulders, or on hilltops. Frequent along Arnarfellsmúlar.

Rinodina cinnamomea (Th.Fr.) Räs. Very rare, on mosses. Arnarfellsbrekka.

Rinodina mniaraea (Ach.) Koerb. Common on flat moss mats or tundra mounds, especially on *Drepanocladus uncinatus*. More frequent in the lower part of Þjórsárver, than in the mountains.

PERTUSARIACEAE

Ochrolechia frigida (Sw.) Lynge. Common on the ground on plant remains and dwarf shrubs in heathland and exposed hillsides.

Ochrolechia grimmiae Lynge. Rare, on mat of *Racomitrium lanuginosum* on the top of Nautalda.

Pertusaria oculata (Dicks.) Th. Fr. Rather common on plants remains on exposed hummocks in the heathland.

GYALECTACEAE

Gyalecta foveolaris (Ach.) Schaer. Rather rare, on bare soil.

VERRUCARIACEAE

Dermatocarpon cinereum (Pers.) Th. Fr. Rare, on bare soil. Near Hnífá, Arnarfell hið mikla.

Dermatocarpon hepaticum (Ach.) Th. Fr. Rare, on bare soil over rocks in the slope of Ólafsfell.

LICHENES IMPERFECTI

Lepraria incana (L.) Ach. Rare, on overhanging soil banks in the slope of Arnarfell hið mikla.

Lepraria neglecta (Nyl.) Lett. Not rare on mosses over rock. Tjarnarver, east of Nauthagi, Ólafsfell.

Thamnolia subuliformis (Ehrh.) Culb. Rather common on the ground in the mountains and on hilltops in the lowland.

After having listed the lichens that are present in Þjórsárver, it may be of interest to pay attention to some of those apparently lacking in the area. Of the genus *Alectoria* neither *A. ochroleuca* nor *A. vexillifera* have been found in Þjórsárver or in the mountains. Both have restricted distribution in Iceland, *A. ochroleuca* is common in the northeastern continental part, extending to the northern side of Hofsjökull, and *A. vexillifera* is frequent in the western part of the country, to the northwestern side of Hofsjökull.

The absence of *Cetraria nivalis, Cladonia arbuscula* and *C. uncialis* in Þjórsárver is remarkable, since these are generally common in Iceland, all frequent west and north of Hofsjökull. *Cladonia uncialis,* however, is apparently lacking in large part of the Central Highlands and southern Iceland, including Þjórsárver. *Xanthoria candelaria*

and *X. elegans,* both recorded throughout the northern part of Iceland, were not found in Þjórsárver either. All these species are very conspicuous, and could hardly have been overlooked.

ACKNOWLEDGEMENTS

The identifications of mosses mentioned in this article are due to Bergþór Jóhannssons work on the mosses of Þjórsárver. Some identifications of crustose lichens have been checked by Prof. Aino Henssen, Marburg. I thank them for their cooperation.

REFERENCES

HENSSEN, Aino & H. M. JAHNS. 1974. Lichenes, eine Einführung in die Flechtenkunde. 467 pp. Georg Thieme, Stuttgart.

JÓHANNSSON, Bergþór & Hörður KRISTINSSON. 1972. Skýrsla um grasafræðilegar rannsóknir í Þjórsárverum sumarið 1971. (Report on botanical investigations in Þjórsárver in the summer 1971). 83 pp. Orkustofnun, raforkudeild. Reykjavík.

JÓHANNSSON, Bergþór, Hörður KRISTINSSON & Jóhann PÁLSSON. 1974. Skýrsla um grasafræðirannsóknir í Þjórsárverum 1972. (Report on botanical investigations in Þjórsárver 1972). 153 pp. Orkustofnun, raforkudeild. Reykjavík.

KRISTINSSON, Hörður. 1974. Two new *Cladonia* and one *Cetraria* species from Iceland. Lichenologist 6: 141–145.

KRISTINSSON, Hörður & Bergþór JÓHANNSSON. 1970. Reitskipting Íslands fyrir rannsóknir á útbreiðslu plantna. Náttfr. 40: 58–65.

Received Nov. 1974.