MEDDELELSER OM GRØNLAND
UDGIVNE AF
KOMMISSIONEN FOR VIDENSKABELIGE UNDERSØGELSER I GRØNLAND
BD. 178 · NR. 7

ADVENTITIOUS PLANTS AND CULTIVATED PLANTS IN GREENLAND

BY

ANFRED PEDERSEN

WITH 40 FIGURES IN THE TEXT,
AND 1 PLATE

KØBENHAVN
C. A. REITZELS FORLAG
BIANCO LUNOS BOGTRYKKERI A/S
1972

Abstract

This paper can be considered as a supplement to M. P. Porsild (1932): Alien Plants and Apophytes of Greenland, *Meddelelser om Grønland* Bd. 92 Nr. 1.

Chapter I gives information concerning all known finds of adventitious plants in Greenland in the period 1810–1970. In this chapter finds of non-naturalized occurrences are set in 6 point type. The distribution of the majority of the naturalized species is shown figures 3–40 (pp. 67–72).

Ostenfeld (1926) and M. P. Porsild (1932) discussed the question of which species can be assumed to have been accidentially introduced to Greenland from Iceland and Norway in the Norse period from ca. 985 to the 1400's; this is touched upon here. There are references to finds of seeds and fruit that were found in cultural layers dating from the Norse period (Iversen, 1953; Fredskild, 1969). The following introduced species are believed to have survived from the 1400's to 1721, when there were no European peoples in Greenland: *Achillea millefolium*, *Leontodon autumnalis var. taraxaci*, *Tripleurospermum maritimum* ssp. *boreale*, *Vicia cracca*, and *Rumex longifolius*. It also is probable that *Agrostis stolonifera*, *Potentilla anserina* s. str., *Stellaria media*, and *Polygonum boreale* survived throughout this period, *Elymus arenarius* s. str. maybe.

Chapter II deals with some species or subspecies that are regarded as indigenous in Greenland, i.a., *Anthoxanthum odoratum*, *Atriplex longipes*, *Cakile edentula*, *Cirsium heterophyllum*, *Elymus arenarius* s. str., *Galium boreale*, *Puccinellia maritima*, *Ranunculus cymbalaria*, *Rorippa islandica* s. str., *Rubus saxatilis*, *Tripleurospermum maritimum* ssp. *phaeocephalum*, and *Zostera marina*. According to other authors they are all regarded as accidentally introduced. Chapter I, page 66, mentions some species that are believed to be both indigenous and accidentally introduced plants.

Chapter III gives a survey of plants that are cultivated in Greenland, or whose cultivation has been attempted there.

ISBN 87 421 0057 7

CONTENTS

INTRODUCTION

The earliest reports concerning finds of accidentally introduced plants in Greenland are attributable to K. L. GIESECKE, the mineralogist who was there from 1806 to 1813 (GIESECKE, 1830; JOHNSTRUP, 1878), and to Lieutenant M. WORMSKIOLD, whose diary kept from 1812 to 1814 was published by WARMING (1890). Some of their finds are described by HORNEMANN (1821). A particularly valuable collection derives from J. VAHL, who was in Greenland from 1828 to 1836. His finds were published by LANGE (1857, 1880). We have additional 19th Century reports on finds by, i.a., A. BERLIN (1884), E. WARMING (1888), N. HARTZ (1894 b), L. KOLDERUP ROSENVINGE (1892, 1896), and J. LINDHARD (OSTENFELD, 1902). By far the majority of the finds is deposited in the Botanical Museum, Copenhagen. M. P. PORSILD (1932) published a comprehensive study of Greenland's anthropochorous plants; the purpose of the present paper is to bring PORSILD's work up to date. In addition to M. P. PORSILD, the following 20th Century collectors deserve special mention: A. E. PORSILD (1945), J. GRÖNTVED (1938), N. POLUNIN (1938, 1943), J. LAGERKRANZ (1950), A. ROSENKRANTZ, C. A. JØRGENSEN, and BENT FREDSKILD. A. E. PORSILD (1945) and ANFR. PEDERSEN (1965) have treated the adventitious flora in Ivigtut. The most recent finds were made by young botanists who have worked for The Greenland Botanical Survey since 1962. My observations and collections date from the summer of 1961 in Godhavn, Egedesminde, Søndre Strømfjord, Godthåb, Færingehavn, Frederikshåb, Ivigtut, Grønnedal, Narssaq, Narssarssuaq, Qagssiarssuk, Ingnerûlalik, Upernaviârssuk, and Julianehåb. A majority of the accidentally introduced species is included in BÖCHER, HOLMEN & JAKOBSEN (1968).

The question of which species the Norsemen from Iceland and Norway presumably accidentally introduced to Greenland has been discussed throughout many years; in particular, introductions to the Eastern Settlement (at present Julianehåb, Narssaq, and Nanortalik municipalities are involved). WARMING (1888) and ROSENVINGE (1896) initiated the discussion, which was taken up for new and special treatment by OSTENFELD (1926) and M. P. PORSILD (1932). Most of the 50 "Old Norse" plants that OSTENFELD reported are, however, unquest-

ionably indigenous. This is quite normal, when seen in connection with the individual species' characteristically coastal, North Atlantic distribution, which extends from Northwestern Europe to Greenland, and in some cases to the eastern coastal areas of Canada and the U.S.A. as well, where the problematic situation continues, and is complicated by the presence of many other North Atlantic species. In contrast to this, the continental flora which prevails in Northeastern North America is represented to a far lesser degree in the southwestern area of Greenland.

At present there is a renewed interest in the subject, partly as a result of finds of fruit, seeds, or pollen in the cultural layers that date from the Norse period (*Stellaria media*, *Capsella bursa-pastoris*, *Polygonum aviculare* s. lat., *Poa annua*, *Potentilla anserina* s. str., cf. IVERSEN (1953), FREDSKILD (1969)), partly because of the cytotaxonomic classification of some of the species.

The details concerning the adventitious species in this work derive from the Arctic Herbarium at Botanisk Museum (C), from Naturhistoriska Riksmuseet, Stockholm (S), from private herbaria(!), or, in several instances where there are no herbarial specimens or no available ones, from the literature listed below. A few finds have been reported to the author. Reports from herbarial labels are enclosed in quotation marks; information obtained from the literature is followed by a reference. Phenological data derive from observations made in herbaria.

Chapter I gives a survey of the adventitious plants' occurrence, arranged by families, which are listed alphabetically. The habitats are listed chronologically, in accordance with the first find at the place in question. The finders' names are indicated by signatures; see list of abbreviations (pp. 8–9).

I have paid special attention to those species which, in my opinion, have naturalized themselves; the distribution of 38 of these species is accordingly shown on figures 2–40 (pp. 67–72). A majority of the rest of the naturalized species is familiar from only one habitat.

The naturalized species are spread by ripe seeds and occur at the settlement independent of renewed accidental introduction. These include species that probably have been naturalized in the towns in the southwestern part of Greenland; farther north, however, the occurrence depends upon renewed introduction. Two signatures appear on the figures.

Species that simply manage to reproduce themselves vegetatively at the place where they were introduced are classified among the non-naturalized species. In the text of Chapter I all reports of habitats of species that are regarded as non-naturalized at the place in question are set in 6 point type.

In connection with chapter I there is a brief list of species which presumably consist of indigenous as well as introduced plants (see p. 66). In several instances it is a matter of guesswork whether a species found in connection with buildings should be regarded as apophytic or adventitious, cp. M. P. Porsild (1932), who often reverts to this question.

Chapter II treats some species or subspecies which, according to the author's more or less well-based assumptions, are native to Greenland, whereas other authors view them as accidentally introduced. In principle I have refrained from discussing the plants that Ostenfeld (1926) believed were "Old Norse" plants, as this has been done by M. P. Porsild (1932) and mentioned by Fredskild (1969). Supposedly, a small number of "Old Norse" plants were able to survive as a result of continuously nutritive soil (see Abstract). With the exception of one or two seashore plants, it is scarcely possible that any accidentally introduced species really could have managed to survive as a neophyte in natural Greenlandic plant communities.

Chapter III gives a survey of cultivated plants that can be grown in Greenland or whose cultivation can be attempted.

I have used the authorized spelling of place names as far as possible. In several instances a place name spelled in the old manner has been identified with the help of Hartz (1894 a). When it has appeared necessary for purposes of localization I have indicated latitudinal parallels taken from the maps 1:250000 of the Geodetic Institute. If the place is situated on the east coast, this is mentioned. Qagssiarssuk and Narssaq mean, respectively, the sheep-farm (61°04′) and the town (60°55′) at Tunugdliarfik; Narssarssuaq (61°10′) the air and reconnaissance ice station at Tunugdliarfik; Upernaviârssuk (60°45′) the agricultural station at Julianehåbsfjord east of Julianehåb. It has not been possible to find some of the indicated place names on the maps.

Plate I of the southernmost part of Greenland (south of 61°25′ N.lat.) includes place names the spelling of which is authorized by the Place Name Committee for Greenland (Stednavneudvalget for Grønland). The plate is reproduced by permission of the Geodetic Institute (A.1165/71). The plate was drawn by Preben Gross.

ABBREVIATIONS

C Herbarial specimens at Botanisk Museum, Copenhagen.
S Herbarial specimens at Naturhistoriska Riksmuseet, Stockholm.
! Herbarial specimens from a private herbarium.

In regard to reports of plant finds for which there are no herbarial specimens, please refer to the bibliography or to the reporter.

A. E. P.	A. E. Porsild
A. G. N.	A. G. Nathorst
A. H. C.	Anonymous Collector
A. J.	Axel Jessen
A. K.	A. Kornerup
A. M. H.	A. M. Hemmingsen
A. N.-N.	A. Noe-Nygaard
A. P.	Anfred Pedersen
A. R.	A. Rosenkrantz
A. S.	Annelise Stahlschmidt
B. F.	Bent Fredskild
B. Fa.	Birte Fabricius
B. S.	Børge Sibbern
C. A. J.	C. A. Jørgensen
C. C. D.	C. Chr. Drejer
C. D.	Chr. Deichmann
C. H.	Carlo Hansen
C. Ho.	C. P. Holbøll
C. K.	Chr. Kruuse
C. O. E.	C. O. Erlanson
C. P.	Carl Petersen
E. D.	Eilif Dahl
E. H.	Eigil Holm
E. L.	Eleonora Lundholm
E. M.	E. Mørch
E. V.	E. Vanhöffen
E. W.	Eug. Warming
F. F.	Fritz Johansen
F. S.	Finn Salomonsen
G. M.	Gustav Meldorf
G. S.	Gunnar Seidenfaden
G. W.	Gudrun Wernich
H. B. A.	H. Behrndt Andersen
H. F.	Hannibal Fencker
H. M.	H. Mortensen
H. M. R.	H. M. Raup
I. R.	Inga Rahbek
J. D.	J. Devold
J. E.	J. Eugenius
J. G.	J. Gröntved
J. Ga.	J. Gandrup
J. L.	J. Lindhard
J. La.	J. Lagerkranz
J. H. L.	J. Lindstrøm Hansen
J. N.-N.	J. Noe Nygaard
J. R.	Jens Rosing
J. T.	J. Tietzen
J. V.	J. Vahl
J. Va.	J. Vaage
J. V. L.	Jens Viggo Larsen
K. D.	Kell Damsholt
K. G.	K. Giesecke
K. H.	Kjeld Holmen
K. J.	Knud Jessen
K. Ja.	Knud Jakobsen
Kj. H.	Kjeld Hansen
L. B. J.	Lise Bolt Jørgensen
L. G. R.	L. G. Raup
L. H.	Louis Harmsen
L. J.	Louis Jensen (L. A. Jensen)
L. K.-N.	L. Kliim-Nielsen
L. K. R.	L. Kolderup Rosenvinge
L. M.	Laur. Mathiesen
M. A.	Marius Abelsen
M. I.	Marianne Iversen

M. J.	Marie Jensen
M. K.-S.	M. Krarup-Smith
M. L.-N.	M. Lyngsø-Nielsen
M. M.	M. Mathiesen
M. P. P.	Morten P. Porsild
M. W.	M. Wormskiold
N. H.	N. Hartz
N. J.	Niels Jacobsen
N. K.	Nils Kjølsen
N. P.	N. Polunin
N. S.	Nils Stahlschmidt
O. L.	Ove Loland
P. B.	Poul Bjerge
P. E.	P. Eberlin
P. F. S.	P. F. Scholander
P. G.	Palle Gravesen
P. Ge.	P. Gelting
P. H. S.	P. H. Sørensen
P. J. P.	P. J. Povelsen
P. M.	Per Munck
P. M. P.	P. Milan Petersen
P. R.	Ph. Rosendal
P. S. H.	Per Schiermacher Hansen
R. B.	Rasmus Björgman
R. Bø.	Richard Bøgvad
S. H.	Søren Hansen
S. L.	Simon Lægaard
S. La.	Signe Larsson
S. T.	Svend Toldbod
S. Ø.	Søren Ødum
T. C.	Tyge Christensen
T. F.	Th. Fries
T. H.	Th. Holm
T. S.	Thorvald Sørensen
T. Sm.	Tem Smitinand
T. W. B.	T. W. Böcher

I. ADVENTITIOUS PLANTS

Amaranthaceae

Amaranthus retroflexus L.

Narssarssuaq 1961: near a chicken yard; sterile in July, A.P., C.

Boraginaceae

Asperugo procumbens L. (fig. 34).

Christianshåb 1888: "on cliffs near the flag station," flower buds in July, S.S., C; 1890: "in a garden near the flag station," bearing almost mature fruit in July, N.H., C; 1924: fruiting in July, M.P.P., C; fully established over the whole rock face and along the shore, climbing on *Elymus*, also climbing on the garden fence, M. P. Porsild (1932); abundant outside the Manager's house, Lagerkranz (1950); the whole colony was a bed of *A. procumbens*, Lagerkranz (1950, p. 16); 1956: K.Ja., C; 1958: fruiting in September, T.W.B., C; 1961: S.T., C; 1962: M.I., C.

Claushavn 1889: sterile, P.H.S., C.

Lycopsis arvensis L.

Ivigtut 1883: a single specimen in a garden, sterile in August, Berlin (1884); 1961: several specimens in a garden, with immature fruit in August, A.P., C.

Julianehåb 1957: flowering in August, reported by B.S.

Narssarssuaq 1961: two specimens near a chicken yard, flowering in July, A.P., C.

Myosotis arvensis (L.) Hill (fig. 17).

Ivigtut 1899: a small plant, with flower buds in August, J.L., C; 1937: Polunin (1943); 1938: a few specimens at the cattle shed, Lagerkranz (1950); 1942: appears to be fully established, fruiting September 2, A. E. Porsild (1945); fruiting in September, A.R., ! ; 1957: S.L. C; 1961: fruiting in August, A.P., C.

Itivnera (46°23′) 1960: "ruderal at the caribou breeding station," fruiting in August, B.F., ! .

Julianehåb 1961: garden weed, fruiting in July, A.P., ! .

Grønnedal 1961: in a garden, A.P., ! .

Between Qagssiarssuk and Tasiussaq Fjord 1962: "in a willow shrub," flowering and fruiting in July, B.F., ! .

Godhavn 1932: "weed in the garden at Magnetisk Station," flowering in August, M.P.P., C.

Godthåb 1965: on a roadside, budding 12 August, P.S.H.,!.

Caryophyllacae

Cerastium glomeratum THUILL.

Frederikshåb: in a greenhouse, A.P., C.

Cerastium holosteoides FR. emend. HYL. (fig. 29).

The following occurrences derive in part from towns where there is considerable trade with Denmark, in part from places where the soil is cultivated. It is difficult to differentiate the species from *Cerastium fontanum* BAUMG. ssp. *scandicum* GART., which is indigenous in Greenland. Neither of them is native in North America, but *Cerastium holosteoides* is extensively naturalized there.

Ivigtut 1883: BERLIN (1884); 1889: flowering in September, J.L., C.

Narssaq 1937: J.G., C; 1961: in a lawn, flowering in July, A.P., C; 1967: on a roadside in town, flowering in mid-July, P.S.H., ! ; 1969: beside a ditch, B.F., ! .

Julianehåb 1946: On cultivated soil, in the doctor's garden, and in ditches, var. *vulgare* (HARTM.) HYL., LAGERKRANZ (1950); 1961: in the churchyard and in a lawn, flowering in July, A.P., C.

Grønnedal 1961: in lawns, A.P., C.

Upernaviârssuk 1961: in the nursery, flowering in July, A.P., C.

Ingnerûlalik (61°04') 1961: in a meadow, flowering and fruiting in July, A.P., C.

Qagssiarssuk 1969: beside a spring near Erik's Hall, B.F., ! .

Cerastium semidecandrum L.

Upernavik about 1810: K.G., C. Since this is fructuous, it presumably grew in a greenhouse or indoors.

Melandrium album (MILL.) GARCKE

Ivigtut 1899: with sterile rosettes. N.H., C.

Melandrium noctiflorum (MILL.) GARCKE

Upernavik 1937: in an open garden frame, fruiting in September, F.J., C

Sagina procumbens L. (fig. 40)

VAHL mentions in his manuscript (1828–1836) that this species grew in moist places at the foot of the mountains in the fjords in Julianehåb District and in the southern part of East Greenland. OSTENFELD (1926) assumes that it was originally introduced accidentally, whereas according to PORSILD (1932), BÖCHER (1938), and BÖCHER, HOLMEN & JAKOBSEN (1968) it is native on localities in South Greenland, where it has also been found on the east coast. SEIDENFADEN (1933) and HULTÉN (1958, map) do not commit themselves, including with regard to its occurrence in North America. It is common in all parts of Iceland (GRÖNTVED, 1942). In the Arctic it is only known as occurring in Greenland and Russia.

In Greenland the main growth occurs in natural meadow communities, as a rule at a distance from and completely independent of human habitations; consequently, it must be regarded as indigenous. Yet, a few occurrences in town apparently can derive from accidental introduction; in Herb. C. these are represented by the following finds:

Igaliko 1828: J.V. C; 1937: POLUNIN (1943).

Julianehåb 1828: J.V. C; 1883: BERLIN (1884); 1937: J.G., C; 1937: POLUNIN (1943); 1961: A.P., C; 1967: P.S.H., ! .

Qaqortoq church ruin (Hvalsey, 60°50′), at Julianehåb 1948: C.A.J., C.

Grønnedal 1955: on the dumping ground, H.B.A., C; 1961: in lawns, A.P., C.

Ingnerulalik (61°04′) 1961: along a road, with ripe fruits in July, A.P., C.

Ivigtut 1961: along a road, A.P. ,! .

Dyrnæs at Narssaq 1962: P.M.P., C.

Nanortalik 1964: C.H., P.M.P. & T.Sm., C.

Godhavn 1913: "weeds in a flowerpot at Arktisk Station," A.E.P., C.

Silene cucubalus WIB.

Grønnedal 1961: a few specimens in a lawn, flowering in late July, A.P., C.

Presumably capable of surviving vegetatively in this place.

Spergula arvensis L.

Ivigtut 1883: on garden soil, flowering in August, BERLIN, (1884).

Godhavn 1931: "in the chicken yard at Arktisk Station," with immature fruit in September, M.P.P., C (var. *sativa* (BOENN.) MERT. & KOCH).

Grønnedal 1961: in a lawn, A.P., C (var. *vulgaris* (BOENN.) MERT. & KOCH).

Spergularia rubra (L.) PRESL (fig. 39)

Grønnedal 1955: "on gravel", H.B.A., C; 1961: a considerable, completely naturalized growth, A.P., C.

Stellaria graminea L.

Ivigtut 1955: flowering in September, A.R., !; 1961: on an abandoned field near Gæstehjemmet, flowering in August, A.P., C.

Grønnedal 1961: in lawns, A.P., C.

Godthåb 1961: in a lawn in a garden, with flower buds in late July, A.P., !.

Capable of surviving vegetatively at least in Ivigtut and Grønnedal.

Stellaria media (L.) VILL. (fig. 27)

Seeds dating from the Norse period have been found in the Western Settlement in the inner part of Godthåb Fjord (IVERSEN, 1953; I. BRANDT, determined and reported) and at Eqalugialik (64°23′) at Ameragdla, in the Eastern Settlement at Qagssiarssuk and Narssaq (FREDSKILD, 1969). "Regularly introduced with garden seeds and escaping from the cold frames and gardens," M. P. PORSILD (1932). *Stellaria media* has been found with mature seeds as far north as in the towns at Disko Bugt. The occurrences mentioned below, which grow far from settlements, especially on bird rocks, are particularly interesting. This is a troublesome weed on moist, well fertilized fields in South Greenland; it is Greenland's most frequent anthropochorous species.

Recorded by GIESECKE from Greenland about 1810, GIESECKE (1830).

Igaliko 1813: M.W., C; 1828: J.V., C; 1883: BERLIN (1884); 1884: "common around the houses, also among mosses in a bog," L.K.R., C.

Julianehåb 1828: J.V., C; 1883: BERLIN (1884); 1902: G.M., C; 1929: E.M., C; 1931: A.H.C., C; 1946: LAGERKRANZ (1950); 1961: A.P., C; 1970: reported by B.F.

Ivingmiut ("Ivimin," 60°50′ on the east coast) 1829: J.V., C; now an abandoned settlement, A.P.

Aneritêq ("Anoritôq," 61°32′ on the east coast) 1829: J.V., C; GRAAH (1832, pp. 73 and 78) mentions that Eskimos lived in "Ivimin" and "Anoritôq." The two settlements have since been abandoned, and *Stellaria media* apparently does not grow on the east coast of Greenland at present (cp. SEIDENFADEN, 1933; DEVOLD & SCHOLANDER, 1933).

Settlement in East Greenland at 59°59′ N. l. 1829: J.V., C.

Godthåb 1831: J.V., LANGE (1880); 1936: LAGERKRANZ (1950); 1961: flowering in August, A.P., C; 1965: small specimens, flowering in late June, P.S.H., ! .

At Godthåbsfjord ("Baals Revier") 1831: J.V., C.

Lichtenfels (63°04′) about 1850: J.T., C; 1876: A.K., LANGE (1880).

Christianshåb 1867: BROWN (1868); 1870: frequent in ruderal vegetation, BERGGREN (1871); E.W. & T.H., C; 1890: N.H., C; 1924: fruiting,

M.P.P., C; 1955: R.B., C; 1957: "in abundance among the houses," fruiting 25 July, B.F., C; 1961: S.T., C; 1962: M.I., C.

Claushavn 1870: BERGGREN (1871).

Sukkertoppen 1870: BERGGREN (1871); 1961: fruiting in September, B.Fa., C.

Holsteinsborg 1871: T.F., LANGE (1887); 1884: E.W. & T.H., LANGE (1887); 1962: fruiting in August, M.L.-N., C; 1967: ceased flowering in August, J.V.L., ! ; 1969: in several places along the main road it forms a continuous carpet, O.L. reported.

Majoraríssap ilua at Frederikshåb Isblink (62°30′) 1878: A.K., C.

Godhavn before 1880: M.K.-S., C; 1902: "common garden weed," M.P.P., C; 1909: J.N.N., C; 1932: "in a chicken yard at Arktisk Station," J.G., C; 1933: flowering in September, C.C.D., C; 1934: "common at the Arctic Station," LAGERKRANZ (1950); 1940: "all growths die under the snow, but hibernating seeds germinate in late June when the surface is thawed," M.P.P., C; 1961: sterile in late June, A.P., C.

Ikigait (Herjolfsnæs, 59°59′) 1880: C.P., C.

Ivigtut 1883: Berlin (1884); 1889: N.H., C; 1899: J.L., C; 1934, 1936, 1938: common, LAGERKRANZ (1950); 1942: common and fully established, A. E. PORSILD (1945); 1952 and 1954: A.R., ! ; 1957: S.L., C; 1961: common, A.P., C.

Frederiksdal 1883: BERLIN (1884); 1970: at the loran station, reported by B.F.

Amitsoq (60°20′) 1883: BERLIN (1884).

Arsuk at Ivigtut 1888: L.K.L., C; HARTZ (1894 b).

Qagssimiut (60°47′) 1888: ROSENVINGE (1892).

"Komiut" at Narssaq (?Nûngmiut, 60°58′) 1888: ROSENVINGE (1892).

Qíngua, Tunugdliarfik 1888: ROSENVINGE (1892); 1964: C.H., P.M.P. & T.Sm., C.

Tasiussaq (61°46′) at Qíngua NE of Narssalik 1889: far from settlements, HARTZ (1894 b).

Frederikshåb 1889: N.H., C; 1961: A.P., C; 1966: L.B.J. & S.La., C.

Nûk, north of Narssalik (61°42′) 1890: among indigenous plants, HARTZ (1894 b).

Ritenbenk (69°46′) 1890: "in a garden," N.H., C.

Umának 1892: "in the Manager's yard," sterile, E.V., C.

Tigssaluk (61°23′) 1899: J.L., C.

Egedesminde 1902: "common garden weed," M.P.P., C; 1966: P.S.H., ! .

Naujarssuit at Qeqertalik (66°44′) 1911: A.E.P. & M.P.P., C; 1926: A.E.P. & M.P.P., C; at the base of a bird cliff where it grew abundantly between herbs and willows. The place is visited by Greenlanders in search of *Archangelica*, who may have brought seed along from their village, M. P. Porsild (1932).

Neria (61°37′) 1922: J.E., C.

Upernavik 1931: "in an open garden frame," flowering and fruiting in September, also ruderal, F.J., C.

Sârdloq (64°21′) at Godthåbsfjord 1936: Lagerkranz (1950).

Eqaluit (60°42′) at Igaliko Fjord 1937: J.G., C.

Qagdlumiut at Agdluitsup kangerdlua (60°42′) 1947: J.G., C.

Sletten at Agdluitsup kangerdlua 1937: J.G., C.

Ionajustssoq, a bird cliff at Godthåbsfjord, 1942: fruiting 3rd August, A.E.P., C.

Ravneklippen in the innermost part of Søndre Strømfjord 1946: "in a dark cave, presumably introduced by caribou hunters who overnighted there," T.W.B., C.

Upernaviârssuk 1953: J.G., C; 1961: A.P. ! .

Qeqertaussaq, "Spiret," at Nordre Strømfjord (67°44′) 1954: "on the bird cliff," F.S., C.

Itivnera (64°23′) 1960: fruiting in July, B.F., C.

Grønnedal 1961: frequent, A.P., C.

Qagssiarssuk 1961: a harmful weed on moist fields; in addition it is dispersed along the sheep and riding paths, A.P., C; 1962: B.F., C; 1969: B.F., ! . Where sheep are kept, herbicides are used to combat *Stellaria media* and *Rhinanthus*, Jensen (1959).

Ingnerûlalik (61°06′) 1961: A.P., C.

Narssarssuaq 1961: A.P., C.

Narssaq 1961: takes over a potato crop, A.P., C; 1962: B.F., C.

Færingehavn 1961: A.P., C.

Qôrnoq (64°32′) 1962: R.B., C.

Dyrnæs at Narssaq 1962: P.M.P., C.

Nanortalik 1964: C.H., P.M.P. & T.Sm., C; 1969: common at the harbour and in gardens, N.S., ! ,; 1970: reported by B.F.

Maukârneq (60°01′) 1964: C.H. & P. M. P., C.

Itivdleq on Eggers Ø (59°54′) 1966): P. G. & C.H., C; 1970: on the abandoned settlement, reported by B.F.; N.I., C.

Anordliuitsoq on Pamiagdluk (60°04′) 1970: on the abandoned settlement, N.J., C.

Angmagssalik 1970: accompanied by *Koenigia islandica* and *Polygonum aviculare*, L.K.-N., C.

Augpilagtoq (60°09′) 1970: reported by B.F.; N.J., C.

Igpik on Ũnartoq (60°31′) 1970: at an abandoned sheep farming settlement, reported by B.F.

Prins Christian Sund Meteorological Station (ca. 60°02′ on the east coast) 1970: N.J., C.

Chenopodiaceae

Atriplex deltoidea BAB.

Umának 1892: in the Manager's yard, 7 cm. tall, sterile, VANHÖFFEN (1897). Grønnedal 1961: in a greenhouse, sterile in August, A.P., C.

Atriplex latifolia WAHLENB. emend. A. PEDERS.

Ivigtut 1899: "ruderal," sterile in September, J.L., C.

Atriplex patula L.

Godhavn 1932: "weeds in the Governor's garden," sterile in September, J.G., C.

Godthåb 1961: "in the Manager's chicken yard, sterile in September, J.G., C.

"Ameralik Fjord": BÖCHER, HOLMEN & JAKOBSEN (1968). No herbarial specimens are available.

Chenopodium album L. (fig. 9)

A common annual weed in West Greenland, as far as gardening and poultry are concerned; in northern parts, however, without mature fruits, M. P. PORSILD (1932).

In Greenland *Chenopodium album* may only be naturalized in Ivigtut, where it has frequently been found throughout a period of almost 80 years. It may be fruiting in good summers in the southernmost part of Southwest Greenland.

Frederiksdal 1883: in gardens, flowering in August, BERLIN (1884).

Ivigtut 1883: garden weeds and near gardens, flowering in August, BERLIN (1884); 1889: "ruderal," sterile in August, N.H., C; 1899: flowering in September, J.L., C; 1936: LAGERKRANZ (1950); 1937: sterile, J.G., C; 1954: A.M.H., C; 1961: flowering in early August, undoubtedly partly naturalized, A.P., C.

Julianehåb 1961: flowering in July, A.P., C.

Upernaviârssuk 1961: sterile in July, A.P., C.

Narssaq 1961: sterile in July, A.P., C.

Qagssiarssuk 1961: sterile in July, A.P., C.

Ingnerûlalik (61°06′) 1961: on the meadows, sterile in July, A.P., C.

Narssarssuaq 1961: sterile in July, A.P., C.

Grønnedal 1961: flowering in July, A.P., C.

Christianshåb 1890: sterile in a garden, up to 24 cm tall, N.H., C.

Ritenbenk ((69°46′) 1890: sterile in a garden, N.H., C.

Umának 1892: sterile in the Manager's garden. E.V., C.

Godhavn 1923: "on the midden at Arktisk Station, introduced with chicken feed," sterile, M.P.P., C; 1932: "in the Governor's garden," sterile, J.G., C; 1961: sterile in July, A.P., C.

Upernavik 1931: "garden weed," with flower buds in September, F.J., C.

Airport at Søndre Strømfjord 1958: with immature fruit in September, T.W.B., C.

Itivnera (64°23′) 1960: "at the caribou breeding station," with flower buds in August, B.F., !.

Godthåb 1961: at the Manager's chicken yard, sterile in July, A.P., C.

Chenopodium glaucum L.

Julianehåb 1828: near the houses (quotation from VAHL's manuscript), sterile in September, J.V., C

Grønnedal 1961: in a greenhouse, A.P., C.

Chenopodium suecicum MURR.
(*C. viride* auct.)

Julianehåb 1888: "weed in the Manager's garden," with flower buds in August, L.K.R., C. (*C. album*, ROSENVINGE, 1892).

Convolvulaceae

Convolvulus arvensis L.

Godhavn 1934: "in a garden frame at Arktisk Station," sterile in September, M.P.P., C.

Compositae

Achillea millefolium L. ssp. *lanulosa* (NUTT.) PIPER.

Narssarssuaq 1961: fairly abundant in lawns at some officers' dwellings, flowering in July, A.P., C.

Accidentally introduced from North America, where it is widespread transcontinentally in northern U.S.A. and southern Canada.

Achillea millefolium L. ssp. *millefolium* s. str. (fig. 33)

Identical with the main form of the European ssp. *millefolium*. It differs from the following Greenlandic *Achillea* in that, i.a., it has pale involucral bracts, broader leaves, and it flowers later. It is almost only found in seaports, as a rule in connection with lawns. Recently introduced to Greenland.

Julianehåb 1946: "ssp. *eu-millefolium*," LAGERKRANZ (1950).

Ivigtut 1934: "ssp. *eu-millefolium*, not rare as an adventive," LAGERKRANZ (1950); 1961: rare, with head buds in August, A.P., C.

Grønnedal 1961: in lawns, A.P., C.

Narssaq 1961: in lawns in gardens, and beside the church, with head buds in July, A.P., C.

Upernaviårssuk at Julianehåb 1961: in the nursery, with head buds in July, A.P., C.

Angmagssalik 1933: observed by R. Bø., reported by BÖCHER (1938); 1946: LAGERKRANZ (1950).

Mesters Vig (72°11′ on the east coast) 1958: "at the lead mine, $^1/_2$ m. tall," with broad leaf segments, flowering in late August, S.L., C.

Frederikshåb 1961: in the Manager's lawn, with head buds in July, A.P., C.

Godthåb 1961: in the Manager's lawn and in the churchyard, with head buds in late July, A.P., C.

Achillea millefolium L. cf. var. *nigrescens* E. MEY. (fig. 3)

M. P. PORSILD (1932) referred the Greenlandic *Achillea*, which is narrow-leaved and has dark, involucral bracts, to var. *nigrescens* E. MEY. (syn. *A. borealis* BONG. ?), which is widespread in Canada, Alaska, and the Rocky Mountains. Upon closer study, M. P. PORSILD (1946) concluded that it is more closely related to the European *Achillea* of Iceland and northern Eurasia than to the American variety. On the basis of this form's association with the Norse settlements he assumed, along with ROSENVINGE (1896) and OSTENFELD (1926), that the Norse settlers originally introduced it to Greenland.

Igaliko 1828: J.V., C; 1925: A.E.P. & M.P.P., C; as a garden weed, M. P. PORSILD (1932).

Sangmissoq ("Sagmesok," 61°05′) at Tunugdliarfik 1828: J.V., C; in several places in large parts of the valleys (at Tunugdliarfik) growths of *Achillea millefolium* were observed (quotation from VAHL's manuscript).

Julianehåb 1828: J.V., C; 1931: Radiofjeldet, A.M.H., C; 1937: at the radio station, J.G., C; 1957: reported by B.S.; 1961: in the churchyard, flowering in July, A.P., C.

Frederiksdal 1828 and 1829: J.V., C; 1900: G.M., C; 1917: H.M., C; 1925: A.E.P. & M.P.P., C.

Qagssiarssuk 1829: J.V., C; 1880: C.P., C; 1925: A.E.P. & M. P.P.,C; 1937: Polunin (1943, var. *nigrescens*); 1961: A.P., C; 1969: B.F., ! ; 1970: far away from the settlement, N.J., C.

Godthåb 1830: J.V., C; 1907: "in gardens," flowering in July, S.H., C.

Lichtenfels (63°04′) 1855: J.T., C; 1876: "outside a garden fence and in corn," A.K., C.

Fiskenæs (63°05′) 1876: "outside a garden," A.K., C.

Atarnaitsup ("Ataneritsoq," 61°02′) at Tunugdliarfik 1888: "near a Norse ruin," L.K.R., C.

Ilua (Pamiagdluk, 59°57′) 1888: "transplanted from Frederiksdal," E.L., C.

Qordlortoq at Tunugdliarfik (Itivnera) 1937: "on arid spots in a low *Salix* thicket," J.G., C.

Kiagtsuk ("Kiagtut," 61°11′) at Narssarssuaq 1900: "near a Norse ruin," flowering in July, L.M., C; 1937: Polunin (1943, var. *nigrescens*).

Qingua (61°14′), Tunugdliarfik 1888: L.K.R., C; 1937: Polunin (1943, var. *nigrescens*); 1962: K.H., Kj.H. & P.M.P., C.

Gammel Qagssiarssuk at Igaliko Fjord 1937: Polunin (1943, var. *nigrescens*).

Ivigtut 1937: J.G., C. 1954: A.M.H., C; 1961: common, A.P., C.

Grønnedal 1952: N.K., C; 1961: in lawns, A.P., C.

Qanagssiagssat ("Qanasiarssut," c. 61°13′) 1953: J.G., C.

Færingehavn 1961: A.P., C.

Narssaq 1961: A.P., C; 1970: G.W., ! .

Dyrnæs at Narssaq (60°57′) 1962: P.M.C., C.

Nanortalik 1969: in the churchyard, flowering in September, N.S., ! .

Holsteinsborg 1969: two clones observed, O.L., ! .

Achillea millefolium L. coll.

Greenland, about 1810: Giesecke (1830). In this manuscript Vahl mentions that Giesecke found *A. millefolium* at Holsteinsborg.

Frederiksdal 1883: Berlin (1884).

Qordlortoq at Tunugdliarfik 1888: Rosenvinge (1896).

Ivigtut 1942: very common by roadsides and in waste places and in open

willow thickets where it flowered and fruited abundantly September 2. The occurrence and behaviour of the plant seen at Ivigtut suggested that it is of introduced rather than of native stock, A. E. PORSILD (1945).

Narssarssuaq: JØRGENSEN *et al.* (1958).

Frederikshåb 1961: sterile, A.P., ! .

Godthåb 1965: on the edge of a ditch, with basal leaf rosettes in July, P.S.H., ! .

With respect to choice of type, in this case no consideration has been given to whether the occurrence is naturalized or not.

Achillea ptarmica L.

Grønnedal 1961: in a lawn, with head buds in August, A.P., C.

Færingehavn 1961: a few specimens under a staircase from the factory, sterile in late July, A.P., C.

Julianehåb 1957: reported by B.S.; 1961: observed cultivated in a garden, sterile in late July, A.P., C.

Presumably capable of surviving vegetatively in the places mentioned.

Anthemis arvensis L.

Ivigtut 1883: on ballast soil, a small, 4 cm tall specimen with head buds in August BERLIN (1884); 1899: flowering in September, J.L., C.

Arctium tomentosum MILL.

Ivigtut 1883: a more than 1 m tall specimen with head buds in August, BERLIN (1884).

Artemisia vulgaris L.

Ivigtut 1883: sterile in a garden, BERLIN (1884); POLUNIN (1943); 1934, 1936, 1948: LAGERKRANZ (1950, page 29).

Godhavn 1931: in a flowerpot, M.P.P., C.

Godthåb 1961: observed partly sterile at the Manager's chicken yard, partly with closed buds in a garden frame, both in July, A.P., C.

Carduus crispus L.

Godthåb 1961: at the Manager's chicken yard, a sterile specimen in July, A.P., C.

Centaurea jacea L.

Ivigtut 1883: sterile in August, BERLIN (1884).

Chrysanthemum leucanthemum L.

Ivigtut 1937: POLUNIN (1943); 1951: flowering in September, A.R., ! ; on an abandoned part of a small field, where *Trifolium hybridum* had been sown, flowering in August, A.P., C.

Grønnedal 1961: in several places in lawns, with head buds in early August, A.P., C.

Godthåb 1961: in the Manager's lawn, with head buds in July, A.P., C.

Upernavik 1961: in a greenhouse, J.L.H., C.

Presumably capable of surviving vegetatively in Ivigtut and Grønnedal.

Cirsium arvense (L.) SCOP.

Ivigtut 1883: near a garden, sterile in August, BERLIN (1884); 1889: sterile in August, N.H., C; 1934: LAGERKRANZ (1950); 1937: growing in rubbish, with head buds in September, A. E. PORSILD, 1945; 1954: flowering in September, A.R., ! ; 1961: large clones in a few places near Gæstehjemmet, with head buds in early August (var. *horridum* W. & GR.), A.P., C.

Godhavn 1934: sterile in September, M.P.P., C; adventive in gravel pits, LAGERKRANZ (1950).

Julianehåb 1937: at the radio station, sterile in August, J.G., C; 1946: abundant near the telegraph office, LAGERKRANZ (1950). The two finds derive from the same place.

Survives vegetatively in Ivigtut and Julianehåb.

Crepis tectorum L.

Ivigtut 1899: a small specimen, flowering in August, J.L., C.

Filago arvensis L.

Ivigtut 1961: in a greenhouse, A.P., C.

Galinsoga ciliata (RAF.) BLAKE

Godhavn 1961: beside a potted plant at Arktisk Station, A.P., C.

Galinsoga parviflora CAV.

Ivigtut 1961: in a greenhouse, A.P., C.

Gnaphalium uliginosum L. (fig. 11)

Sangmissoq ("Sagmesok," 61°05′) at Tunugdliarfik 1828: fruiting in September, J.V., C. VAHL's manuscript indicates that the plant grew in a dried-up lake ca. 13 m a.s.l., and together with *Rorippa islandica* ("Nasturtium palustre Brown"). It is probable that like *R. islandica* the species here occurred spontaneously. HARTZ (1894 a) does not identify the place name; it could be Sangmissup at Qagssiarssuk (Maps of Geodetic Institute).

Julianehåb 1828: J.V., C.

Qagssiarssuk 1828: J.V., C.

Narssaq 1888: flowering in July, L.K.R., C; in a meadow close by the dwellings, in the vicinity of which there are Norse ruins, ROSENVINGE

(1896); 1899: G.M., C; 1937: "on moist bottom by the shore," J.G., C; 1955: H.B.A., C; 1961: along roads, A.P., C.

Ivigtut 1937: POLUNIN (1943); 1961: in gardens and in greenhouses, flowering in August, A.P., C.

Upernaviârssuk 1961: in the nursery and beside a road, flowering in July, A.P., C.

Godhavn 1924: "in a flowerpot," M.P.P., C.

Helianthus annuus L.

Narssarssuaq 1961: in a chicken yard, sterile in July, A.P., C.

Lapsana communis L.

Godhavn 1931: a sturdy specimen in the chicken yard at Arktisk Station, flowering in late September, M.P.P., C.

Godthåb 1961: two sterile specimens at the Manager's chicken yard.

Leontodon autumnalis L. var. *coronopifolius* LANGE

Grønnedal 1961: frequent in lawns, flowering in early August, A.P., C.

Leontodon autumnalis L. var. *taraxaci* (L.) HARTM. (fig. 13)
(*L. a.* var. *asperior* WAHLENB.)

All of the authors who have concerned themselves with the origin of the Greenlandic flora believe that the Norsemen introduced *Leontodon autumnalis* var. *taraxaci*. This variety is common and indigenous in Iceland. In Eastern Canada and Northeastern U.S.A. the variety has not been recorded, but the main species has been reported as introduced there.

Igaliko 1828: J.V., C; 1890 and 1900: H.M., C; 1925: A.E.P. & M. P.P., C.

Julianehåb 1828: J.V., C; 1899: N.H., C; 1904: C.D., C; 1936, 1946: in alpine moors among alpine plants, LAGERKRANZ (1950); 1937: J.G., C; 1961: A.P., C; 1970 reported by B.F.

Qaqortoq church ruin (Hvalsey 60°50′) at Julianehåb 1828: J.V., LANGE (1880); 1925: A.E.P. & M.P.P., C.

"Komiut" at Narssaq (? Nûngmiut, 60°58′) 1888: L.K.R., C.

Qordlortoq Norse ruins at Tunugdliarfik (60°12′) 1888: "in a meadow with Carices," L.K., C.

Qagssiarssuk 1880: C.P., LANGE (1887); 1925: A.E.P. & M.P.P., C; 1961: A.P., C; 1969: B.F., ! .

Upernaviârssuk at Julianehåb 1937: J.G., C; 1961: A.P., C.

Igdlorssuit at Igaliko Fjord (60°47′) 1954: C.A.J., C.

Narssaq 1961: A.P., C; 1970: G.W., ! .

Grønnedal 1961: A.P., C.

Qíngua, Tunugdliarfik 1962: flowering in July, H.K., C.H. & P. M. P., C.

Måjût at Tunugdliarfik (61°04′) 1962: K.H., C.H. & P.M.P., C.

Dyrnæs at Narssaq 1962: with head buds 22 June, P.M.P., C; 1963: K.D. & K.H., C.

Tugtutôq (60°55′) 1963: flowering 3rd August, K.G., C.H. & K.Ja., C.

Leontodon autumnalis L. coll.

Julianehåb 1937: Polunin (1943).
South and north of Qagssiarssuk 1937: Polunin (1943).
Qíngua, Tunugdliarfik 1937: Polunin (1943).
Narssarssuaq: Jørgensen *et al.* (1958).

Matricaria matricarioides (Bong.) Porter (fig. 14)

Ivigtut 1899: two small specimens introduced with garden soil, flowering in August, J.L., C; 1937: along roadsides, fruiting i September, J.G., C; 1937: Polunin (1943); 1938: Lagerkranz (1950); 1961: frequent on roadsides, A.P., C.

Christianshåb 1924: flowering in July, M.P.P., C; 1955: R.B., ! ; 1961: S.T., ! ; 1962: M.I., ! .

Godhavn at Arktisk Station 1925, 1927, and 1931: flowering in August, M.P.P., C; 1932: J.G., C.
At least in good summers some of the fruit matures, M.P. Porsild (1932); 1934: Lagerkranz (1950); 1961: with basal rosettes in early July, A.P., ! .

Grønnedal 1938: Lagerkranz (1950); 1954: M.A., ! .

Julianehåb 1946: Lagerkranz (1950, page 41).

Itivnera (64°23′) 1951: reported by J.R.; 1960: flowering in July, B.F., ! .

Igaliko 1957: reported by B.S.

Upernaviârssuk at Julianehåb 1961: A.P., C.

Qagssiarssuk 1961: common on roadsides and in fields, flowering in July, A.P., C; 1962: "at a farm SW of Qagssiarssuk," B.F. ! ; 1969: B.F., ! .
Narssaq 1961: in gardens and at roadsides, A.P., C; 1962: B.F., ! .

Narssarssuaq 1961: frequent at the dumping ground, flowering in July, A.P., ! .

Frederikshåb 1961: with head buds in July, A.P., ! .

Godthåb 1965: at a roadside, with full-blown heads in mid-August, P.S.H., ! .

Nanortalik 1969: flowering in September, N.S., ! .

Matricaria recutita L.
(*M. chamomilla* L.)

I doubt that the fruits ever mature here, M. P. PORSILD (1932).

Collected from Greenland by M.W. about 1813, C. Jakobshavn 1833: J..V, C; at the doctor's house, where it has grown for several years, BERGGREN (1871).

Nordre Strømfjord "close by the edge of the inland ice, far inland, 25 July 1879:" flowering, A.K., C. According to M. P. PORSILD (1932), a caribou hunter must have transported it to a place of this nature.

Ivigtut 1889: sterile, N. H., C; flowering in August, J.L., C; 1942: on roadsides and in waste places, flowering and fruiting in September, A. E. PORSILD (1945).

Hunde Ejland (68°52′) 1892: flowering in July, P.H.S., C.

Christianshåb 1893: flowering in August, M.M., C.

Grønne Ejland in Disko Bugt 1897, P.H.S., C.

Godhavn 1902: "common in garbage heaps," flowering in September, M.P.P., C; 1932: J.G., C.

Egedesminde 1902: M.P.P., C.

Julianehåb 1902: G.M., C.

Søndre Strømfjord 1946: one specimen at an abandoned caribou hunters' camp at the head of the fjord, C.O.E., reported by BÖCHER (1952).

Godthåb 1961: at the Manager's chicken yard, A.P., ! .

Narssarssuaq 1961: A.P., ! .

Holsteinsborg 1969: observed beside the hospital in an old lawn, reported by O.L.

Senecio vulgaris L. (fig. 23)

Ivigtut 1883: on garden soil, flowering and fruiting in August, will probably survive, BERLIN (1884); flowering in August, N.H., C; 1899: introduced with garden soil, J.L., C; not uncommon in small gardens, LAGERKRANZ (1950); 1937: J.G., C; 1937: POLUNIN (1943); 1942: "common and fully established," A. E. PORSILD (1945); 1951: A.R., ! ; 1954: A.M.H., C; 1961: here and there, A.P., ! .

Grønnedal 1952: flowering in July, N.K., C; 1961: frequent, A.P., ! .

Tasiluk (60°41′) east of Julianehåb 1957: reported by B.S.

Narssaq 1961: flowering in July, A.P., ! .

Narssarssuaq 1961: flowering in July, A.P., ! .

Umának Municipality, WEGENER's camp at 70°10′, undated: flowering, P.R. leg., reported by M.P. PORSILD (1932).

Sonchus asper (L.) HILL

Godhavn at Arktisk Station 1931: in the chicken yard, a sturdy *ferox*-form with head buds and one flowering head in mid-September, M.P.P., C.

Sonchus oleraceus L.

Ivigtut 1883: in a garden, sterile in August, BERLIN (1884).

Tanacetum vulgare L.

Julianehåb 1961: used in a garden as an ornamental plant, not flowering in July, A.P., ! .

Narssaq 1961: used in a garden as an ornamental plant, not flowering in July, A.P., ! .

Sukkertoppen 1965: at a roadside, sterile in late August, P.S.H., ! .

Tripleurospermum maritimum (L.) KOCH ssp. *boreale* (HARTM.) (stat. nov.[1]) (fig. 24)

(*Matricaria maritima*, p.p.)

Tripleurospermum maritimum is represented by three subspecies in Greenland, ssp. *phaeocephalum* (RUPR.) HÄMET-AHTI (see page 81), ssp. *inodorum* (L.) HYL. (see page 27) and ssp. *boreale*. The last-mentioned subspecies is widespread in the North Atlantic area, and is known from Norway, Scotland, the Faeroe Islands (rare), and Iceland (common). In Greenland it is primarily associated with localities rich in nitrate and phosphate near buildings or on former settlements; it is only rarely seen on the shore, where it is considered as a neophyte. OSTENFELD (1926) believes that the Norsemen originally introduced it, whereas PORSILD will not exclude the possibility of its being indigenous. In Iceland it occurs naturally on the shore and on bird cliffs, and there is an undoubted apophytic occurrence near farms and buildings (GRÖNTVED, 1942).

Julianehåb 1828: J.V., LANGE (1880); 1937: H., C; 1897 and 1898: G.M., C; 1931: Radiofjeldet, A.M.H., C; 1937: at the radio station, J.G., C; 1938, 1946: "var. *phaeocephala*," LAGERKRANZ (1950); 1961: common on polluted places near the houses and on fences, a village pride (fig. 1), A.P., C; 1969: B.F., ! ; 1970: B.F. reported.

Igaliko 1828: J.V., C; 1837: C.Ho., LANGE (1857); 1883: "var. *phaeocephala*," BERLIN (1884); 1925: A.E.P. and M.P.P., C; 1938: "var. *phaeocephala*," LAGERKRANZ (1950).

Torssukátak ("Torkutatak," 60°50′) at Julianehåb 1837: C.Ho., ROSENVINGE (1892).

At Tasermiut (60°32′) 1880: C.P., C; 1964: on the shore among *Elymus*, C.H., P.M.P. & T.Sm., C.

[1]) Basionym: *Tripleurospermum inodorum* SCH. *β borealis in* C. J. HARTMAN 1849: *Handbok i Skandinaviens flora*, 5th ed., p. 2. Described from Trondheim.

Fig. 1. *Tripleurospermum maritimum* (L.) KOCH ssp. *boreale* (HARTM.) and *Potentilla anserina* L. s. str., Julianehåb 17.7. 1961. Examples of naturalized species. A.P. phot.

Qernertoq at Tunua (59°59′ on the east coast) 1883: P.E., LANGE (1887).

Qordlortoq at Tunugdliarfik (60°12′) 1888: near a Norse ruin, ROSENVINGE (1892).

Qíngua, Tunugdliarfik (61°14′) 1888: ROSENVINGE (1892); 1962: K.H., C.H. & P.M.P., C.

Narssaq 1888: L.K.R., C; 1961: A.P., ! .

Ilua (Pamiagdluk, 59°57′) 1888 and 1889: E.L., C.

Kûgssuaq at Tasermiut (60°16′) 1889: "at the shore," N.H., C.

Taserssuaq at Tasermiut (60°15′) 1894: A.J., C.

Qagssiarssuk 1937: J.G., C; 1937: also south of Q., POLUNIN (1943); 1961: A.P., C; 1962: B.F., ! .

Ilua ("Tunuarmiut", 60°58′) ved Tunugdliarfik 1937: J.G., C.

Sydprøven 1937: POLUNIN (1943).

Ivigtut 1937: Polunin (1943); "var. *phaeocephala*," LAGERKRANZ (1950); 1942: an escape from gardens . . . seed brought from Swedish Lapland

ten years ago, A. E. Porsild (1945); 1954: A.M.H., C; 1961: not observed, A.P.

Itivnera (64°23′) 1951: reported by J.R.; 1960: abundant around the houses, flowering 25 July, B.F. ! .

Qanagssiagssat (c. 61°13′) at Tunugdliarfik 1953: "near an old Norse settlement," J.G., C.

Igdlorssuit ("Iviglorssuit," 60°47′) at Igaliko Fjord 1954: C.A.J., C.

Niaqornârssuk at Kangerdluarssuk (60°50′) 1955: H.B.A., C.

Upernaviârssuk 1957: P.B., C; 1961: A.P., ! .

Narssarssuaq 1961: A.P., C.

Ingnerûlalik at Qagssiarssuk (61°06′): A.P., C.

Qôrnoq (64°32′) 1962: R.B., ! .

Nûpiluk (60°46′) 1962: K.H., C.H. & P.M.P., C.

Dyrnæs at Narssaq 1962: P.M.P., C.

Mâjût (61°14′) 1962: K.H., C.H. & P.M.P., C.

Christian IV.s Ø (60°07′) 1964: C.H. & P.M.P., C.

Tasermiut at the head of the fjord 1964: C.H., P.M.P. & T.Sm., C.

Itivdleq on Eggers Ø (59°54′) 1967: near ruins, flowering in July, C.H. & P.G., C; 1970: on the abandoned settlement, reported by B.F.; N.J., C.

Nanortalik 1969: several places, i.a., in the churchyard, flowering in September, N.S., ! .

Igpik on Ũnartoq (60°31′) 1970: on an abandoned sheep-farm, reported by B.F.

Augpilaqtoq (60°09′) 1970: reported by B.F.

Frederikshåb 1961: planted in gardens, A.P., C.

Godthåb 1961: planted in gardens, A.P., C.

Tripleurospermum maritimum (L.) Koch ssp. *inodorum* (L.) Hyl.
(*Matricaria maritima*, p.p.)

Sletten at Agdluitsup kangerdlua 1937: possibly typical *M. inodora*, Polunin (1938, 1943).

Ivigtut 1937: flowering in September, J.G., C; 1937: E.D., reported by Polunin (1943); 1952: A.R., ! . 1961: not rare, flowering in August, A.P., C.

Grønnedal 1961: in lawns, A.P., C.

Saputit (ca. 60°11′) at Tasiussaq, Tasermiut 1970: at the sheephold, with head buds in August, M.J., ! .

Umánaq 1892: "*Matricaria inodora* var. *discoidea*," 8 cm tall, flowering in the Manager's yard, VANHÖFFEN (1897).

Egedesminde 1902: flowering in September, M.P.P., C.

Godhavn 1923: accidentally introduced to the yard at Arktisk Station, spreading out along the road, now vanished, M. P. PORSILD (1932). Transplanted from here in 1928 to the churchyard in Jakobshavn, M. P. PORSILD (1932).

Tripleurospermum maritimum (L.) KOCH coll.

Greenland about 1810: GIESECKE (1839). VAHL mentions in his manuscript that GIESECKE has found *Pyrethrum inodorum* var. *maritimum* in Holsteinsborg District.

Igaliko 1813: M.W., LANGE (1857); 1888: in abundance on the houses, ROSENVINGE (1896).

Julianehåb 1913: M.W., LANGE (1880); 1883: sterile, BERLIN (1884).

Ivigtut 1883: sterile, BERLIN (1884), who tends to believe that ssp. *inodorum* is concerned.

Sukkertoppen 1969: at outlets from buildings, reported by E.H.

Holsteinsborg 1969: on the hospital's lawn, reported by O.L.

Xanthium strumarium L.

Lichtenau about 1810: in the Herrnhutter's garden, GIESECKE (1830), LANGE (1880).

Cruciferae

Arabis hirsuta (L.) SCOP. var. *glaberrima* WAHLENB.

Ivigtut 1961: on an abandoned small field near Gæstehjemmet, c. 30 specimens with numerous mature fruits, 2 August: A.P., C.

Possibly accidentally introduced from North America (syn.: var. *glabrata* T. & G. ?).

Barbarea arcuata (OPIZ) RCHB. (fig. 30)

Ivigtut 1951: with abortive fruit in September, A.R., ! ; 1954: with immature fruit in September, A.M.H., C; 1961: a large number on a roadside and a refuse dump, with immature fruit in August, A.P., C.

Grønnedal 1961: in lawns, A.P., C.

Narssaq 1961: in lawns, with immature fruit in July, A.P., C.

Upernaviârssuk 1961: in fields, A.P., C.

Godthåb 1961: in the Manager's lawn, with immature fruit in July, A.P., C.

Presumably capable of producing mature seeds in good summers.

Barbarea stricta ANDRZ. (fig. 7)

Ivigtut 1937: POLUNIN (1943); 1938: not rare, LAGERKRANZ (1950); 1952: fruiting in September, A.M.H., C; 1957: S.L., C; 1961: numerous at an old cattle shed, with immature fruit in early August, A.P., C.

Julianehåb 1961: near the experimental station, with immature fruit in July, A.P., C.

Barbarea vulgaris R. BR.

Ivigtut 1954: with immature fruit in September, A.M.H., C.

Brassica campestris L.

Christianshåb 1890: "in a garden," 42 cm tall, flowering in July, N.H., C.

Ivigtut 1899: "in a waste place," with immature fruit in August, J. L., C.

Angmagssalik 1902: introduced with chicken feed, flowering, KRUUSE (1906).

Julianehåb 1957: reported by B.S.

Holsteinsborg 1908: flowering, C.D., C.

Saputit (60°11′) at Tasiussaq, Tasermiut 1970: at the sheephold, 50 cm tall, flowering in August, M.J., ! .

Brassica juncea L.

Itivnera (64°23′): a sturdy specimen, flowering in August, B.F., ! .

Brassica napus L.

Ivigtut 1883: on ballast soil and in gardens, flowering in August, BERLIN (1884); 1961: a few specimens in a kitchen garden, with flower buds in August, A.P., C.

Julianehåb 1902: in a garden, G.M., C.

Godhavn at Arktisk Station 1916: a 30 cm tall specimen with not yet visible flowers.

Godthåb 1965: beside a wall around a house, small specimens, flowering in August, P.S.H., ! .

Camelina sativa (L.) CRANTZ ssp. *sativa*

Ingnerûlalik (61°06′) 1961: a few specimens in a cornfield, flowering and with immature fruit in July, A.P., C.

Capsella bursa-pastoris (L.) MEDIC. (fig. 8)

Seeds have been found in cultural layers from the Norse period in the Western Settlement at the inner part of Godthåbsfjord (IVERSEN, 1953, determined and reported by I. BRANDT) and at Eqalugialik (64°23′) at Ameragdla, in the Eastern Settlement at Qagssiarssuk and Narssaq (FREDSKILD, 1969).

Julianehåb 1813: M.W., C; 1828: in cultivated fields and in the vicinity of the houses (quotation from VAHL's manuscript), fruiting in July, J.V., C; 1883: BERLIN (1884); 1936, 1946: LAGERKRANZ (1950); 1937:

locally abundant, POLUNIN (1943); 1957: reported by B.S.; 1953: J.G., C; 1961: common on polluted places in the town, A.P., C; 1970: reported by B.F.

Eqaluit pârdlît (64°02′) at Ameralik 1831: "near Norse ruins which the Greenlanders visit," fruiting in July, J.V., C; a much used fishing place, M. P. PORSILD (1932).

Ivigtut 1883: fruit-bearing, BERLIN (1884); 1899: fruiting in August, J.L., C; 1925: M. P. PORSILD (1930); 1934, 1936, 1938: common in the whole area, LAGERKRANZ (1950); 1937: J.V., C; 1942: common and fully established in gardens and by roadsides, September, A. E. PORSILD (1945); 1951 and 1952: A.R., ! ; 1954: A.M.H., C; 1961: fairly common, A.P., C.

Tâterât bird cliff (65°10′) 1885: "quite as if it were wild," fruiting in August, S.H., C.

Narssaq 1888: small individuals in abundance around the houses, ROSENVINGE (1892); 1900 and 1901: G.M., C; 1925: A.E.P. & M.P.P., C; 1929: E.M., C; 1961: A.P., C; 1962: B.F., ! ; 1970: G.W., ! .

Qagssiarssuk 1925: A.E.P. & M.P.P., C; 1937: few plants, POLUNIN (1943); 1961: common at roadsides and in the corn, A.P., C; 1962: B.F., ! ; 1969: B.F. ! .

Godhavn 1932: "numerous specimens in the garden at Magnetisk Station and in the Governor's garden," fruiting in August, M.P.P., C and J.G., C; 1934: "at Arktisk Station," M.P.P., C; 1934: not rare, LAGERKRANZ (1950); 1961: at Arktisk Station, sterile in early July, A.P., C.

Jakobshavn 1934: LAGERKRANZ (1950).

Grønnedal 1952: N.K., C; 1961: frequent, A.P., C.

Upernaviârssuk 1953: in corn, J.G., C; 1961: in corn, A.P., C.

Itivnera (64°23′) 1960: around the houses, fruiting in July, B.F., ! .

Sarqaq (70°01′) 1961: reported by H.F.

Sukkertoppen 1961: "one specimen in a window box," with immature fruit in September, B.Fa., C.

Godthåb 1961: a few specimens at three places beside houses, A.P., C.

Tasiussaq at Qagssiarssuk 1962: B.F., ! .

Qôrnoq (64°32′) 1962: reported by R.B.

Dyrnæs at Narssaq 1962: with immature fruit in June, P.M.P., C.

Nanortalik 1964: C.H., P.M.P. & T.Sm., C; 1969: in the new part of town, with immature fruit in September, A.S., ! ; 1970: reported by B.F.

Holsteinsborg 1969: in a lawn and in several places along the main road, reported by O.L.

Cochlearia officinalis L. and *Cochlearia anglica* L.

Reported from Ivigtut 1883 on a ballast dump, (BERLIN, 1884, the former species) and 1942 (PORSILD, 1945, the latter species).

There is a possibility of confusion with *C. groenlandica* L., A.P.

Conringia orientalis (L.) DUM.

Godhavn at Arktisk Station 1923: on the midden, 80 cm tall and with immature fruit in September, introduced with chicken feed, M.P.P., C.

Descurainia sophia (L.) PRANTL
(*Sisymbrium sophia* L.)

Ivigtut 1878: A.K., LANGE (1880).
Itivnera (64°23′) 1960: 75 cm tall and with immature fruit in August, B.F., ! .
Godthåb 1961: small plants in an open garden frame, sterile in July, A.P., C.

Erophila verna (L.) CHEV.

Upernaviârssuk at Julianehåb 1959: "weed in the nursery, introduced with soil around small forest trees," flowering and with immature seeds 13 June, C.A.J., C.

Erysimum cheiranthoides L.

Grønnedal 1961: a few specimens in a lawn, A.P., C.

Lepidium densiflorum SCHRAD.

Airport at Søndre Strømfjord 1969: ca. 15 specimens beside the hotel, with nearly mature fruit 11 August, L.K.-N., C, ! .

Raphanus raphanistrum L.

Godhavn 1932: in the Governor's garden and in the chicken yard at Arktisk Station, flowering in September, M.P.P., C.

Julianehåb 1937: flowering in August, J.G., C; 1957: reported by B.S.

Upernaviârssuk at Julianehåb 1953: flowering in a field of oats, J.G., C.

Rorippa palustris (L.) BESSER ssp. *palustris* (fig. 37)

According to JONSELL (1968) distributed circumboreally in the temperate climatic zone. It is only known to have occurred in the Arctic in the below-mentioned finds from Greenland, which PEDERSEN (1965) referred to as *R. islandica* f. *erecta* BRÜGGER. In regard to *R. islandica*, see page 79.

Ivigtut 1899: fruiting in August, J.L., C; 1934: common on cultivated soil, LAGERKRANZ (1950); 1937: fruiting in September, J.G., C; 1942: very common by roadsides and on waste places, fruiting and fully established September 2, A. E. PORSILD (1945); 1946: at roadsides, T.W.B., C; 1951: A.R., ! ; 1954: A.M.H., C; 1957: with immature fruit in June, S.L., C; 1961: very common on arid ground between the houses, A.P., C.

Arsuk at Ivigtut 1952: N.K., C; probably introduced from Ivigtut.

Grønnedal 1961: frequent, A.P., C; probably introduced from Ivigtut.

Rorippa silvestris (L.) BESSER

Ivigtut 1937: with immature fruit in September, J.G., C; 1961: at the edge of a garden, with abortive fruit in August, A.P., C. A herbarial specimen collected by J. LINDHARD in 1899 and referred to by A. E. PORSILD (1945) to *R. silvestris*, is *R. palustris*.

Capable of surviving vegetatively at this place.

Sinapis alba L.

Narssaq 1890: small, sterile plants in August, P.H.S., C; 1961: sterile in July, A.P., C.

Julianehåb 1936: splendid specimens, LAGERKRANZ (1950).

Ivigtut 1961: introduced to a market garden, flowering in August, A.P., C.

Sinapis arvensis L.

Ivigtut 1883: in and outside of gardens, flowering in August, BERLIN (1884); 1889; N.H., C; 1899: flowering, J.L., C; LAGERKRANZ (1950); 1951, 1952, 1954: respectively sterile, with immature fruit and flowering, all taken in September, A.R., ! ; flowering in August, A.P., C.

Christianshåb 1890: in a garden, sterile in July, N.H., C.

Angmagssalik 1899: introduced with chicken feed the previous year, flowering in August, KRUUSE (1906); 1902: "at the trading place, introduced with chicken feed," flowering, C.K., C.

Godhavn 1923: at Arktisk Station, "introduced with chicken feed, 1 m tall," flowering, M.P.P., C; 1931: "at Arktisk Station in the chicken yard," flowering and with immature fruit in late September, M.P.P., C.

Upernavik 1961: "in a greenhouse," J.L.H., C.

Sukkertoppen 1961: "one specimen beside a window box," B.Fa., C.

Godthåb 1961: beside the Manager's chicken yard, with flower buds in July, A.P., C.

Frederikshåb 1961: beginning to flower in late July, A.P., C.

Upernaviârssuk at Julianehåb 1961: A.P., C.

Narssaq 1961: flowering in July, A.P., C.

Qagssiarssuk 1961: among corn, flowering in July, A.P., C.

Ingnerûlalik at Qagssiarssuk 1961: among corn, flowering in July, A.P., C.

Narssarssuaq 1961: flowering and with immature fruit in July, A.P., C.

Holsteinsborg 1962: with a basal leaf rosette in August, M.L.-N., C.

Sisymbrium altissimum L.

Godhavn 1923: "at Arktisk Station on a midden, introduced with chicken feed," flowering in September, M.P.P., C; 1932: "in the garden at Magnetisk Station," flowering in October, J.G., C.

Julianehåb 1946: spreads more and more, LAGERKRANZ (1950).

Thlaspi arvense L.

Ivigtut 1883: flowering in August, BERLIN (1884); in a waste place, flowering and with immature fruit, N.H., C; 1942: common in gardens and by roadsides, fruiting abundantly September 2, A. E. PORSILD (1945); 1951: with immature fruit in September, A.R., ! ; 1961: on garden soil, rare, fruiting in August, A.P., C.

Godhavn 1932: in a garden, with immature fruit in September, J.G., C: 1935: "in an open garden frame," fruiting in September, M.P.P., C.

Narssaq 1961: sparse, with fruit, A.P., C.

Godthåb 1961: at the Manager's chicken yard, flowering in July, A.P., C.

Holsteinsborg 1969: a few specimens in the hospital's one year old lawn, with immature seeds in August, reported by O.L.

Airport at Søndre Strømfjord 1969: a few specimens in a lawn, reported by O.L.

T. arvense is apparently naturalized in Ivigtut, where it has grown c. 80 years.

Fumariaceae

Fumaria officinalis L.

Ivigtut 1899: introduced with garden soil, flowering in August, J.L., C.

Geraniaceae

Erodium cicutarium (L.) L'HERIT.

Ivigtut 1883: on garden soil, one specimen not flowering, BERLIN (1884); 1952; with immature fruit in September, A.R., ! ; 1961: sterile on garden soil in August, with mature fruit in greenhouses, A.P., C.

Geranium molle L.

Ivigtut 1961: A.P., C.

Geranium pusillum BURM. fil.

Ivigtut 1952: "on the midden," sterile in September, A.R., ! .

Gramineae

Agrostis gigantea ROTH

About half of the reported occurrences probably derive from grassy fields, the remainder having been sown in lawns. *A. gigantea* was found in Iceland (LÖVE, 1970), and was introduced to the Faeroes; according to GLEASON (1952) it was cultivated and has run wild in U.S.A. and Canada.

Qaqortoq church ruin (Hvalsey, 60°50′) at Julianehåb 1925: K.N.C., C.

Ivigtut 1937: in front of "Messen," J.G., C; 1961: in and near lawns, A.P., C.

Igaliko, between Igaliko and Julianehåb, south of Qagssiarssuk and near Qagssiarssuk 1937: in open areas in willow or birch scrub, often far from ruins and forming an almost pure stand on sunny, south-facing slopes, POLUNIN (1943, 1938 and 1959).

Grønnedal 1961: frequent in lawns, and as though it had run wild from them, A.P., C.

Narssaq 1961: in a lawn, A.P., C.

Narssarssuaq 1961: in lawns, A.P., C.

Frederikshåb 1961: beside a garden fence, A.P., C.

Julianehåb 1964: C.H., C.

Agrostis stolonifera L. (fig. 4)

The occurrences marked with a * are from freshwater meadows or salt marshes; they can obviously be regarded as indigenous. ROSENVINGE (1896), OSTENFELD (1926) and M. P. PORSILD (1932) tend to believe that *A. stolonifera* is a "Norse plant," although PORSILD does not exclude the possibility of its being spontaneous. BÖCHER, HOLMEN & JAKOBSEN (1968) add "possibly introduced." There is no clear available evidence of its having been accidently introduced recently. Some of the occurrences are the result of sowing. *A. stolonifera* is native and common in Iceland, according to GLEASON (1925) it is introduced and naturalized in North America. Other authors believe that it is indigenous in the coastal regions of Southeastern Canada and Northeastern U.S.A.

Igaliko 1828: J.V., C; 1888: ROSENVINGE (1892); 1925: A.E.P. & M.P.P., C; * 1926: Kildemosen, K.J., C.

* Ũnartoq (60°30′) 1828, J.V., C; near the thermal springs, M. P. PORSILD (1932); 1963: K.H. & K.D., C.; 1963: C.A.J., C; 1970: near the thermal springs, reported by B.F.

Narssaq * 1888: in a moist field, L.K.H., C; 1961: in a lawn and on a moist roadside, A.P., C.

* Isarungmiut ("Isaromiut," 60°09′, Isaroq) at Nordre Sermilik 1888: "in a salt marsh," L.K.R., C.

Tasiussaq (60°50′) at Julianehåbsfjord 1925: A.E.P. & M.P.P., C.

Gammel Qagssiarssuk at Igaliko Fjord (60°53′) 1925: A.E.P. & M.P.P., C.

Neria (61°35′) 1925: A.E.P. & M. P.P., M.P. PORSILD (1930).

* Amitsuarssuk (60°45′) at Agdluitsup kangerdlua 1925: A.E. & M.P.P., M. P. PORSILD (1930).

Qagssiarssuk at Tunugdliarfik 1925: A.E.P. & M.P.P., C; 1937: POLU-

NIN (1943); * 1937: "in and near the river 2 km distant from Qagssiarssuk," J.G., C; 1970: abundant in the river, reported by B.F.

Julianehåb 1937: POLUNIN (1943): on a roadside, A.P., C.

*Qíngua (60°15′), Tunugdliarfik 1937: POLUNIN (1943); * 1937: "on moist ground at the shore," J.G., C; 1962: K.H., C.H. & P.M.P., C.

Narssarssuaq 1961: in lawns, A.P., C.

Ivigtut 1961: rare, A.P., C.

Godthåb 1961: in lawns, A.P., C.

*Torssukátak (60°54′) at Brede Fjord 1962: C.H., Kj.H. & P.M.P., C; in a salt marsh, reported by C.H.

Mâjût (61°04′) at Tunugdliarfik 1962: C.H., Kj.H. & P.M.P., C.
Frederiksdal 1970: at the loran station, reported by B.F.

Ella Ø (72°52′ on the east coast) 1939: "at the station," flowering August 27, P.Ge., C. – Compare *Astragalus alpinus*, page 49.

Agrostis tenuis SIBTH. (fig. 5)

To date only reported from Greenland from Igaliko, where POLUNIN (1938), who thought it was a "Norse plant," found it. As a result of revising the *Agrostis* material in Arktisk Herbarium (C.H., A.P.), we learned about the additional finds that are reported here, including two that are earlier than POLUNIN's. The majority of the occurrences probably derive from cultivation of fields for sheep grazing, and two result from sowing in lawns. According to CHRISTENSEN (1955) *Agrostis* species make up a significant part of the grass vegetation on the fertilized farmlands in the inner regions of the fjords. No clear evidence of accidental introduction seems to be available. *A. tenuis* is indigenous and common in Iceland, but is reported as having been introduced to North America; according to GLEASON (1952), it may, however, have been native in eastern Canada.

Igaliko 1888: in an open willow scrub, L.K.R., C; 1937: POLUNIN (1938); growing profusely in a moist depression in the cultivated farmland at Igaliko, at a good distance away from the present settlement, but near some *Vicia cracca* and apparently similarly well established, POLUNIN (1943), who also reports that he has seen the species in Iceland in the valley from which ERIK THE RED came.

Ikigait (Herjolfsnæs, 59°59′) 1925: K.N.C., C.

Julianehåb 1937: at the radio station and near the lake, J.G., C; 1946: at the sheep breeding station, together with *Alopecurus arundinaceus*, LAGERKRANZ (1950), cp. *A. pratensis*, page 37.

Upernaviârssuk at Julianehåb 1953: J.G., C; 1954 and 1963: C.A.J., C.

Eqaluit iluat (61°06′, "Lille Ilua") at Narssaq 1955: H.B.A., C.

Qagssiarssuk 1961: A.P., C; 1969: a few m², reported by B.F.

Grønnedal 1961: in a lawn, A.P., C.

Mâjût (61°04′) at Tunugdliarfik 1962: C.H., KJ.H. & P.M.P., C.

Dyrnæs at Narssaq 1963: a green spot near the ruin, K.Ja., C.

Ũnartoq (60°30′) 1963: C.A.J., C.

Godthåb 1965: on the edge of a ditch beside the churchyard, eared in mid-July, P.S.H., ! .

Alopecurus geniculatus L. (fig. 6)

Sletten (Angmagssivik) at Agdluitsup kangerdlua 1937: "in a ditch beside the hayfield," J.G., C.

Julianehåb 1937: at the fox farm, J.G., C; 1946: LAGERKRANZ (1950); 1961: A.P., C; 1937: in a riverbed, flowering in late July, P.S.H., ! .

Ivigtut 1942: common in ditches and moist places, no doubt fully established, A. P. PORSILD (1945). There is a possibility that *Alopecurus aequalis* SOBOL., which is frequent at Ivigtut, has been erroneously determined, A.P.

Upernaviârssuk 1957: P.B., C.

Qagssiarssuk 1961: flowering in July, A.P., C.

Narssaq 1961: flowering in July, A.P., C.

Færingehavn 1961: flowering in July, A.P., C.

Godthåb 1961: flowering in July, A.P., C.

Recently accidentally introduced and naturalized. The *Alopecurus* plants collected by VAHL and TH. FRIES now deposited in Arktisk Herbarium and which LANGE (1857, 1888) referred to *A. geniculatus* are *A. aequalis*, which are spontaneous in Greenland, cf. ROSENVINGE (1892).

Alopecurus geniculatus x *pratensis*

Julianehåb 1946: 5 specimens, flowering in September, J.La., S, A.P. det., including the plants that LAGERKRANZ (1950) referred to *A. arundinaceus* x *geniculatus*.

Alopecurus pratensis L. (fig. 28)

Ivigtut 1889: in a waste place, flowering in August, N.H., C; 1934: LAGERKRANZ (1950); 1937: flowering in July, J.G., C; 1961: eared in August, A.P., C.

Qagssiarssuk about 1912: found growing at the place when OTTO FREDERIKSEN, the first sheep breeder, arrived there. He reported to N.P.,

POLUNIN (1943); 1937: on several of the ruins, POLUNIN (1943); 1956: "around the Norse church," flowering 18th July, C.A.J., C; 1961: in the church ruins, flowering in August, A.P., C; 1969: along the river, B.F., ! .

Nanortalik 1925: "in the Manager's garden," flowering in September, K.N.C., C; 1969: at a garden, with mature fruit in September, N.S., ! .

Sletten near Akuliaruserssuak at Agdluitsup kangerdlua 1937: POLUNIN (1943).

Lichtenau at Agdluitsup kangerdlua 1937: POLUNIN (1943).

Julianehåb 1946: at the agricultural station, J.La., S, A.P. det., including the plant that LAGERKRANZ (1950) referred to *A. arundinaceus;* 1961: in several places run wild from cultivation, A.P., C; 1970: reported by B.F.

Itivdleq at Tunugdliarfik 1953: "in an enclosure, in *Salix* copses," flowering 12 July, J.G., C.

Narssaq 1961: in a lawn and along a moist roadside, A.P., C.

Grønnedal 1961: in lawns, eared in August, A.P., C.

Qôrqut (64°11′) 1941: "in a hayfield," flowering in August, A.E.P., C.

Frederikshåb 1961: eared in August, A.P., C.

Færingehavn 1961: beside the factory, will flower in August, A.P., C.

Godthåb 1965: on a roadside, flowering in late July, P.S.H., C.

As a result of the find in Qagssiarssuk, POLUNIN comments: "Hence presumably an "Old Norse" introduction." This presumption is unacceptable. The main occurrences in Western Europe originate from cultivation in fields in the 18 and 1900's; it could scarcely have existed in Norway in the Middle Ages, and the first find in Iceland dates about 1870, cp. GRÖNTVED (1942), who remarks that it is not fully established. In Greenland *A. pratensis* only produces mature fruit in good summers.

Avena sativa L.

Ivigtut 1889: sterile in August, HARTZ (1894 b); 1889: accidentally introduced, flowering in September, J.L., C; 1937: POLUNIN (1943); 1948: with immature fruit in October, K.Ja., C; 1961: A.P., ! .

Godhavn 1923: at a chicken yard, flowering in September, M.P P., C.

Julianehåb 1961: A.P., ! .

Nanortalik 1969: at the old harbour, flowering in September, N.S., ! .

Beckmannia eruciformis (L.) HOST ssp. *baicalensis* (KUZN.) HULT. (*B. syzigachne* (STEUD.) FERN.)

Julianehåb 1951: "in a garden," well developed and flowering, L.J., C

Presumably introduced from America; this subspecies is indigenous in central and western North America, as well as in East Asia.

Bromus inermis LEYSS.

Godthåb 1965: on a roadside eared late July, P.S.H., ! .

Bromus mollis L.

Godhavn 1916: at Arktisk Station, eared in August, M.P.P., C.

Umának at WEGENER's western camp (ca. 70°40′) 1931: introduced with hay from Denmark, P.R. leg., M. P. PORSILD (1932).

Ivigtut 1952: with immature fruit in September, A.R., ! .

Grønnedal 1955: fruiting in September, H.B.A., C.

Julianehåb 1961: on a field at the sheep breeding station, eared in July, A.P., C.

Bromus tectorum L.

Godhavn 1916: at Arktisk Station. Panicle quite developed in late August, but not flowering, M.P.P., C.

Dactylis glomerata L.

Godhavn 1931: at Arktisk Station, a ca. 50 cm tall specimen, eared in late September, M.P.P., C.

Ivigtut 1934, 1936, 1938: LAGERKRANZ (1950, p. 30); on rubbish, flowering in September, J.G., C; 1961: in waste places and in a lawn, A.P., C.

Grønnedal 1961: in lawns, eared in August, A.P., C.

Julianehåb 1961: cultivated at the agricultural station, eared in July, A.P., C.

Narssaq 1961: in lawns, eared A.P., C.

Godthåb 1965: on a roadside, eared in late July, P.S.H., ! .

Deschampsia caespitosa (L.) BEAUV. (fig. 10)

Ivigtut 1889: flowering in August, J.G., C. 1934, 1936, 1938: LAGERKRANZ (1950, page 30); 1961: few specimens, A.P., C.

Julianehåb 1937: flowering in August, J.G., C; POLUNIN (1943); 1946: in an enclosure at the agricultural station, LAGERKRANZ (1950); 1961: A.P., ! . 1970: reported by B.F.

Grønnedal 1961: eared in August, A.P., C.

Narssaq 1961: eared in July, A.P., C.

Ũnartoq (60°37′) 1962: K.H., C.H. & P.M.P., C.

Godthåb 1936: some exceedingly vigorous tufts in a large, grassy enclosure immediately outside the Seminary, LAGERKRANZ (1950); 1961: several places, eared in July, A.P., C; 1965: in abundance beside the hospital, with widespread, not yet flowering panicle in late July, P.S.H., ! .

Itivnera (64°23′) 1960: "ruderal at the jetty, introduced with hay for the caribou," eared 25 July, B. F., C.

Færingehavn 1961: eared in July, A.P., C.

Mesters Vig (72°11′ on the east coast) 1963: B.F., C.

The occurrence in Greenland is connected with the built-up area, and it can be difficult to imagine that it is indigenous. According to PORSILD (1957, map), it extends to the coast of the Polar Sea in Alaska and in Canada, on the Baffin Land islands.

Elytrigia repens (L.) NEVSKI
(*Agropyron repens* L.)

Greenland 1828: J.V., C.

Ivigtut 1937: "in a waste place," flowering in September, J G., C; 1951 and 1952: with immature fruit in September, A.R., ! ; frequent, A.P., C.

Godhavn 1961: at Arktisk Station, S.L., C.

Godthåb 1961: in and near a garden, eared in late July, A.P., C; 1965: on a wayside, eared in early August, P.S. H., ! .

Frederikshåb 1961: in a garden, not eared in late July, A.P., C.

Julianehåb 1961: in the churchyard, eared in July, A.P., C.

Narssaq 1961: in and near gardens, A.P., C.

Qagssiarsuk 1961: in a garden eared in late July, A.P., C.

Narssarssuaq 1961: beside the houses, eared in late July, A.P., C.

Grønnedal 1961: beside the houses, A.P., C.

Hardly capable of producing mature fruit in Greenland; the rhizomes were presumably introduced with garden soil. The majority of the specimens belongs to var. *aristatum* DÖLL, and has awns and hairy leaf sheaths.

Festuca ovina L.

Sletten at Agdluitsup kangerdlua 1937: POLUNIN (1943).

Julianehåb 1946: LAGERKRANZ (1950, page 30).

There is a possibility of confusion with *F. vivipara* (L.) SM. or *F. brachyphylla* SCHULTES.

Festuca pratensis HUDS.

Ivigtut 1934: not uncommon, LAGERKRANZ (1950); 1937: in a waste place, flowering in September, J.G., C; 1961: run wild from cultivation in part of a field and in a lawn, almost flowering 2 August, A.P., ! .

Grønnedal 1961: frequent in lawns, eared in August, A.P., ! .

Narssaq 1961: in a lawn, eared in August, A.P., ! .

Julianehåb 1961: cultivated at the agricultural station, A.P., ! .

Godthåb 1965: on a roadside, sturdy specimen, about flowering in late July, P.S.H., ! .

Sukkertoppen 1969: at the edge of a house, flowering in early August, reported by E.H.

Festuca rubra L.

A variable species, which is represented in Greenland by indigenous and introduced races. It has run wild in the towns, and it is difficult to

differentiate between the introduced races and the indigenous one, when the latter occurs apophytically.

Sletten at Agdluitsup kangerdlua 1937: introduced, POLUNIN (1943).

Ivigtut 1942: its occurrence and association with familiar ruderal species is suggestive of introduced, rather than of indigenous races, A. E. PORSILD (1945); 1961: in and near lawns, A.P., C.

Grønnedal 1952: N.K., C; 1961: common in lawns, and run wild from these, A.P., C.

Godthåb 1961: in a lawn, flowering in August, A.P., C; 1965: beside the wall of a house, almost flowering in late July, P.S.H., ! .

Festuca rubra L. var. *fraterculae* R. RASM.

Færingehavn 1957: in a waste place, flowering and fruiting in August, T.C., C; 1961: many specimens on polluted, nutritive soil beside the fish filet factory, evidently introduced to this place by Faeroe islanders, A.P., C, EBBE KJELLQVIST det.

Frederikshåb 1961: in the Manager's garden, like the former, eared and about to flower in July, A.P., C., EBBE KJELLQVIST det.

To date, this variety was only known to have grown on the Faeroe Islands, from where RASMUSSEN (1927) described it, and from Western Iceland and Lofoten, in particular on the bird cliffs.

Hordeum distichum L.

Julianehåb 1888: "in the Manager's garden," eared L.K.R., C.

Ivigtut 1952: with immature fruit in September, A.R., ! .

Nanortalik 1969: near the new harbour, sterile in September, N.S., ! .

Hordeum jubatum L.

Holsteinsborg 1969: in a one year-old lawn at the hospital, almost flowering in September, O.L., ! .

Hordeum vulgare L.

Umának 1892: in the Manager's yard, VANHÖFFEN (1897).

Ivigtut 1899: in August, J.L., C.

Angmagssalik 1902: at the trading place, KRUUSE (1906).

Godhavn 1923: at Arktisk Station, eared in September, M.P.P., C; 1924: "as weeds at the station," M.P.P., C.

Godthåb 1936: LAGERKRANZ (1950).

Julianehåb 1936, 1946: LAGERKRANZ (1950).

Fig. 2. *Lolium multiflorum* LAM. and *Phalaris canariensis* L. beside the wall of a house in Godthåb 12.8.1965. Examples of non-naturalized species. PER SCHIERMACHER HANSEN phot.

Lolium multiflorum LAM.

Umának, at WEGENER's western camp (ca. 70°40′) 1931: introduced with hay from Denmark, eared but not flowering in late August, P.R. leg., M. P. PORSILD (1932).

Ivigtut 1934, 1938: on cultivated soil, in gardens, LAGERKRANZ (1950).

Godthåb 1965: along the wall of a house, together with *Phalaris canariensis* and *Panicum miliaceum* (fig. 2), deriving from bird seed, eared in mid-August, P.S.H., ! .

Lolium temulentum L.

Godhavn 1939: "Arktisk Station, on the south side," eared, but did not reach flowering, M.P.P., C.

Lolium perenne L.

Ivigtut 1937: "in a waste place," eared in September, J.G., C; 1942: on rubbish, beginning to flower in September, A. E. PORSILD (1945); 1952: with immature fruit in September, A.R., ! .

Julianehåb 1937: POLUNIN (1943).

Grønnedal 1961: in a lawn, eared in August, A.P., ! .

Godthåb 1961: in a lawn, eared in July, A.P., ! .

Does not appear to produce mature fruit in Greenland.

Phalaris canariensis L.

Godthåb 1965: along the wall of a house, together with *Lolium multiflorum* and *Panicum miliaceum* (fig. 2), ca. 30 cm tall, eared in August, P.S.H., ! .

Phleum pratense L. s. str.

Ivigtut 1889: flowering in August, N.H., C.; 1899: flowering in August, J.L., C; 1936: LAGERKRANZ (1950); 1942: well established, with immature fruit in September, A. E. PORSILD (1945); in a lawn, A.P., C.

Sletten at Agdluitsup kangerdlua 1937: POLUNIN (1943).

Grønnedal 1955: eared in September, H.B.A., C; frequent, cultivated in lawns, A.P., C.

Julianehåb 1961: cultivated in a field, eared in July, A.P., C; 1970, reported by B.F.

Qagssiarssuk 1961: cultivated in fields, eared in July, A.P., C.

Ingnerulalik (61°06′) south of Qagssiarssuk 1961: A.P., ! ; 1962: in a field of rye, B.F., ! .

Narssaq 1961: cultivated in lawns, A.P., ! ; eared in July, A.P., ! .

Godthåb 1961: in a lawn, A.P., ! ; by a roadside, c. 50 m tall specimens, eared in August, P.H.S., ! .

Airport at Søndre Strømfjord 1969: reported by K.H.

Saputit (ca. 60°11′) at Tasiussaq, cultivated and run wild at the sheep-farm, M.J., ! .

Apart from the earliest occurrences in Ivigtut, which were accidentally introduced, the occurrence of this species in Greenland is attributable to cultivation. On a map HULTÉN (1968) shows an occurrence in the middle part of the east coast of Greenland (Scoresbysund?).

Panicum miliaceum L.

Godthåb 1965: along the wall of a house, introduced with bird seed, 6 cm tall, sterile specimens in mid-August, P.S.H., ! .

Poa angustifolia L. coll.

Narssarssuaq 1961: in lawns at the officers' dwellings, flowering in late July, A.P., C.

Ivigtut 1961: in a lawn and by a roadside, flowering in July-August, A.P., C.

Grønnedal 1961: frequent in lawns, A.P., C.

Poa annua L. (fig. 15)

Fruit have been found in mud samples from cultural layers dating from the Norse period at Qagssiarssuk, FREDSKILD (1969).

Julianehåb 1828: J.V., C; 1883: Berlin (1884); 1888: L.K.R., C; 1946 in several places, in wet ditches, Lagerkranz (1950); 1961: frequent, A.P., C; 1970: reported by B.F.

Lichtenfels (63°04′) 1855: J.T., C.

Jakobshavn 1867: Brown (1868).

Ivigtut 1883: Berlin (1884); 1889: very common in waste places, N.H., C; here and there, forming small carpets of grass, Hartz (1894 b); 1899: J.L., C; 1938: Lagerkranz (1950); 1942: very common and completely established, A. E. Porsild (1945); 1957: S.L., C; 1961: common, A.P., C.

Amitsoq (60°20′) 1883: Berlin (1884).

Frederiksdal 1883: Berlin (1884); 1970: at the loran station, reported by B.F.

Frederikshåb 1884: T.H., Rosenvinge (1892); 1961: A.P., C.

Christianshåb 1890: 24 cm tall, flowering, Hartz (1894 b).

Igaliko 1925: M. P. Porsild (1930).

Sangmissoq (59°59′) 1925: mass occurrence on the inhabitated area, A.E.P. & M.P.P., C.

Godhavn 1932: "in the yard at Arktisk Station", flowering in July, J.G., C; hibernate, with green leaves under the snow, Porsild (1932); 1934: Lagerkranz (1950); 1937: M.P.P., C; 1941: "in the Manager's enclosure," flowering in late July, M.P.P., C; 1961: A.P., C.

Narssaq at Kangerdlugssuatsiaq (60°30′ on the east coast) 1932: grows abundantly in front of the old Danish winter quarters; this hut has not been occupied since 1925–26, but during all these years the plant has managed to produce ripe seeds. Some tufts were as tall as 30 cm, Devold & Scholander (1933).

Angmagssalik 1932: extremely common, flowering in September, T.W.B., C; 1946: abundant on the slopes from the harbour up to the village, Lagerkranz (1950); 1968: reported by I.R.; 1969: L.K.-N., C.

Godthåb 1936: at the edge of the brook above the bridge where *Catabrosa aquatica* was found, Lagerkranz (1950); 1942: on roadsides in the surrounding region, flowering in August, A.E.P., C; Jørgensen *et al.* (1958); 1961: here and there, A.P., C; 1965: P.S.H., ! .

Narssaq south of Ameralik (64°) 1936: together with *Catabrosa aquatica*, Lagerkranz (1950).

Sydprøven (60°29′) 1937: Polunin (1943).

Between Qagssiarssuk and Tasiussaq 1956: all the way along the path. C.A.J., C; 1962: B.F., C.

Tasermiut (60°32′) 1956: at the settlement, C.A.J., C; 1957: S.L., C.

Ingnerûlalik (61°06′) at Qagssiarssuk 1961: in abundance on fields and along pathways, A.P., C.

Qagssiarssuk 1961: A.P., C; 1969: B.F., ! .

Narssaq 1961: A.P., C; 1962: "on moist nutritive soil in the outskirts of the town," B.F., C.

Narssarssuaq 1961: A.P., C.

Grønnedal 1961: common, A.P., C.

Færingehavn 1961: A.P., C.

Dyrnæs at Narssaq 1962: P.M.P., C.

Måjût at Tunugdliarfik (61°04′) 1962: C.H., Kj.H. & P.M.P., C.

Nanortalik 1964: C.H., P.M.P. & T.Sm., C; 1969: common in the town, N.S., ! ; 1970: reported by B.F.

Augpilagtoq (60°09′) 1966: C.H. & P.G., C; 1970: reported by B.F.

Igpik on Ũnartoq (60°31′) 1970: on an abandoned sheep-farm, reported by B.F.

Itivdleq on Eggers Ø (59°54′) 1970: on the abandoned settlement, reported by B.F.

Prins Christian Sund Meteorological Station (64°04′ on the east coast) 1970: N.J., C.

Poa elata LINDM.

Ivigtut 1937: on a rubbish heap, J.G., C; 1961: flowering in July, A.P., C.

Grønnedal 1961: A.P., C.

Julianehåb 1961: flowering in July, A.P., C.

This species, which belongs to the *Poa pratensis.* str. complex and is close related to *Poa uberrima* LINDM., apparently was introduced to Greenland.

Poa palustris L.

Sletten at Agdluitsup kangerdlua 1937: POLUNIN (1943).

"At Sydprøven:" BÖCHER, HOLMEN & JAKOBSEN (1968). May also apply to the above-mentioned find, A.P.

There is a possibility of confusion with *Poa nemoralis*, which is spontaneous in Greenland.

Poa pratensis L. s. lat.

Several varieties of this species which belong to this highly variable complex and are variously treated as species, subspecies or varieties, are indigenous in Greenland, Böcher (1952), Böcher, Holmen & Jakobsen (1968). In southwest Greenland var. *domestica* Læst. occurs apophytically in particular, and makes it difficult to determine whether the *Poa pratensis* materials are indigenous or introduced. In regard to *Poa angustifolia* coll. and *Poa elata*, see above.

Poa trivialis L. (fig. 16)

Sletten at Tunugdliarfik 1937: "in ditches along the hay field," J.G., C.

Ivigtut 1961: on moist, cultivated soil, flowering 2 August, probably naturalized, A.P., C.

Narssaq 1961: on moist, cultivated soil, flowering in July, apparently naturalized, A.P., C.

Frederikshåb 1961: flowering in July, A.P., C.

Færingehavn 1961: A.P., C.

Godthåb 1961: on damp localities, rare, also observed sown in a lawn, A.P., C.

The finds reported as having been made by Wormskiold in 1813 (Warming, 1890) of *Poa trivialis* can be referred to *Poa pratensis*. Hornemann (1821) notes 4 Poa-species collected by Wormskiold, but not *Poa trivialis*.

Secale cereale L.

Ivigtut 1889: "in a waste place," flowering in August, N.H., C; 1899: "in a waste place," eared in August, J.L., C.

Godhavn 1923: "at Arktisk Station from introduced chicken feed," flowering in September, M.P.P., C.

Qôrqut at Godthåbsfjord (64°16′) 1941: "cultivated," A.E.P., C.

Christianshåb 1957: 60 cm tall, eared, reported by R.B.

Itivnera (64°70′) 1960: "at the caribou breeding station," eared in August, B.F., ! .

Julianehåb 1961: A.P., C.

Qagssiarssuk 1961: cultivated, A.P., ! .

Triticum aestivum L.

Godthåb 1931: at Arktisk Station, flowering in late September, M.P.P., C.

Iridaceae

Sisyrinchium montanum Greene

Ivigtut 1961: A few specimens on an abandoned small field near Gæstehjemmet, originally sown together with *Trifolium hybridum*, now growing along with this, as

well as with *Trifolium aureum*, *Arabis hirsuta* and *Chrysanthemum leucanthemum*, flowers withered 2 August, A.P., C.

Presumably introduced from America along with the mentioned accompanying plants.

Juncaceae

Juncus bufonius L. s. str. (fig. 12)

Ivigtut 1961: naturalized in gardens and along roadsides in the town; also observed in greenhouses, A.P., C.

Mâjût at Tunugdliarfik (61°04′) 1962: with mature fruit in September, Kj.H., C.H. & P.M.P., C.

POLUNIN (1943) mentions *Juncus bufonius* as occurring in Julianehåb 1937 and in Qagssiarssuk 1937 (E.D. leg.). Presumably this really is *Juncus ranarius*, which was found at a later date at the two places referred to.

Juncus ranarius PERR. & SONG. (fig. 12)

BÖCHER, (1950, map) and BÖCHER, HOLMEN & JAKOBSEN (1968) referred the Greenlandic material of *Juncus bufonius* coll. as belonging to *Juncus ranarius*. The number of chromosomes counted on materials from Narssarssuaq reportedly is 2n = 30 (JØRGENSEN *et al.*, 1958). The material corresponds quite closely to strains of Danish *Juncus ranarius*, and differs from the typical *J. ranarius* in that its flowers grow singly, and, as a rule, has inner petals that are more or less cuspidate. Its habit, the appearance of its capsules, and the colour of the lower sheaths are normal.

In general the distribution of *Juncus ranarius* is more northerly than that of *Juncus bufonius*. According to GRÖNTVED (1942) the majority of *Juncus bufonius* coll. in Iceland can be assigned to *Juncus ranarius;* according to a report by A. LÖVE *in* HYLANDER (1953) *Juncus bufonius* s. str. is not known to have occurred in Iceland.

Both *J. ranarius* and *J. bufonius* are widespread in North America. *J. ranarius* is scarcely so dispersed culturally, as it is a facultative halophyte. Its occurrence in Greenland is partly connected with the settlements in the southwest, where it apparently is anthropochorous; in part it has been found in completely uninhabited regions elsewhere, and therefore the species is believed to be native here. The spontaneous occurrences are represented by the following finds: 1. Various places from Qungasiussâ ("Ipiutarssuaq") to Sarfarssuaq waterfall (67°49′) at the inner part of Nordre Strømfjord, M. P. PORSILD, 1920 (1918: "on a

moist, muddy bottom at the waterfall," A. E. & M.P.P., C); 2. At the inner part of Søndre Strømfjord (66°49′) 1927: "in mud of seepage water," C.O.E., C., as well as at salt lakes and on moist rocks, Böcher (1950, 1952); 3. Storefjord on Liverpool Land (71°05′ on the east coast) 1933: A.N.-N., C.

Rosenvinge (1892, 1896) and Ostenfeld (1926) assumed that "*Juncus bufonius*" was originally introduced by the Norsemen, and Polunin (1959) employs the characterization "evidently introduced," whereas M. P. Porsild (1932) is more doubtful because of its occurrence in uninhabited regions, and accordingly lists it among the apophytes. It should be emphasized here that to date it is not known to have occurred in natural plant communities in Southwest Greenland, but has only been observed in towns and at sheep-farms, hitherto known from the following finds:

Igaliko 1828: "on paths between the houses and in fields," J.V., C; in his manuscript Vahl mentions *J. bufonius* as growing on moist places at the foot of the mountains in Igaliko Fjord; 1888: "on a pathway," L.K.R., C; 1925: A.E.P. & M.P.P., C; 1948 and 1954: C.A.J., C.

Narssaq 1925: "beside a ditch, introduced along with cattle from Igaliko?," A.E. & M.P.P., C; 1955: H.B.A., C; 1961: along roads and beside houses, A.P., C; 1962: B.F., C.

Julianehåb 1937: J.G., C; 1961: along roadsides, not rare, A.P., C.

Itivdleq (60°59′) at Tunugdliarfik 1953: "along a path near the coast," J.G., C.

Tasiussaq west of Qagssiarssuk 1956: C.A.J., C.

Narssarssuaq: Jørgensen *et al.* (1958).

Qagssiarssuk 1961: in fields and along roadsides, A.P., C; 1969: B.F., ! .

Ingnerûlalik (61°06′) 1961: frequent in the fields together with *Stellaria media*, A.P., C.

Iterdlaq at Igaliko Fjord (60°56′) 1962: K.H., C.H. & P.M.P., C.

Labiatae

Lamium amplexicaule L.

Ivigtut 1883: in gardens, flowering in August, Berlin (1884): 1961: a few specimens in gardens, with flower buds in August, flowering in greenhouses, A.P., C.

Ûmának at Godthåbsfjord system 1907: "in a garden," flowering in August, J.Ga., C; 1926: with immature fruit in September, A.J., C., at the same place, seemingly acclimatized, M. P. Porsild (1932).

Nanortalik 1969: in a garden, with immature fruit in early September, N.S., ! .

Lamium hybridum VILL.
Ivigtut 1934: has doubtlessly long existed in this place, Lagerkranz (1950).

Lamium moluccellifolium (SCHUM.) FRIES
Ivigtut 1937: POLUNIN (1943).

Lamium purpureum L.
Ivigtut 1883: flourishes excellently in gardens, flowering in August, will probably be able to survive, BERLIN (1884); 1889: "introduced with garden soil," with immature fruit in August, J.L., C; 1942: a common and well established weed which on September 2 had flowers and mature seeds, A.E. PORSILD (1945); 1961: not seen, A.P.

Scutellaria galericulata L.
Godhavn 1932: "in the garden at Magnetisk Station," sterile in September, J.G., C.

Malvaceae

Malva neglecta WALLR.
Angmagssalik 1902: sterile on refuse heaps, KRUUSE (1906).

Oxalidaceae

Oxalis corniculata L.
Godhavn 1930: in a flowerpot at Arktisk Station, M. P. PORSILD (1932).

Oxalis europaea JORDAN
(*O. stricta* auct.)
Ivigtut 1961: in a greenhouse, A.P., C.

Papaveraceae

Chelidonium majus L.
Ivigtut 1883: a flowering and fruiting specimen, Berlin (1884).

Papaver dubium L.
Ivigtut 1899: with flower buds in August, J.C., C.

Papaver nudicaule L.
Ivigtut 1942: Commonly run wild from gardens; young plants winter successfully and flower in June. The species has been said to have been introduced into gardens fifteen to twenty years ago, A. E. PORSILD (1945); 1954: A.M.H., C; 1957: S.L., C; 1961: very common, naturalized on rocky ground between the houses, where it is sown for ornamental

purposes in the town, and spreads on its own, A.P., C. Not observed by LAGERKRANZ (1950) in 1934, 1936, 1938.

Grønnedal 1961: sown and run wild, A.P., ! .

Julianehåb 1961: A.P., ! .

Narssaq 1961: A.P., ! ; 1970: G.W., ! .

Godthåb 1961: A.P., ! ; in the churchyard, flowering in July, P.S.H., ! .

Sukkertoppen 1961: B.Fa., ! .

Godhavn 1961: at Arktisk Station, S.L., ! .

Holsteinsborg 1969: a few specimens, reported by O.L.

Nanortalik 1969: run wild in gardens, N.S., ! .

Run wild from gardens or sown in the sourroundings, self-fertilizing. Reports of *P. nudicaule* from Greenland in the 19th Century (VAHL, HOLBØLL, RABEN, RINK, BROWN, BERLIN, LANGE) must be referred to *Papaver radicatum* ROTTB. *P. nudicaule* reaches the Arctic in Central Siberia (POLUNIN, 1959).

Papaver somniferum L.

Narssarssuaq 1961: flowering in July, A.P., C.

Ivigtut 1961: a few small, flowering specimens in August in gardens; possibly derived from refuse from birdcages, A.P., C.

Grønnedal 1961: few specimens, A.P., C.

Sukkertoppen 1965: along the harbour quai, one of the small specimens budding, P.S.H., ! .

Papilionaceae

Astragalus alpinus L.

A single specimen was found at Kap Oswald (72°53′) on Ella Ø in NE Greenland 1952: P.J.P., C. BÖCHER, HOLMEN & JAKOBSEN (1966) describe it as "possibly introduced from Norway." THORVALD SØRENSEN, who lived on Kap Oswald in 1931–32, did not observe it. He believes that it was introduced at a later date.
Its distribution is circumpolar (HULTÉN, 1968, map), and it grows in the Arctic in Europe, Asia, and North America, in Canada, for instance, on Banks Island (ca. 70°N.lat.), Melville Island (ca. 75°N.lat.) and Baffin Land (PORSILD, 1957, map). In Norway it is a montane plant.

Lathyrus pratensis L.

Greenland about 1810: only near the firths at 60°, GIESECKE (1830). The information has not been confirmed, A.P.

Ivigtut 1942: with immature pods on September 2. The species appears to be fully

established, and in favourable seasons undoubtedly produces mature seeds, A. E. PORSILD (1945); 1961: a large, richly flowering clone near Gæstehjemmet, with immature fruit in August, A.P., C.

Capable of surviving vegetatively at Ivigtut.

Medicago arabica (L.) ALL.

Godhavn 1934: in the chicken yard at Arktisk Station, with flower buds in September, M.P.P., C.

Medicago lupulina L.

Ivigtut 1883: sterile, BERLIN (1884); 1889: "in a waste place among *Trifolium repens*," sterile, N.H., C; 1899: flowering in September, J.L., C; 1961: only seen in a greenhouse, A.P., ! .

Godhavn 1934: "in a chicken yard," flowering in September, M.P.P., C; 1956: "garden weed at Arktisk Station," flowering, M.P.P., C.

Godthåb 1961: sterile in a garden and in a chicken yard, also seen flowering in a greenhouse, all three finds in August, A.P., C.

Melilotus albus DESR.

Ivigtut 1899: flowering, J.L., C.

Melilotus altissimus THUILL.

Ivigtut 1936: LAGERKRANZ (1950); 1937: Polunin (1943); 1945: flowering in September, A.M.H., C.

Melilotus indicus (L.) ALL.

Narssarssuaq 1961: a few specimens in a chicken yard, flowering in July, A.P., C.

Pisum arvense L.

Qagssiarssuk 1961: cultivated among corn, sterile in July, A.P., ! .

Ingnerûlalik at Qagssiarssuk 1961: cultivated among corn, flowering in July, A.P., C.

Upernaviârssuk 1961: cultivated, A.P., ! .

Narssaq 1961: cultivated among corn, sterile in July, A.P., ! .

Pisum hortense (NEILR.) A. & GR.

Ivigtut 1899: in a waste place, sterile in September, J.L., C.

Angmagssalik 1902: flowering at the trading station, KRUUSE (1906).

Often observed at inhabited places, M. P. PORSILD (1932).

Trifolium aureum POLL.

Ivigtut 1961: a few specimens in an abandoned small field near Gæstehjemmet, flowering in early August, A.P., C.

Trifolium hybridum L. (fig. 36)

Ivigtut 1952: on the "midden," flowering in September, A.R., ! ; 1961: cultivated in small field near Gæstehjemmet and near the playing field,

spreading along roadsides, sturdy specimens, flowering in early August, A.P., C. Offspring of plants from Ivigtut have been cultivated at the experimental station in Julianehåb, JENSEN (1959).

Grønnedal 1961: frequent in lawns, A.P., C.

Julianehåb 1960: Swedish seed sown in a border, flowering, L.J.,; 1961: run wild from the fields at the agricultural station, A.P., C; 1968: vanished, reported by L.J.

Godthåb 1961: at the Manager's house, flowering in July, A.P., C.

In Greenland *T. hybridum* may only be naturalized in Ivigtut and Grønnedal, where the occurrence probably derives from America, introduced during the war.

Trifolium pratense L.

Ivigtut 1936: not rare, undoubtedly introduced with loads of hay, LAGERKRANZ (1950); 1937: POLUNIN (1943); 1942: flowering in September, A. E. PORSILD (1945); 1954: A.M.H., C; 1961: scattered, sturdy individuals that bloomed in August, apparently partially accidentally introduced, partially sown, A.P., C.

Julianehåb 1960: flowering, from Swedish seed sown in a border, reported by L.J., 1961: in the churchyard, sterile in July, A.P., C; 1968: disappeared from the first-mentioned place, reported by L.J.

Qagssiarssuk 1961: sown in fields together with cultivated grasses, A.P., C.

Narssaq 1961: in a lawn, flowering in July, A.P., C.

Grønnedal 1961: frequent in lawns, A.P., C.

Godthåb 1961: at a chicken yard and in a greenhouse, sterile in late July, A.P., C.

Capable of surviving vegetatively in SW Greenland.

Trifolium repens L. (fig. 31)

Ivigtut 1883: flowering in August, BERLIN (1884); 1889: N.H., C; 1937: "in a waste place," flowering in September, J.G., C; 1934–1938: LAGERKRANZ (1950, page 30); 1942: very common in gardens, in lawns, and along fences and roadsides. The species appears to flower and bear fruit in normal years, and seems to be perfectly capable of wintering, A. E. PORSILD (1945); 1951: flowering in September, A.R., ! ; 1954: A.M.H., C; 1957: flowering in late June, S.L., C; 1961: flowering in August, run wild, and possibly also accidentally introduced, A.P., C.

Julianehåb 1931: Radiofjeldet, A.H.C., C; 1937: at the radio station, flowering in August, J.G., C; 1937: POLUNIN (1943); 1946: large growths among alpine plants, LAGERKRANZ (1950); 1961: in the agricultural station's field, A.P., C; gone from this place as a result of the ground's being leveled, but transplanted to the agricultural station in Upernaviârssuk, reported by L.J., 1968; 1968: the occurrence at the transmittor

viable and spreading northwest; was originally introduced with fodder, reported by L.J.
Offspring of plants from Julianehåb have been cultivated at the agricultural station in Julianehåb, JENSEN (1959).

Qagssiarssuk 1961: in a field, flowering in July, A.P., C.

Ingnerulalik at Qagssiarssuk 1961: in a field, sterile in July, A.P., C.

Narssaq 1961: in a lawn, flowering in July, A.P., C.

Grønnedal 1961: frequent in lawns, A.P., C.

Godthåb in the 1850's: H. RINK, LANGE (1857); 1961: in a lawn, with flower buds in July, A.P., C.

Sukkertoppen 1932: "in the garden at the doctor's house, a growth several years old," flowering and beginning to bear fruit in September, J.G., C.

Frederikshåb 1961: sterile, A.P., C.

Apparently naturalized in SW Greenland as far as Ivigtut.

Vicia augustfolia (L.) RCHB. ssp. *segetalis* (THUILL.) ARCANG.

Ivigtut 1899: with immature fruit in August, J.L., G.

Vicia cracca L. (fig. 26)

Greenland about 1810: only in the vicinity of Kap Farvel, GIESECKE (1830).

Igaliko 1828: flowering, and with immature fruit 5th August, J.V., C; found on a fairly fertile place in Igaliko, where the Icelandic colonists who lived there in the old days surrounded it with a stone fence; presumably this was a so-called croft. The plant may once have been cultivated as fodder at the same place, partly inside and partly outside the fence (two quotations from VAHL's manuscript); 1883: BERLIN (1884); 1888: flowering in July, L.K.R., C; undoubtly the Icelandic colonists introduced it, ROSENVINGE (1896); 1902: flowering in July, G.M., C; 1925: sterile, A.E.P. & M.P.P., C; 1931: "a few plants," K.N.C., C; 1937: flowering, POLUNIN (1943); 1968: observed, reported by L.J.

Julianehåb 1828: near the ruins of the old Norse settlers' houses, J.V., LANGE (1880); 1961: in abundance in the churchyard, A.P., C; planted in the churchyard, reported by L.J., 1968.

Between Qagssiarssuk and Tasiussaq 1928: "ca. 1 km from Sermilik in the valley towards Qagssiarssuk, partly up along the side of the mountain that faces north, and near a Norse ruin," "a sturdy growth measuring 100 × 25 m," flowering in late August, K.N.C., C; 1956: C.A.J., C; (JØRGENSEN *et al.* (1958) mention Tasiussaq at Sermilik (61°10′), which applies to the same place); 1962: "on a stone slide in a willow scrub," flowering in July, B.F., ! ; 1968: reported by L.J.

Qagssiarssuk 1929: flowering in late July, E.M., C; 1937: L.J., C; 1961: A.P., C; 1968: reported by L.J.

Ivigtut 1937: sterile in September, J.G., C; 1938: LAGERKRANZ (1950); 1942: common; the species appears to be fully established and on September 2 had almost mature pods, A.E. PORSILD (1945); 1954: A.R., ! ; 1961: common and naturalized, flowering in August, A.P., C.

Upernaviârssuk at Julianehåb 1961: A.P., C.

Narssaq 1961: in the rural dean's lawn, flowering in July, A.P., C.

Grønnedal 1961: in a lawn, sterile in July, A.P., C.

Godthåb 1961: in a lawn, sterile in July, A.P., C.

It is generally agreed that the Norsemen are responsible for the occurrence at Igaliko. Presumably the occurrences at Julianehåb (1828) and between Qagssiarssuk and Tasiussaq can also be considered archaeophytical.

Vicia hirsuta (L.) S. F. GRAY

Ivigtut 1883: one specimen on garden soil, flowering in August, BERLIN (1884).

Vicia sativa L.

Frederiksdal 1883: a flowering specimen, BERLIN (1884).

Ivigtut 1883: flowering, BERLIN (1884).

Godhavn 1931: "in the chicken yard at Arktisk Station," with immature fruit in September, M.P.P., C.

Qagssiarssuk 1961: cultivated in corn, sterile in August, A.P., C.

Ingnerulalik at Qagssiarssuk 1961: cultivated in corn, sterile in August, A.P., C.

Narssaq 1961: in the rural dean's lawn, A.P., C.

Vicia sepium L.

Ivigtut 1942: a few, flowering specimens 2nd September, A. E. PORSILD (1945); 1961: a very large clone in the vicinity of *Rubus idaeus* at Gæstehjemmet, with immature fruit in August, A.P., C.

Grønnedal in the 1950's reported by C.A.J.

Capable of surviving vegetatively at the two places.

Plantaginaceae

Plantago coronopus L.

Claushavn 1889: flowering in August, N.H., C; 1889: with immature fruit, P.H.S., C.

Plantago lanceolata L.

Godthåb 1961: at the Manager's chicken yard, a few sterile specimens, A.P., C.

Plantago major L. ssp. *pleiosperma* PILGER

Ivigtut 1889: with flower buds, N.H., C.

Grønnedal 1961: with immature fruit in early August, A.P., C.

Upernaviârssuk at Julianehåb 1961: frequent on a roadside, with flower buds in July, A.P., C.

Narssaq 1961: in a chicken yard, with small flower buds in July, A.P., C.

Dyrnæs at Narssaq 1962: flowering in July, P.M.P., C.

Seemingly more frequent than ssp. *major;* it develops further, but is scarcely naturalized.

Plantago major L. ssp. *major*

Godhavn 1932: with flower buds, M.P.P., C.

Ivigtut 1961: rare, sterile in August, A.P., C.

Plantago major L. coll.

Ivigtut 1883: fruiting in August, BERLIN (1884); 1934–38: LAGERKRANZ (1950, page 30); 1937: POLUNIN (1943).

Angmagssalik 1902: flowering, KRUUSE (1906).

Christianshåb 1955: reported by R.B.

Julianehåb 1957: reported by B.S.

Qôrnoq (ca. 64°32′) 1962: in a flowerpot, reported by R.B.

Godthåb 1966: reported by B.S.

Polygonaceae

Polygonum boreale (LANGE) SMALL (fig. 20)
(*P. heterophyllum* LINDM. ssp. *boreale* (LANGE) LÖVE & LÖVE)

P. boreale grows in Northern Scandinavia, on the Faeroe Islands, the Shetland Islands, the Orkney Islands, in Northern Scotland (STYLES, 1962), and Iceland, and has been reported as growing in the Hudson Bay—St. Lawrence—Newfoundland area. M. P. PORSILD (1932) classified it among the apophytes, but he also thought that "if the Norsemen . . . brought seeds over, they could hardly have avoided the *Polygonum.*" At present *P. boreale* is scarcely found in natural biotopes in Greenland, cp. with this the conditions in Iceland, where GRÖNTVED (1942), i.a., mentions it as growing on sandy seashores and along banks of brooks. FREDSKILD (1969) has found fruits of *P. aviculare* s. lat. in cultural layers dating from the Norse period in both the Eastern and the Western settlements; the greatest likelihood is that these are *P. boreale*, cp., also, LÖVE & LÖVE (1956), who found pollen from comparable cultural layers in Iceland. The first finds of *P. aviculare* s. lat. in Greenland were made on inhabited localities; thus VAHL states in his manuscript (1828–36) that

P. aviculare was found in particular on fertilized places in the vicinity of houses and on tenting grounds.

At Tunugdliarfik 1828: J.V., C.

Sangmissoq (? 61°05′) at Tunugdliarfik 1828: J.V., C; 1925: A.E.P. & M.P.P., C.

Julianehåb 1828: J.V., C; 1883: Berlin (1884); 1930: A.H.C., C; 1957: reported by B.S.; 1961: A.P., C; 1970: reported by B.F.

At Ameralik (ca. 64°) 1831: J.V., C.

Holsteinsborg 1831 and 1832: J.V., Lange (1880); 1871: T.F., Lange 1887); 1884: E.W. & T.H., C.

Christianshåb 1833: J.V., C; 1884: E.W. & T.H., C; 1924: M.P.P., C; 1957: B.F., C; 1962: M.I., C.

Godthåb in the 1830's: H., Lange (1880); 1965: on a roadside, sterile in August, P.S.H., ! .

Godhavn 1874: N.K.-S., C; 1927: at Arktisk Station, M.P.P., C; 1932: J.G., C; 1961: at Arktisk Station, A.P., C.

Ikigait (Herjolfsnæs, 59°59′) 1880, C.P., C.

Igaliko 1883: Berlin (1884); 1888: L.K.R., C; 1925: A.E.P. & M.P.P., C; 1957: S.L., C.

Ivigtut 1883: Berlin (1884); 1888: L.K.R., C; 1899: J.L., C; 1937: J.L., C; 1937: J.G., C; 1942: fully established, A. E. Porsild (1945); 1951: A.R., ! ; 1954: A.M.H., C; 1961: fairly common, A.P., C.

Grønnedal 1883: Berlin (1884); 1954: M.A., ! .

Frederiksdal 1883: Berlin (1884).

Ũmának at Godthåbsfjord (64°29′) 1885: S.H., C.

Nunatsuk (60°05′ on the east coast) at Ikerasagssuaq 1885: P.E., C.

Arsuk at Ivigtut 1888: L.K.R., C; 1952: N.K., C.

Qagssimiut (60°48′) 1888: L.K.R., C; 1952: N.K., C.

"Komiut" at Narssaq (? Nùngmiut, 60°58′) 1888: L.K.R., C.

Ilua (59°56′) 1889: E.L., C.

Narssaq 1900: G.M., C; 1961: A.P.; 1962: B.F., C; 1970: reported by B.F.

Qeqertaq (70°) 1913: A.E.P., C.

Nanortalik 1925: K.N.C., C; 1964: C.H., P.M.P. & T.Sm., C.

Akugdlît (? 61°03′) 1932: J.G., C.

Qagssiarssuk 1937: Polunin (1943); 1937: J.G., C; 1961: A.P., C; 1962: along a sheep path 1 km west of the village, B.F., C; 1969: B.F., ! .

Sydprøven (60°29′) 1937: POLUNIN (1943).

Qagdlumiut ("Qaglimiut," 60°42′) 1937: POLUNIN (1943).

Qíngua (61°15′) Tunugdliarfik 1937: "near a hut for salmon fishers," J.G., C.

Kangâmiut at Søndre Strømfjord (65°48′) 1941: M.P.P., C; T.W.B., C.

Itivdleq (Kongevejen, 60°59′) at Tunugdliarfik 1953: J.G., C.

Upernaviârssuk at Julianehåb 1953: J.G., C.

Between Qagssiarssuk and Tasiussaq 1956: "along the whole path," C.A.J., C; 1962: B.F., C.

Itivnera (64°23′) 1960: "beside the caribou breeding station's houses," flowering in July, B.F., C.

Ingnerulalik 1961: A.P., C; 1962: B.F., C.

Dyrnæs at Narssaq 1962: P.M.P., C.

Sukkertoppen 1965: with mature fruit in August, P.S.H., ! .

Augpilagtoq (60°09′) 1966: C.H. & P.G., C; 1970: reported by B.F.

Frederiksdal 1970: at the loran station, reported by B.F.

Polygonum aviculare L. ssp. *aviculare* (fig. 21)
(*P. heterophyllum* LINDM. ssp. *heterophyllum*)

Angmagssalik 1932: T.W.B., C; in abundance, not collected by C. KRUUSE in 1902, BÖCHER (1938); 1933: R.Bø., C; 1969: small, flowering specimens along a gravelled road, 14 July, I.R., ! ; 1969: common along roadsides, L.K.-L., C.

Ivigtut 1961: fruiting in August, A.P., C.

Narssarssuaq 1961: flowering in July, A.P., C.

Godhavn at Arktisk Station 1931: introduced several times with packing material; vigorous specimens have been found growing in gravel in the yard, flowering richly and fruiting, and would undoubtedly keep on growing, if not checked. *P. boreale* does not occur on Disko, M. P. PORSILD (1932).

Jakobshavn 1933: "weeds from Danish packing material," C.C.D., C.

Sukkertoppen 1961: beside the old schoolhouse, fruiting in September, B.Fa., C.

Godthåb 1961: in the Manager's chicken yard, sterile in July, A.P., C.

Presumably naturalized in Ivigtut, Narssarssuaq and Angmagssalik. There is a possibility that the occurrences from Angmagssalik mentioned under *P. aviculare* coll. belong to ssp. *aviculare*.

Polygonum aviculare L. coll.

Fruits of "*P. aviculare*" have been found in cultural layers from the Norse period in the inner part of the Godthåb Fjord system (IVERSEN,

1953; I. BRANDT det. and reported), in Eqalugialik (64°22′) at Ameragdla, in Qagssiarssuk and Narssaq (FREDSKILD, 1969). These may either be from *P. boreale* or *P. aviculare* ssp. *aviculare*.

Greenland about 1810: "*P. latifolium*," GIESECKE (1830).

Igaliko 1813: M.W., WARMING (1890); 1883: BERLIN (1884).

Christianshåb 1867: BROWN (1868); 1870: BERGGREN (1871).

Jakobshavn 1867: BROWN (1868).

Claushavn 1867: BROWN (1868).

Egedesminde 1867: BROWN (1868); sparse near the landing place, HART (1880).

Prøven (72°22′) 1867: BROWN (1868). Not observed by HART (1880) who was there in 1876.

Arsuk at Ivigtut 1889: HARTZ (1894 b).

Godhavn 1934: LAGERKRANZ (1950).

Ivigtut 1936: LAGERKRANZ (1950).

Julianehåb 1936, 1946: LAGERKRANZ (1950).

Angmagssalik 1946: LAGERKRANZ (1950); 1968: reported by I.R.

Sarqaq (70°01′) 1961: reported by H.F.

Kûngmiut (65°51′ on the east coast) 1967: ELSLEY (1967); 1971: L.K.-N.

Thule region: an occurrence here appears on a map in HULTÉN (1968).

There is every possibility that almost all of the mentioned occurrences refer to *P. boreale*. They are not included on the map, fig. 20, and in this case it has not been decided which kind of type should be used to show whether they are or are not naturalized.

Polygonum convolvulus L.

Ivigtut 1883: one specimen beside a house, sterile in August, BERLIN (1884); 1889: sterile in September, J.L., C; 1937: POLUNIN 1943; 1961: sterile in garden soil in August, but flowering in greenhouses, A.P., ! .

Christianshåb 1890: in a garden, sterile in August, N.H., C.

Ritenbenk (69°44′) 1890: in a garden, sterile in September, N.H., C.

Godhavn 1923: "at Arktisk Station, introduced with chicken feed," with flower buds in September, M.P.P., C; 1931: "at the station's chicken yard," flowering in late September, M.P.P., C; "flowering and fruiting specimens," M. P. PORSILD (1932); 1932: "in the Governor's garden," sterile in September, J.G., C; 1934: at Arktisk Station, with flower buds in September, M.P.P., C.

Upernavik 1931: in an open garden frame, sterile in September, F.J., C.

Upernaviârssuk at Julianehåb 1961: in fields, sterile in July, A.P., C.

Narssaq 1961: in a field, sterile in July, A.P., C.

Narssarssuaq 1961: flowering in July, A.P., ! .

Grønnedal 1961: in a lawn, sterile in July, A.P., ! .

Godthåb 1961: at chicken yards, sterile in July, A.P., ! ; 1965: on a roadside, seedling in August, P.S.H., ! .

PORSILD (1932, p. 23) mentions *P. convolvulus* among the species he observed as having mature fruit. The collections show that there can scarcely be any doubt that the species is not naturalized in Greenland.

Polygonum lapathifolium L. s. lat.
(including *P. nodosum* PERS.)

Ivigtut 1883: a specimen beside a house, sterile in August, BERLIN (1884); 1952: sterile, A.R., ! .

Godhavn 1931: "in the chicken yard at Arktisk Station," 60 cm and flowering, M.P.P., C.

Grønnedal 1961: in a greenhouse, A.P., C.

Narssarssuaq 1961: sterile, A.P., C (var. *incanum* KOCH).

Polygonum persicaria L.

Ivigtut 1889: sterile in August, N.H., C; 1961: sterile in garden soil and in greenhouses, A.P., ! .

Upernavik 1931: "in an open garden frame," sterile in September, F.J., C.

Narssarssuaq 1961: A.P., ! .

Narssaq 1961: sterile in July, A.P., C.

Qagssiarssuk 1961: in a field, sterile in July, A.P., C.

Ingnerûlalik (61°06′) 1961: in fields, sterile, A.P., C.

Godthåb 1961: at a chicken yard, sterile, A.P., C.

Rumex acetosa L. ssp. *acetosa*

OSTENFELD (1926) placed *R. acetosa* among the plants introduced by the Norsemen, but according to M. P. PORSILD (1932) it is indigenous in Greenland, where its occurrence is sturdy and apophytic. More recent investigations have shown that the material can be divided between ssp. *lapponicus* HIIT. (Arctic-Circumpolar), which probably is indigenous in Greenland, and ssp. *acetosa*, which is an introduced plant, cp. LÖVE (1944). The occurrences marked * were determined by A. LÖVE, the rest by A.P.—ssp. *acetosa* is unquestionably naturalized in SW Greenland.

Greenland 1813*: M.W., C.

Itivdliarssuk (60°35′) on Kangeq 1828*: J.V., C.

Ivigtut 1883 (?): sterile, BERLIN (1884); 1934: LAGERKRANZ (1950, p. 30), who refers it to the adventitious plants; 1957: flowering in June, S.L., C; 1961: a fertile and variable growth on nitrous soil beside the old cattle shed; disseminated from this place to large parts of the town, flowering in August, A.P., C.

Frederikshåb 1886*: L.K.R., C; 1956*: T.W.B., C.

Julianehåb 1946 (?): LAGERKRANZ (1950); 1961: considerably abundant in the churchyard, A.P., C.

At Ruin Site 10 1957: C.A.J., C.

Itivnera (64°23′) 1960: "on a rubbish heap at the caribou breeding station," with immature fruit in July, B.F., C.

Godthåb 1961: a few specimens in the churchyard, A.P., C.

Rumex acetosella L. ssp. *acetosella*

Rumex acetosella is indigenous in Greenland, and can be divided among three subspecies, see BÖCHER, HOLMEN & JAKOBSEN (1968). The Danish ssp. *acetosella* unquestionably was introduced to the two places in question.

Godhavn at Arktisk Station 1916: M.P.P., C; specimens were sometimes seen where crates of provisions from Denmark were unloaded. Native *Rumex acetosella* has never been observed on Disko, M. P. PORSILD (1932).

Ivigtut 1952: "on the midden," A.R., ! .

Rumex longifolius DC. (fig. 22)
(*R. domesticus* HARTM.)

All of the authors who have concerned themselves with the origin of Greenland's flora believe that the Norse settlers originally introduced this plant. It is also associated with human habitations in Iceland and on the Faeroes, where it is fairly common. According to GLEASON (1952) it was recently introduced to North America.

Igaliko 1828: "near the ruins of the old Norsemen's dwellings," fruiting in August, J.V., C; 1937: among the ruins, $1^1/_2$ m tall, POLUNIN (1943); 1937: "under cliffs, a 3 hours' walk south from Igaliko," J.G., C; 1962: flowering in July, B.F., C.

Julianehåb 1828: J.V., C; 1902: "at a riverbed," G.M., C; 1937: fruiting in September, J.G., C; 1961: A.P., C.

Qaqortoq church ruin (Hvalsey, 60°50′) 1828: J.V., C; 1925: fruiting in November, K.N.C., C; 1946: LAGERKRANZ (1950).

Ivigtut 1883: not flowering in August, BERLIN (1884); 1889: sterile, N.H., C; 1934, 1946: very large specimens, LAGERKRANZ (1950); 1937: J.G., C; 1937: POLUNIN (1943); 1942: one of the most successful Ivigtut weeds in competition with native species, A. E. PORSILD (1945); 1952: A.R., ! ; 1961: common, A.P., ! .

Singitsoq ("Sinigtsok" 60°45′) west of Julianehåb 1888: "on a damp slope in grass at a height of 700 feet a.s.l., far away from dwellings and

ruins," fruiting in August, L.K.R., C; there is a small Norse ruin nearby (Ruin Group 88), ROSENVINGE (1896).

Godhavn 1934: "in a chicken yard at Arktisk Station, fruiting in September, M.P.P., C.

Igaliko Fjords' northern side opposite Qanisartût 1954: "on the mountainside," C.A.J., C.

Narssaq 1961: A.P., C.

Grønnedal 1961: common, A.P., C.

Færingehavn 1961: flowering in July, A.P., C.

Kûgssuaq at Tasermiut (60°16′) 1964: with flower buds 13th July C.H., T.M.P. & T.Sm., C.

Rumex obtusifolius L.

Ivigtut 1889: sterile rosettes, N.H., C; a flowering specimen at the workmen's houses, A.P., C.

Primulaceae

Anagallis arvensis L.

Ivigtut 1889: "in a yard," N.H., C. (f. *azurea* HYL.).
Upernavik 1961: "in a greenhouse," J.L.H., C.

Ranunculaceae

Ranunculus acer L.

Distribution: Boreal Eurasia, Iceland (common), also accidentally introduced—naturalized in North America. It is indigenous in Greenland, and has a strikingly rich, apophytic occurrence at the towns and sheep-farms in South Greenland, and consists of many races (BÖCHER 1938, map). It may also occur as an introduced species, e.g.: Julianehåb 1936: a very typical European form, certainly introduced, LAGERKRANZ (1950); 1961: dominant in the churchyard, A.P., C; in addition, Godthåb 1961: in a garden, but apparently cultivated here, A.P., C.

Ranunculus repens L. (fig. 19)

Ivigtut 1889: in gardens, flowering and with immature fruit in August, N.H., C; 1899: flowering in July, J.L., C; 1902: C.D., C; seemingly established here, M. P. PORSILD (1932); 1934–38: LAGERKRANZ (1950, p. 30); bearing mature fruit in September, J.G., C; 1942: fully established, with flowering and fruiting specimens, September 2nd, A. E. PORSILD (1945); 1961: flowering in August, A.P., C.

Julianehåb 1937: POLUNIN (1943); "naturalized", POLUNIN (1959); 1940: "naturalized in ditches and on moist localities, with immature fruit in

September," A.E.P., C; 1946: at the sheep breeding station on cultivated soil, LAGERKRANZ (1950); 1961: blooming in August, A.P., C.

Grønnedal 1961: frequent in lawns, with immature fruit in early August, A.P., C.

Narssaq 1961: near a greenhouse and on garden soil, flowering in late July, A.P., C.

Dyrnæs at Narssaq 1962: flowering in late July, P.M.P., C.

Godthåb 1961: observed as a cultivated garden plant, but doubtless introduced, flowering in early August, A.P., C.

Rosaceae

Alchemilla acutidens BUSER coll.

Ivigtut 1937 and Julianehåb 1937: according to POLUNIN (1943), E. DAHL reported this species as a recent introduction.

The identity as well as the origin of this plant is uncertain, A.P.

Alchemilla subcrenata BUSER

Ivigtut 1938: together with *Urtica dioeca*, *Stellaria media* and *Cochlearia officinalis* var. *groenlandica*, LAGERKRANZ (1950), G. SAMUELSSON det. Als Adventivpflanze habe ich sie aus Südgrönland (Ivigtut 1938, S) gesehen, SAMUELSSON (1943, p. 22). Two very well-developed plants observed in Herb. S., A.P.

Aphanes arvensis L.

Ivigtut 1961: in a greenhouse, A.P., C.

Potentilla anserina L. s. str. (fig. 18)

Herbarial specimens have solely been taken into consideration in reporting the habitats of *P. anserina* s. str., which has made it possible to avoid confusing it with *P. egedii* and this species' var. *groenlandica*. The majority of the material apparently was introduced recently. Finds of fruit in cultural layers from the Norse period at Qagssiarssuk (FREDSKILD, 1969 b), have, however, aroused current interest in the origin of this species; accordingly, it seems likely that the Norse settlers were the first to introduce this species. Several of the occurrences in connection with the Norse settlements give support to this hypothesis. Yet the present occurrences on the beach, where the species has established itself to but a modest degree, presumably are neophytic. M. P. PORSILD (1932) does not exclude the possibility of *P. anserina's* having been native in Greenland originally. It has a circumpolar distribution, and reportedly is common in Canada and in NE U.S.A. In Iceland it is more common than *P. egedii* and grows along the beach (GRÖNTVED, 1942).

Itivdliarssuk on Kangeq (60°35′) 1828: not flowering in July, J.V., C.

Igaliko 1883: var. *communis* LEHM., BERLIN (1884); 1888: L.K.R., C.

Igdlutalik ("Igtalik," Nordprøven, 60°52′) west of Narssaq 1899: not flowering in July, G.M., C.

Julianehåb 1883: var. *communis* LEHM., BERLIN (1884); 1889: flowering in July, G.D., C; 1931: with flower buds in June, A.H.C., C; 1938: extremely common, LAGERKRANZ (1950); 1961: common on polluted places and along roads and ditches, flowering in July, A.P., C; 1970: reported by B.F.

Itivdleq (Kongevejen, 60°59′) at Tunugdliarfik 1953: "on gravel on the shore," flowering, J.G., C.

Igdlorssuit at Tasiluk (60°41′): flowering in early August, C.A.J., C.

Grønnedal 1954: M.A., ! .

Qagssiarssuk 1961: A.P., C; 1969: B.F., ! .

Mâjût at Tunugdliarfik (61°04′) 1962: C.H., Kj.H. & P.M.P., C.

Dyrnæs at Narssaq (60°57′) 1962: flowering 11 June, P.M.P., C.

Sermilik (60°37′) 1962: flowering in August, C.H., Kj.H. & P.M.P., C.

Nûpiluk (60°46′) 1962: flowering in July, C.H., Kj.H. & P.M.P., C.

Iterdlaq (60°55′) at Igaliko Fjord 1962: flowering in July, C.H., Kj.J. & P.M.P., C.

Qíngua (61°15′) Tunugdliarfik 1962: "on the shore," flowering in July, C.H., Kj.H. & P.M.P., C.

Tugtutôq (60°55′) 1963: flowering in August, K.D., D.H. & K.Ja., C.

Kûgssuaq (60°16′) 1964: flowering 8 July, C.H., P.M.P. & T.Sm., C.

Narssaq 1970: G.W., ! .

Godthåb 1961: in the churchyard, flowering in August, A.P., C.

Frederikshåb 1961: in a lawn, flowering in August, A.P., C.

HULTÉN's map (1968) shows an occurrence at Angmagssalik on the east coast.

Potentilla norvegica L. ssp. *hirsuta* (MICHX.) HYL. (fig. 32)

Ivigtut 1936: near the cattle shed, in the lawns as well as along the ditch (*P. norvegica*), LAGERKRANZ (1950); 1954: fruiting in September, A.M.H., C; 1957: C.A.J., C; 1961: common in large parts of the town, especially at the playing field, naturalized and fruiting in September, A.P., C.

Narssarssuaq, according to BÖCHER, HOLMEN & JAKOBSEN, (1968, *P. norvegica*).

Godhavn 1927: "on a refuse dump at Arktisk Station, flowering a few years in August," M.P.P., C; 1962: "in the garden at Magnetisk Station," sterile in September, J.G., C.

At the two first mentioned places it presumably was accidentally introduced from North America.

Rubiaceae

Galium aparine L.

Ivigtut 1883: in a garden, sterile, BERLIN (1884).

Ritenbenk (69°46′) 1890: "in a garden," flowering in September, N.H., C.

Godhavn 1932: in two gardens, flowering in September, J.G., C; 1936: "hibernated under the snow in a garden frame at Arktisk Station," fruit immature in July, M.P.P., C.

Galium mollugo L. var. *augustifolium* LEERS

Grønnedal 1961: in lawns, flowering in August, A.P., C.

Presumably capable of surviving vegetatively at the locality.

Galium uliginosum L. (fig. 35)

Ivigtut 1934, 1936, 1938: common, LAGERKRANZ (1950); 1937: growing abundantly among *Salix glauca*. This presumably very recently introduced species seems to thrive, GRÖNTVED (1938); 1937: it is abundant and certainly thrives, POLUNIN (1943); 1942: with immature fruit 2nd September, A. E. PORSILD (1945); 1951 and 1952: "on the midden," flowering in September, A.R., ! . Not observed by A.P. in 1961. According to GRÖNTVED (1938, 1954) and POLUNIN (1943, 1959), this is an introduced plant. It may have come to Ivigtut with peatmoss litter. According to GRÖNTVED's map (1942), it is spontaneous and rare in Iceland, but there is no evidence of its occurrence in North America.

Scrophulariaceae

Cymbalaria muralis G., M. & SCH.

Godhavn 1930: in a flowerpot, M. P. PORSILD (1932).

Linaria vulgaris (L.) MILL.

Ivigtut 1960: reported by P. M.; 1961: two clones on grass borders along houses and roadsides, flowering in August, A.P., C.

Presumably capable of surviving there vegetatively.

Verbascum thapsus L.

Ivigtut 1883: a small specimen on a ballast dump, sterile, and with only one rosette in August, BERLIN (1884).

Veronica arvensis L.

Ivigtut 1899: in a waste place, fruiting in August, J.L., C; 1961: a few sterile specimens were found in a garden; in a greenhouse it had mature seeds, A.P., ! .

Veronica persica POIR. (fig. 38)

Ivigtut 1934: growing sporadically in small gardens, with ripe fruit in September, LAGERKRANZ (1950).

Narssaq 1961: outside a greenhouse in the rural dean's garden, flowering, and with unripe fruit in July, A.P., C.

Veronica serpyllifolia L. (fig. 25)

Ivigtut 1932: L.H., C; 1937: J.G., C, very common and fruiting abundantly, apparently naturalized, GRÖNTVED (1938); 1937: growing abundantly around the cryolite mine, POLUNIN (1943), with mature seeds, POLUNIN (1959); 1958: in recent years this plant has spread widely throughout Ivigtut, LAGERKRANZ (1950); 1942: very common and fruiting abundantly and had mature fruit September 2, appeared to be fully established, A. E. PORSILD (1945); 1957: with unripe fruit in July, S.L., C; 1961: common, with ripe fruit in August, A.P., C.

Julianehåb 1937: at the radio station, a few specimens with ripe capsules, 17 September, GRÖNTVED (1938); 1946: very numerous in the doctor's garden, LAGERKRANZ (1950).

Solanaceae

Solanum nigrum L.

Egedesminde 1961: in a greenhouse, A.P., C.

Upernavik 1961: in a greenhouse, J.L.H., C.

Umbelliferae

Anthriscus silvester (L.) HOFFM.

Ivigtut 1937: in a waste place, with almost ripe fruit in mid-September, J.G., C; 1938: in ditches close to the cattle shed, LAGERKRANZ (1950); 1961: one specimen near the old harbour, flowering in early August, A.P., C.

Godthåb 1961: a large specimen in the Governor's garden, flowering in July, A.P.C.

Capable of surviving vegetatively at the two places in question.

Carum carvi L.

Not cultivated in Greenland but commonly used as a spice in bread and often wasted, probably to be found at the most inhabited places, M. P. PORSILD (1932).

Ivigtut 1889: "in a waste place", with unripe fruits in August, N.H., C.
Frederiksdal 1890: flowering in August, E.L., C.
Julianehåb 1937: POLUNIN (1943).

Scandix pecten-veneris L.

Godhavn 1939: "in a flowerpot at Arktisk Station," flowering, M.P.P., C.

Urticaceae

Cannabis sativa L.

Jakobshavn 1853: sterile, J.V., C.

Ivigtut 1883: an almost 40 cm tall specimen on ballast soil, sterile in August, Berlin (1884); 1899: sterile in August, J.L., C; 1961: a small specimen on garden soil, presumably derives from seed provided for caged birds, A.P., C.

Christianshåb 1890: in a garden, sterile in July, N.H., C.

Godhavn 1931: a large, non-flowering specimen in open garden frames amongst grown vegetables, M. P. PORSILD (1932).

Urtica dioeca L.

Godhavn 1927: "in a flowerpot at Arktisk Station," male plant, M.P.P., C.

Ivigtut 1937: "a lovely, well-developed colony near Messen," flowering in September male plant, J.G., C; 1938: not especially common, LAGERKRANZ (1950); evidently well established, but may only bear fruit in favourable seasons, flowering in September, A. E. PORSILD, 1945: 1951: A.R., ! ; 1957: "on a fertilized spot," male plant, flowering in early August," S.Ø., C; 1961: along a roadside, but particularly on refuse dumps near the old cattle shed (female plant), flowering in early August, A.P., C.

Capable of surviving vegetatively in Ivigtut.

Urtica urens L.

Ivigtut 1876: "among houses and in waste places," flowering in October, A.K., C; 1883: with mature fruit in August, BERLIN (1884); 1889: in waste places, N.H., C; 1899: flowering and with unripe fruit in July, J.L., C; 1938: common at the cattle shed, LAGERKRANZ (1950); 1937: POLUNIN (1943); 1942: common, fruiting in September, A.E. PORSILD (1945); 1952: bearing fruit in September, A.E.P., ! ; 1961: fairly rare, flowering in August, A.P., C. Apparently naturalized in Ivigtut, A.P.

Julianehåb 1946: increasingly growing, LAGERKRANZ (1950, p. 41).

Godhavn 1929: M.P.P., C; common in flowerpots, where it has kept on growing for 20 years; also in gardens, under glass and as well as outdoors, flowering and fruiting (M. P. PORSILD 1932): in the Governor's garden, flowering in September, J.G., C.

Upernavik 1961: in a greenhouse, reported by J.L.H.

Grønnedal 1961: on garden soil and in a garden frame, A.P., C.

Holsteinsborg 1962: flowering in August, M.L.-N., C.

Christianshåb 1962: M.I., ! .

Dyrnæs at Narssaq (60°70′) 1962: with flower buds in July, P.M.P., C.

Nanortalik 1969: large specimens on garden soil, flowering in early September, N.S., ! .

Violaceae

Viola arvensis MURR.

Ivigtut 1899: "in a waste place," flowering in August, J L., C; 1937: flowering in mid-September, J.G., C; 1961: a few specimens on garden soil and in greenhouses, fruiting in August, A.P., C.

Julianehåb 1929: "in a flowerpot," E. MØRCH, C.

Grønnedal 1961: in a lawn, with fruit in early August, A.P., C.

Appendix

List of species which in Greenland comprise indigenous as well as introduced strains.

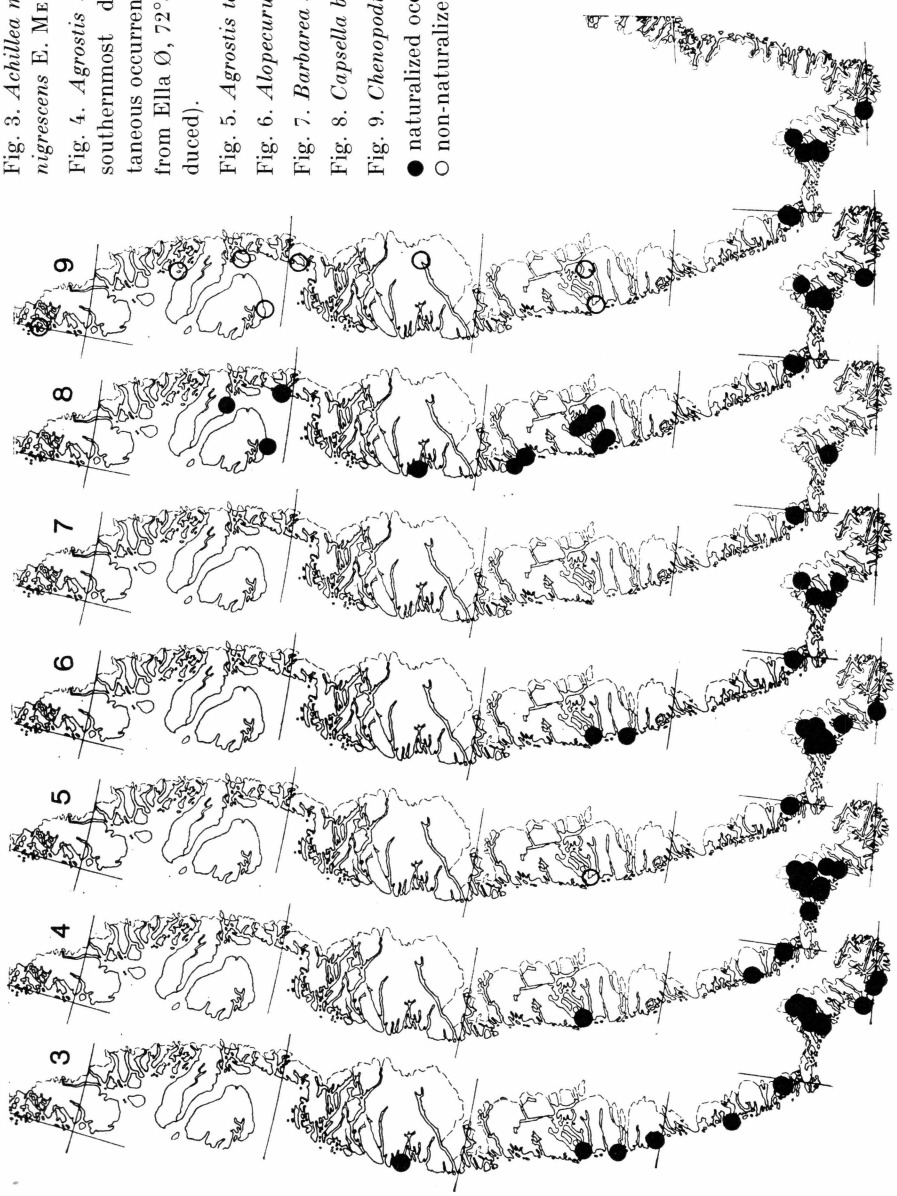


Fig. 3. *Achillea millefolium* L. cf. var. *nigrescens* E. Mey.
Fig. 4. *Agrostis stolonifera* L. Some of the southernmost dots may represent spontaneous occurrences. In addition also known from Ella Ø, 72°53′ on the east coast (introduced).
Fig. 5. *Agrostis tenuis* Sibth.
Fig. 6. *Alopecurus geniculatus* L.
Fig. 7. *Barbarea stricta* Andrz.
Fig. 8. *Capsella bursa-pastoris* (L.) Medic.
Fig. 9. *Chenopodium album* L.
● naturalized occurrence.
○ non-naturalized occurrence.

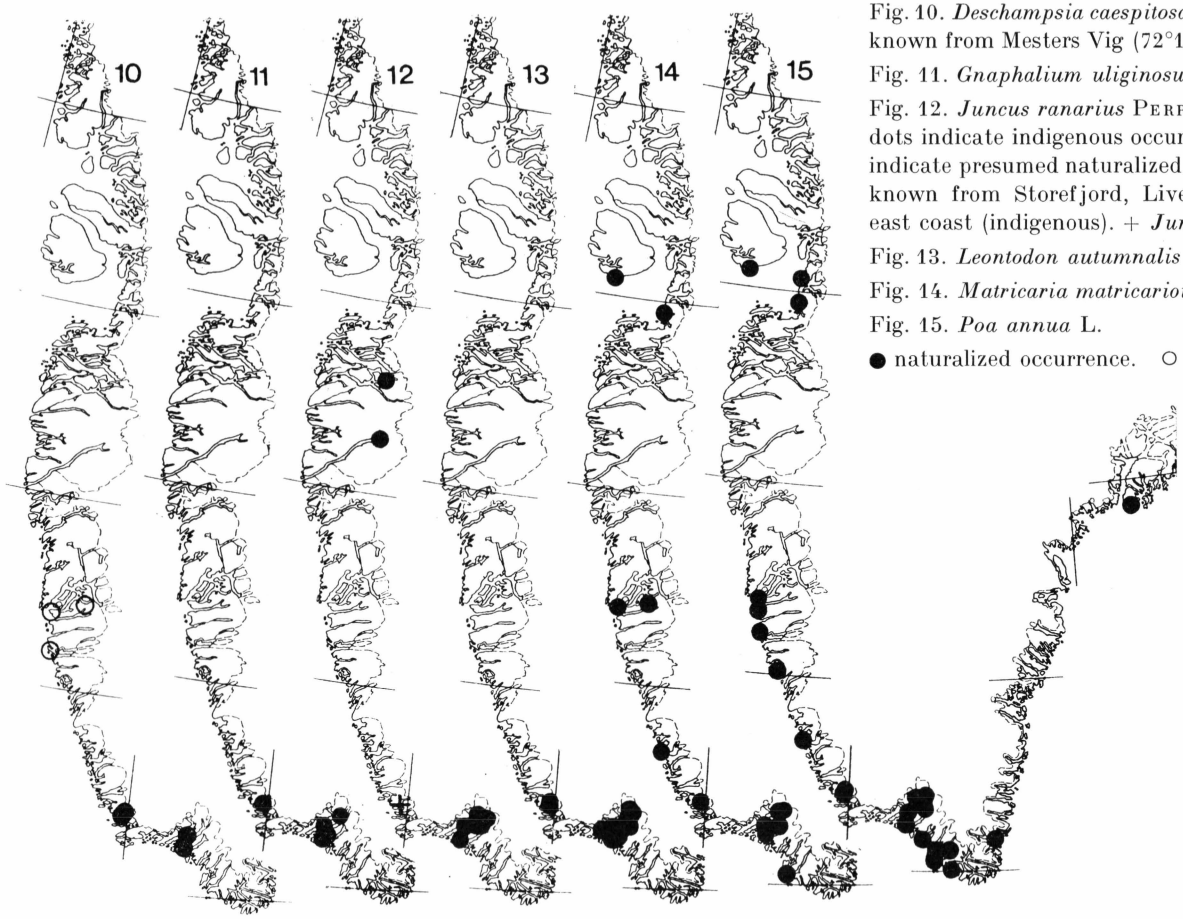


Fig. 10. *Deschampsia caespitosa* (L.) BEAUV. In addition also known from Mesters Vig (72°11′) on the east coast.

Fig. 11. *Gnaphalium uliginosum* L.

Fig. 12. *Juncus ranarius* PERR. & SONG. The two northerly dots indicate indigenous occurrences. The dots in the south indicate presumed naturalized occurrences. In addition also known from Storefjord, Liverpool Land, 71°05′, on the east coast (indigenous). + *Juncus bufonius* L. s. str.

Fig. 13. *Leontodon autumnalis* L. var. *taraxaci* (L.) HARTM.

Fig. 14. *Matricaria matricarioides* (BONG.) PORTER

Fig. 15. *Poa annua* L.

● naturalized occurrence. ○ non-naturalized occurrence.

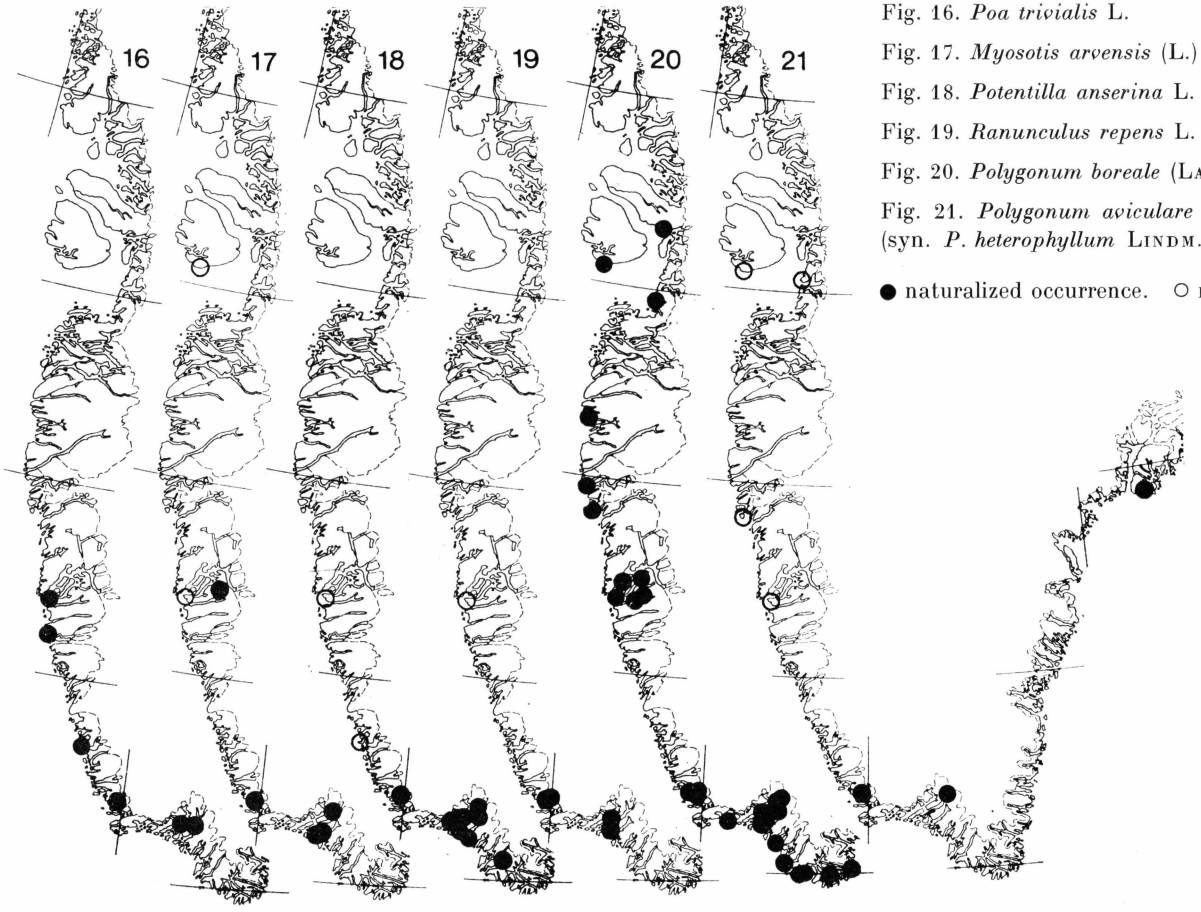


Fig. 16. *Poa trivialis* L.

Fig. 17. *Myosotis arvensis* (L.) HILL

Fig. 18. *Potentilla anserina* L. s. str.

Fig. 19. *Ranunculus repens* L.

Fig. 20. *Polygonum boreale* (LANGE) SMALL

Fig. 21. *Polygonum aviculare* L. ssp. *aviculare* (syn. *P. heterophyllum* LINDM. ssp. *heterophyllum*).

● naturalized occurrence. ○ non-naturalized occurrence.

Fig. 22. *Rumex longifolius* DC.
Fig. 23. *Senecio vulgaris* L.
Fig. 24. *Tripleurospermum maritimum* (L.) KOCH ssp. *boreale* (HARTM.) A. PEDERS.
Fig. 25. *Veronica serpyllifolia* L.
Fig. 26. *Vicia cracca* L.
Fig. 27. *Stellaria media* (L.) VILL.

● naturalized occurrence.
○ non-naturalized occurrence.

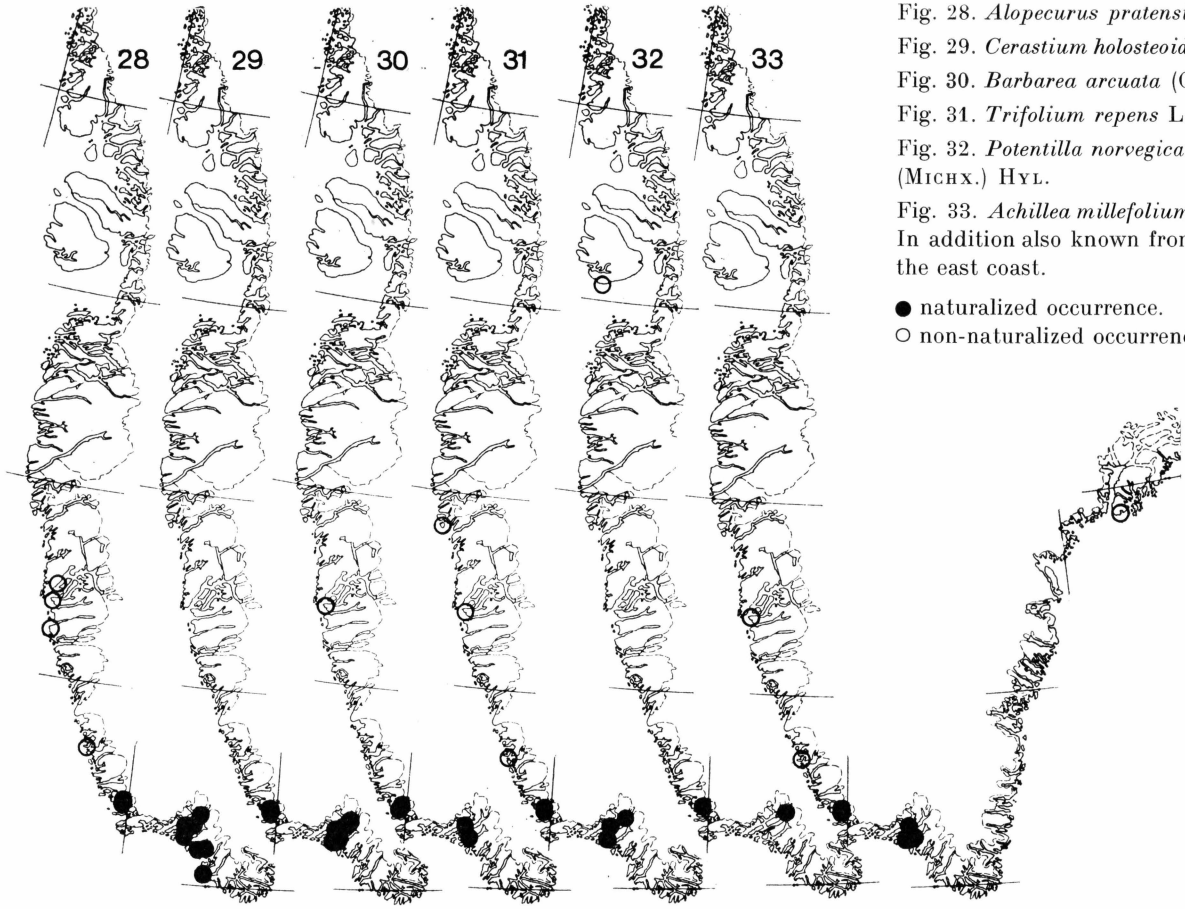


Fig. 28. *Alopecurus pratensis* L.

Fig. 29. *Cerastium holosteoides* Fr. emend. Hyl. s.str.

Fig. 30. *Barbarea arcuata* (Opiz) Rchb.

Fig. 31. *Trifolium repens* L.

Fig. 32. *Potentilla norvegica* L. ssp. *hirsuta* (Michx.) Hyl.

Fig. 33. *Achillea millefolium* L. ssp. *millefolium* s.str. In addition also known from Mesters Vig (72°11′) on the east coast.

● naturalized occurrence.
○ non-naturalized occurrence.

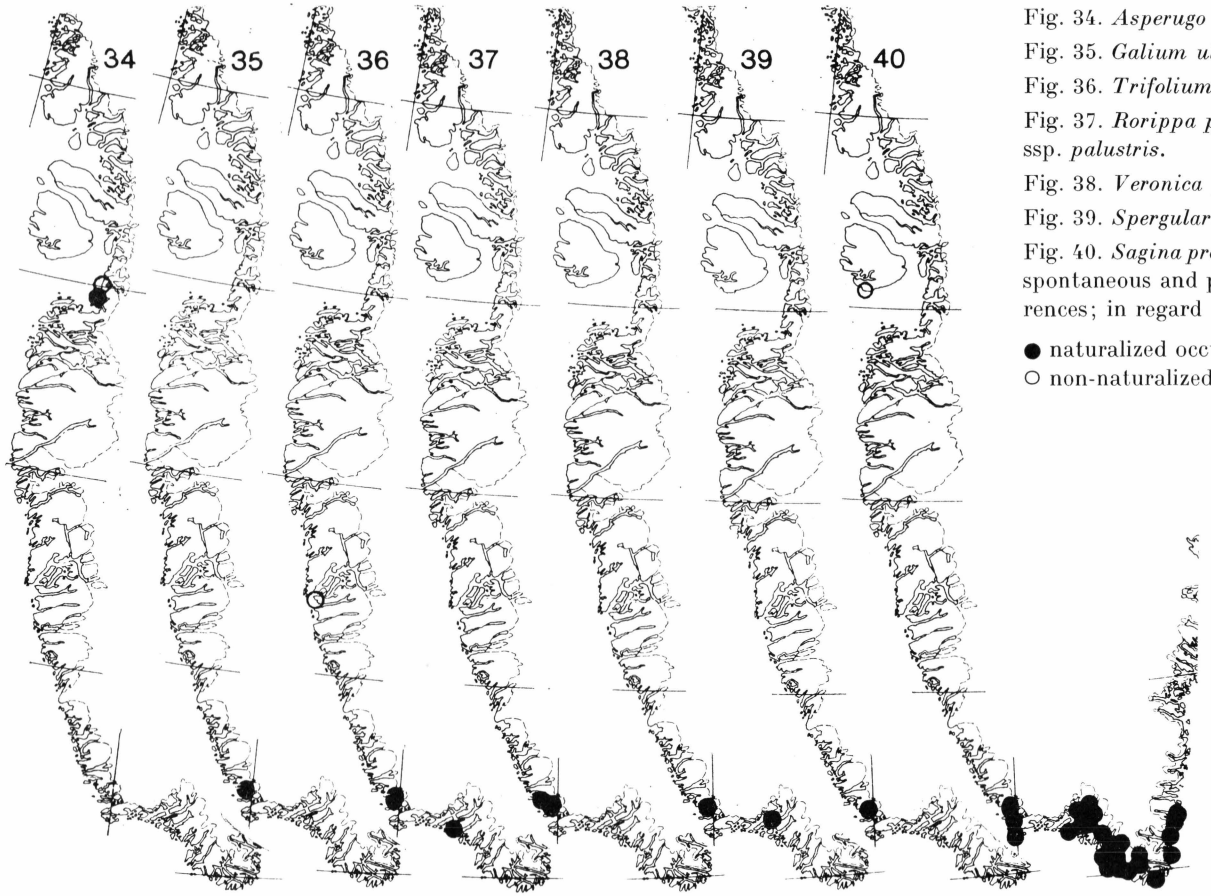


Fig. 34. *Asperugo procumbens* L.

Fig. 35. *Galium uliginosum* L.

Fig. 36. *Trifolium hybridum* L.

Fig. 37. *Rorippa palustris* (L.) BESSER ssp. *palustris*.

Fig. 38. *Veronica persica* POIR.

Fig. 39. *Spergularia rubra* (L.) PRESL.

Fig. 40. *Sagina procumbens* L. ● indicates both spontaneous and presumed naturalized occurrences; in regard to the latter, see the text.

● naturalized occurrence.
○ non-naturalized occurrence.

II. PRESUMABLY INDIGENOUS SPECIES, WHOSE ORIGIN HAS BEEN DISPUTED

For further information reference is made to M. P. Porsild (1932, pp. 37–80), in which the occurrence in Greenland of a number of species not mentioned here is discussed. Page 66 in the present paper includes a list of species which comprise strains that are indigenous as well as introduced in Greenland.

Agrostis scabra Willd. var. *septentrionalis* Fern.

The species is North American (Hultén 1968, map); the variety grows in eastern Canada. It was found for the first time in SW Greenland (Julianehåb) 1937 (Polunin, 1943). He calls *A. scabra* an "additional species evidently of recent introduction," and repeats this (1959). According to Fredskild (1964) var. *septentrionalis* is known as occurring at present in 7 habitats (1828–1963), and "is undoubtedly indigenous in Greenland." Almost all of the finds were made in the immediate vicinity of Norse ruins or in towns.

Anthoxanthum odoratum L. ssp. *alpinum* Löve

Rosenvinge (1896) and Ostenfeld (1926) refer to *A. odoratum* as a Norse plant. M. P. Porsild (1932) mentions it among the 6 species that in his opinion were most probably introduced by the Norsemen (p. 79), yet he does point out that in Greenland it actually is not associated with present or past settlements, but grows, instead, in grassy heaths or in clearings among scrub (p. 44). According to Seidenfaden (1933) and Böcher (1938, map), it is unlikely that it was introduced to Greenland, and it is emphasized that it must be spontaneous on the east coast. Böcher, Holmen & Jakobsen (1968) only mention the diploid ssp. *alpinum* as occurring in Greenland (also familiar from Iceland, the Faeroe Islands, northern Fennoscandia, and the mountainous regions of Central Europe). If one employs the differential characters given by Hedberg (1967) it can be seen that tetraploid ssp. *odoratum* is not to be found in the available Greenlandic herbarial materials.

Atriplex longipes DREJER ssp. *praecox* (HÜLPH.) TURESS.

This species is known to occur at the following places in Greenland:

Tasermiutsiaq (60°27′) at Tasermiut (1889): fruit-bearing plants, N.H., C; reported by HARTZ (1894 b) from "a sandy beach."

Uiluit ("Uiluvit," 60°26′) at Tasermiut 1925: young plants with immature fruit, A.E.P. & M.P.P., C; reported by M. P. PORSILD (1932) as growing in *Puccinellia*-communities.

At Tasermiut (60°32′) 1964: on a sandy bottom in a delta "at the head of a fjord" on the northern side, C.H., C and reported by C.H.

In addition, there are the following habitats in the Godthåb region:

Kapisigdlit kangerdluat (64°25′, "Pingsorfik," Pisigsarfik Fjord) at Godthåbsfjord 1907: S.H., C.

Eqaluit pârdlît (64°02′) 1936: J.La., C; together with *Puccinellia phryganodes*, *Stellaria humifusa* and *Cochlearia officinalis*, LAGERKRANZ (1950).

Eqaluit (64°09′) in Ameragdla, Ameralik 1941: A.E.P., C.

Itivnera (64°21′) in Itivdleq, Ameralik 1941: A.E.P., C.

Eqalugialik (64°23′) in Ameragdla, Ameralik 1947: "the shore at the northern end of the lagoon," T.C., C.

Since the first plants that were collected were young and their bracteoles undeveloped, determination was difficult. On herbarial specimens they have been referred to *A. glabriuscula* (HARTZ, 1894 b; ROSENVINGE, 1896; M. P. PORSILD, 1930; A. E. PORSILD in herbarium; HULTÉN, 1958; POLUNIN, 1959; ANFR. PEDERSEN *in* Bot. Tidsskr. 63, 1968) or, with doubt, as *A. longipes* (OSTENFELD, 1926; M. P. PORSILD, 1932; BÖCHER, HOLMEN & JAKOBSEN, 1968). LAGERKRANZ (1950) referred his find to *A. longipes* ssp. *praecox* (HÜLPH.) TURESS.

Whereas ROSENVINGE, OSTENFELD and BÖCHER, HOLMEN & JAKOBSEN evidently believe that the Greenlandic *Atriplex* is an introduced plant, M. P. PORSILD (1932) believes that it is indigenous.

Collections made since 1936 include individuals with well-developed bracteoles, which show with desirable clarity that they can be referred to *A. longipes*. Yet these collections were not included in Arktisk Herbarium until 1968. The determination is supported by information about biotopes and accompanying plants; thus, in contrast to *A. glabriuscula*, *A. longipes* actually does grow in salt marshes. There should be no doubt that *A. longipes* is native in Greenland. It is not identical with *A. lapponica* POJARK. or with *A. kuzenevae* SEMEN., which are described in Flora Murmansk. Obl. 3, cp. figures here, as occurring in Northern Russia.

To date *A. longipes* ssp. *praecox* was only known to occur in the coastal regions of the Baltic Sea, Northern Russia, Northern and Western Norway, in Iceland (Arktisk Herbarium, København) and Greenland. Until now the collections from Iceland have been referred to *A. patula*, by LÖVE (1970) to *A. longipes* ssp. *lapponica* (POJARK.) LÖVE & LÖVE though.

Cakile edentula (BIGEL.) HOOK.

In 1952 a *Cakile* was found on the beach near the mouth of a river between Grønnedal and Ivigtut, N.K., C. It was in bloom and had unripe fruit in August, but had progressed sufficiently to make sure determination that the plant in question was the American tetraploid species *C. edentula*, whose ssp. *edentula* is distributed from southern Labrador to Yukatan (map *in* HULTÉN, 1968). LÖVE & LÖVE (1947) have shown that in Iceland *C. edentula* particularly occurs on the west and south coasts (2n = 36 have been counted, *C. maritima* L. has 2n = 18), and they presume that it originally spread to Iceland with the Gulf Stream. There can be a reasonable doubt whether the Greenlandic *Cakile* was accidentally introduced to the place, or whether it is indigenous. It would be desirable to see some occurrences which cannot be suspected as deriving from the harbour traffic. But it should be noted that the find was not made in the vicinity of the two adjacent town areas.

Carex lyngbyei HORNEM.

According to ROSENVINGE (1896), OSTENFELD (1926), and M. P. PORSILD (1932), the Norsemen presumably introduced it from Iceland, where it was used as hay-making. HULTÉN's map (1968) shows that ssp. *lyngbyei* is only known to occur on the Faeroes, Iceland, Greenland, and Eastern Canada.

Carex rostrata STOKES

On the basis of its occurrence in the vicinity of Norse ruins in the Eastern Settlement, ROSENVINGE (1896), OSTENFELD (1926), and M. P. PORSILD (1932) presumed that the Norsemen introduced this species. POLUNIN (1943) mentions rich occurrences far from built-up areas. At Qagssiarssuk its fruits have been found in turf that is earlier than the cultural layer from the Norse period, which proves that it originally immigrated to Greenland without human help (FREDSKILD, 1969). Its distribution is circumpolar (HULTÉN, 1958), and according to POLUNIN (1959) it reaches the Arctic in Northeastern Europe and Northwestern Asia; according to HULTÉN's map (1958), in Alaska, as well.

Chrysosplenium tetrandrum (N. LUND) TH. FRIES

As far as Greenland is concerned, our knowledge of this plant is limited to occurrences in the Northeast on Clavering Ø, where it grows, in particular, near ruins of Eskimo dwellings. SØRENSEN (1953, p. 101) presumes that in common with *Puccinellia vaginata* and *Tripleurospermum*, the Polar Eskimos brought it here. Its distribution is Arctic-circumpolar: Alaska, Canada, the northernmost parts of Fennoscandia and the Soviet Union, *cp.* HULTÉN (1950, map no. 974). It is not known from the west and north coasts of Greenland, and the closest habitats in Canada are on Ellesmere Land, Devon Island, and Baffin Land (maps in A. E. PORSILD, 1957 and HULTÉN, 1968).

Cirsium heterophyllum (L.) HILL

Found in 1937 "in open locality near the beach" beside a hut in Bjørnedal (61°18′) at Arsuk Fjord, J.G., C, cp. GRÖNTVED (1938), who believed that it had been introduced. Five flowering individuals and many sterile rosettes were observed. The reason why HULTÉN (1958, map) includes it in the Amphiatlantic species is the significance he attaches to this find. It is boreal distributed in Eurasia as far as Lake Bajkal, montane in Central Europe. It reaches the Arctic in the Soviet Union (POLUNIN, 1959). It was introduced to Torshavn on the Faeroe Islands (1938), is, according to GRÖNTVED (1942) hardly known to occur in Iceland, and it is not reported from North America. It may possibly be considered spontaneous in Greenland, cp. HULTÉN l.c., and BÖCHER, HOLMEN & JAKOBSEN (1968). According to a report from Dr. PER MUNCK, Ivigtut, it was no longer extant in 1960.

Elymus arenarius L. s. str.

Until now the entire Greenlandic materials of *Elymus* have been assigned to the tetraploid *E. mollis* TRIN. (syn. *E. arenarius* L. var. *villosus* E. MEY.), which grows from Northeastern Asia and North America as far as Greenland (BOWDEN, 1957, map). It has 2n = 28, and this number was found in Greenlandic *Elymus* by BÖCHER & LARSEN, 1950 and JØRGENSEN *et al.*, 1958. Meanwhile, as a result of studies in Herb. C. BOWDEN l.c. has determined on the basis of its morphological character an *Elymus* form from Southwest Greenland that is identical with the octoploid *E. arenarius* s. str. (2n = 56), which is indigenous in Northwestern Europe. BOWDEN includes only three of the five finds in his list. In his opinion "*E. arenarius* has been introduced to the west coast of Greenland," "probably in sand ballast from ships." He compares herewith several occurrences in harbour towns in the U.S.A. and in Canada, where he found octoploid materials. HULTÉN has the same point of view (1962, map), which states in the text that "ssp. *arenarius* apparently is

introduced to several places in tbe Greenland;" in the caption of the map it is "introduced with certainty."

In Herb. C *Elymus arenarius* s. str. is now known to occur in 19 habitats in Greenland. Eleven of the finds were made at Tunugdliarfik, Igaliko Fjord, Agdluitsup kangerdlua, and in the Julianehåb area. Five finds are from the southernmost part of Greenland at ca. 60° N. Lat., one of them from the east coast (60°09′). One is from a mountainside at Grønnedal, two from the Godthåb region. The differential characters as specified by BOWDEN l.c. and SIGURBJÖRNSSON (1963) have been used in this determination; these should make confusion impossible[1]). 2n = 56 has been found in Greenland material, reported 1971 by B. FREDSKILD.

There is no conclusive evidence of *E. arenarius* s. str. having been introduced to Greenland since 1721. Even though the sailing ships may have brought in ballast soil, this could scarcely have been beach sand, for, as much testifies, nearly all of it consisted of top soil for use in greenhouses, garden frames, and garden grounds. If it possibly had been introduced, it is strange that the plant has not been found at sizeable harbour towns. The majority of the finds were made in the vicinity of the Norse settlements; possibly the explanation is that these localities are the places where the sheepholders now live and which the botanists visited; another explanation is that *Elymus* here grows under the particularly favourable conditions on the manured sosls that are found near building sites. SIGURBJÖRNSSON l.c. (p. 7) mentions that *E. arenarius* may have been cultivated in Iceland for fodder and breadstuffs, but his references are to the contrary. The occurrence on the Southeast coast is inexplicable, if *E. arenarius* supposedly was introduced. *E. arenarius* s. str. is not a rare plant in Iceland, and finds of pollen show that it existed on the island before the settlement (SIGURBJÖRNSSON l.c., map). The question whether the *E. mollis* that came from the west and grew in Iceland and accordingly met there with the *E. arenarius* s. that came from the east has been the subject of a debate (SIGURBJÖRNSSON l.c. with literary entries, HULTÉN l.c. and HYLANDER, 1966, pp. 439–440). It is quite obvious that the two species joined in Greenland.

Galium boreale L.

Found in 1953 1 km north of Qanagssiagssat ("Qanasiarssat," ca. 61°13′) at Tunugdliarfik in an open willow and birch scrub by J. GRÖNTVED (C);

[1]) *Elymus arenarius* differs from *Elymus mollis* in that the straw under the main spike is smooth, yet can at times be hairy on the upper 1–5 mm and on the small collar above. The internodes of the spikes' axis are ± ciliated, the outer side is smooth or only hairy on top and on the small collar above. The glumes are smooth below or less hairy here than above. – *Elymus mollis* is uniformly short and close-haired on straw and collar, on the outer sides of the axis-internodes, as well on the glumes.

according to him it is impossible to decide whether it arrived at the place by natural means. *G. boreale* coll. has a circumpolar–boreal distribution, and reaches the Arctic in Yukon, Alaska, and in Northeastern Asia. LÖVE & LÖVE (1954) divided *G. boreale* into two species, *G. boreale* s. str. (Europe, incl. Iceland) and *G. septentrionale* R. & S. (Asia, North America). According to GRÖNTVED (1954) and RAHN (1961), the Greenlandic *G. boreale* belongs to the eastern boreal floral element. HORNEMANN (1821) reports it as occurring in Greenland. The information must come from GIESECKE or WORMSKIOLD; unfortunately there are no herbarial specimens in the museum in Copenhagen.

Lathyrus maritimus (L.) FR.

Grows in natural communities in Southwest Greenland (map *in* BÖCHER, 1938). OSTENFELD (1926) includes it among his 50 Norse plants, whereas M. P. PORSILD (1932) apparently seems to believe that it is indigenous. Since FREDSKILD (1969) found pollen from this plant in samples taken under the cultural layer from the Norse period in Qagssiarssuk, there is no doubt about its being native in Greenland.

Montia fontana L. ssp. *fontana*
(*M. lamprosperma* CHAM.)

"Its occurrence at Ivigtut and elsewhere in Greenland strongly suggests that the species is introduced rather than native," A. E. PORSILD (1945). POLUNIN (1943, 1959) leans toward the same view. M. P. PORSILD (1932) includes it among the apophytes, and BÖCHER (1938, map) also considers it native. Since then FREDSKILD (1969) has found its pollen at Qagssiarssuk, partly in layers of turf whose date precedes the beginning of our calendar, partly from cultural layers dating from the Norse period. Its distribution is circumpolar and reaches the Arctic in Russia, Northeastern Asia, Alaska, and Canada. In Greenland it grows as far north as Thule.

Puccinellia maritima (HUDS.) PARL.

Grows in salt marshes in the floral provinces S and SW (SØRENSEN 1953, map). According to OSTENFELD (1926), SØRENSEN l.c. (p. 61 *et seq.* and 107–108) and BÖCHER, HOLMEN & JAKOBSEN (1968), it probably was introduced originally, perhaps by the Norsemen; according to M. P. PORSILD (1932), however, it may just as well have immigrated on its own. It is frequent on salt marshes in Iceland. GLEASON (1952) mentions coastal occurrences between Nova Scotia and Rhode Island, but according to SØRENSEN l.c. the American plant is not identical with the Greenlandic one, and is described as an independent species. According to POLUNIN (1959) *P. maritima* only grows in the Arctic in Southwestern

Greenland. In Norway it occurs almost as far north as 70° N.L. The Greenlandic *P. maritima* is more closely related to the Icelandic form than to the American one, which does not prove that it necessarily has been introduced. If *P. maritima* possibly had been introduced in Greenland, it is indeed remarkable that it has managed to become a dominant element in the salt marshes of Southwestern Greenland. Naturalized plants, when they behave neophytically, normally have a limited occurrence among the native growths. There are no fructiferous *P. maritima* in the Greenlandic herbarial materials. It is possible that the strain only reproduces itself vegetatively, but the possibility that it can bear fruit in good summers or has done so in warmer periods cannot be excluded. It is scarcely believable that stolons were transported with animals from a long distance. In Denmark *P. maritima* does not bear fruit frequently, when it grows at the extreme zone of tidal inundation.

Puccinellia vaginata (Lange) Fern. & Weath.

Common in Northwest Greenland, but also occurs in the middle part of the east coast, where it grows, in particular, near old Eskimo settlements, cp. Sørensen (1953, map); thus it is not improbable that it was brought here by the Eskimos, who use the soft straw as linings for their kamiks, for baskets and other woven things (p. 101). *P. vaginata* is known to occur in the Arctic from Alaska to Northwestern and Northeastern Greenland (map *in* Porsild, 1957; Hultén, 1968).

Ranunculus cymbalaria Pursh

Known to occur in Greenland in Eqaluit (64°09′) and Kilaersarfik (64°15′) at Ameralik, as well as at Store Saltsø and Lille Saltsø at Søndre Strømfjord, cp. Böcher *et al.*, 1968, who report it as growing on clayey banks of fjords and the banks of salt lakes. According to Hultén (1958) "it seems very likely that the plant is introduced to Greenland . . .". Neither the map *in* Hultén, that shows that in the north the species grows in Alaska, Victoria Island, Labrador, and Newfoundland, nor do the three habitats that are not connected with settlements support this supposition.

Rorippa islandica (Oeder) Borbás ssp. *islandica*

Found in Greenland partly along the banks of lakes and near temporary waterholes, either in completely unbuilt areas (Søndre Strømfjord) or on formerly or currently built-up areas in Julianehåb and Narssaq municipalities, cp. the list of finds *in* Jonsell (1968, p. 183), Remarkably enough, the majority of the finds was made near the Norse settlements, but neither Ostenfeld (1926), M. P. Porsild (1932), nor Jonsell (l.c.

p. 58 and p. 61) believe that *R. islandica* is a Norse plant. FREDSKILD (1969) found seeds of this plant in cultural layers from the Norse period; this does not, however, mean that it necessarily was introduced, for it could have been apophytic, even then. JØRGENSEN *et al.* (1958) has counted 2n = 16 in the Greenlandic materials. According to JONSELL l.c. the diploid *R. islandica* is a different species from the tetraploid *R. palustris* (see p. 31). The former has a North Atlantic distribution (Nordland Fylke in Norway, Scotland, Northern Ireland, Iceland, and Greenland, but it is also montane (the Alps, the Pyrenees).

Rubus saxatilis L.

Frequent in Iceland, but not known to occur in North America. J. VAHL found it at Tasermiut in 1829. On four of the specimens it simply says Tasermiut, on the fifth "*in lociis sanosis per pedes alpinum in interiore sinus Tasermiut.*" VAHL's manuscript only mentions it as occurring on stony places at the foot of the mountains at the bottom of the large lake Korsoak in Tasermiut Fjord. The lake must be identical with Taserssuaq, "Korsoak" with the Norse settlement at the river Kûgssuaq (60° 16′N. lat., 44°44′ W. long.), which is located at Tasermiut 1 km west of Taserssuaq and 10 km from the reported habitat. N. HARTZ found it in 1889 "on one spot in the birch scrub near the Norse ruin," cp. HARTZ (1894 b), who adds "only found at this place in West Greenland." Whereas VAHL's plants were sterile, the plants HARTZ collected were beginning to fruit 31st August. On one of the herbarial specimens it says "Tasermiut, in a birch scrub, just a few feet above sea level," on another, "Taserssuaq Qíngua among birch scrub." The latter place corresponds to VAHL's "at the bottom of the large lake." *R. saxatilis* was found in 1964 in "Qíngua Valley, 60°16′ N. lat., 44°31′ W. long.", C.H., P.M.P. & T.Sm. leg. Therefore it can be assumed that the species has been found at several places in the area.

Since there are Norse ruins at Tasermiut, OSTENFELD (1926) presumed that *R. saxatilis* "hardly can have been introduced by other means than by the Norsemen." M. P. PORSILD (1932) was uncertain about its origin: "it may have been brought over among hay or in cattle or horse dung (p. 67)." On pp. 79–80 it is referred to the group: "Plants for which an introduction by the Norsemen is possible but which may just as well have immigrated by natural ways."

Neither of the two authors mentions VAHL's find at "Eqalimmîn" on the east coast (GRAAH, 1829, called "Ekalemiut" by LANGE, 1880). According to SEIDENFADEN (1933) the place is identical with Eqalungmiut (Dronning Maries Dal, 63°28′ N. lat.), where it was found again in 1931 (KNUD RASMUSSEN's expedition) and in 1932 (DEVOLD & SCHOLANDER, 1933: "quite common in the slopes," "had occasional berries"). There

has never been any Norse settlement here, which proves that in this case the species occurred spontaneously. Why did this not happen in the same way at Tasermiut?

Sagina nodosa L.

According to Rosenvinge (1896), Ostenfeld (1926), and M. P. Porsild (1932) the Norsemen may have introduced this plant, although Porsild believes that there is a good possibility of its being spontaneous. According to Böcher, Holmen & Jakobsen (1968), it is "perhaps introduced." Its distribution is boreal and almost circumpolar (Hultén, 1958, 1968, map), with occurrence in the Arctic on Kanin, in Western Siberia, Yukon, and on Baffin Land. It is common in Iceland.

Sisyrinchium groenlandicum Böcher,

which is related to the American *S. montanum*, has been found in several places near the Godthåbsfjord system, as well as at Søndre Strømfjord (Iversen, 1938, 1953; Böcher, 1948, 1956, 1966, and Fredskild, 1966). According to Iversen it was found in the vicinity of Norse ruins; therefore he believes that the Norsemen originally introduced it during their voyages from the St. Lawrence area ("Vinland"). According to Böcher the Greenlandic *Sisyrinchium* differs from *S. montanum* morphologically and cytologically, and should be considered as a native species.

Tripleurospermum maritimum (L.) Koch ssp. *phaeocephalum* (Rupr.) Hämet-Ahti
(*Matricaria maritima* p. p.)

Found at the following places in the central part of the east coast:

At Kjerulf Fjord (73°10′) on Suess Land 1899: "near Eskimo ruins," A.G.N., C; 1929: J.Va., C.

At Dødemandsbugt ("Daudmannsøya") on the south side of Clavering Ø 1929: "near Eskimo ruins," J.Va., C.

South of Kap James (73°46′) on the coast of Hold with Hope 1930: "in sand at the high tide mark," G.S., C.

Eskimonæs on Clavering Ø 1931: P.Ge., C.

Knudshoved on the coast of Hold with Hope (73°43′) 1934: T.S., C; on an old Eskimo settlement, reported by T.S.

At Kap Hedlund (72°45′) on Lyell Land 1932: "on old seaweed banks," T.S., C; also on an old Eskimo settlement, reported by T.S.

Mesters Vig (72°14′) at Kong Oscars Fjord 1960: "wrack and sand beach ridge," H.M.R. & L.G.R., C; growing profusely around a small

hut used by hunters in winter, on a sandy beach near the entrance to Mesters Vig, (RAUP, 1965).

In the opinion of M. P. PORSILD (1932, p. 74) the Northeastern Greenlandic *Tripleurospermum* is spontaneous and taxonomically different from the South Greenlandic variety. DEVOLD & SCHOLANDER (1933) are of the opinion that it probably was carried along by the Polar Eskimos during their migrations round the north of Greenland, a point of view that is common to both HAGERUP (1941) and SØRENSEN (1953, p. 101). HAGERUP's count is n = 9.

According to HÄMET-AHTI (1967) ssp. *phaeocephalum's* distribution ranges from the northernmost parts of Norway and Finland to Arctic Russia, including Novaja Zemlja. *Matricaria inodora* L. var. *nana* (HOOK.) LEDEB., which grows in Northeastern Asia and in the North American Arctic does not seem to differ from the European ssp. *phaeocephalum*. Maps in A. E. PORSILD (1957) and HULTÉN (1968) show that *T. maritimum* coll. has been found in North American areas that are closest to Greenland, i.e., Banks Island, Victoria Island, Baffin Land, and in Northwestern Labrador. Provided that it was introduced to Greenland, it is strange that it should have arrived in Northeastern Greenland, rather than in Northwestern Greenland, where the majority of the people came. The circumstance that 3 or 4 of the 7 finds were made on former Eskimo settlements, all located in the immediate vicinity of the coast, does not prove that the species could be introduced; it is nitrophilous, and, as an apophyte, can have thrived on the nutritive localities. The find in the Mesters Vig District was made far away from earlier settlements.—*T.m.* ssp. *boreale* is discussed on p. 25.

Zostera marina L.

Z. marina was found in the Godthåbsfjord system by WORMSKIOLD in 1813 and by VAHL in 1830 (LANGE, 1880); more recent finds here are described by M. P. PORSILD (1932). OSTENFELD (1926) believed that it could have been introduced along with ships, whereas in PORSILD's opinion it must be spontaneous. In favour of the supposition that *Zostera marina* is indigenous to Greenland, it can be stated that the species has been found in the North American Arctic, viz. in Alaska as far north as 65° N. lat., in Yukon (POLUNIN, 1959) and at Hudson Bay as far north as 60° N. lat., cp. map *in* HULTÉN 1968.

III. CULTIVATED PLANTS

1. Forage Plants and Plants from Lawns

Some of the species that are mentioned below were found growing wild; most of them, in particular before cultivation commenced, were introduced. Refer to the discussion of finds in Chapter I.

Literature: Grønlandskommissionens Betænkning 5:1 (1950), the chapter on sheep breeding, pp. 124–138; CHRISTENSEN (1953, 1955); LOUIS JENSEN (1959).

Agrostis gigantea ROTH

The species was sown in lawns in Southwest Greenland, and ran wild from these. But some occurrences probably derive from cultivation in fields. See also page 33.

Agrostis stolonifera L.

Some of the occurrences mentioned on p. 34 probably derive from cultivation in fields; others evidently derive from sowing in lawns. The tests at the agricultural station show that *A. stolonifera* gives a good yield, reported by LOUIS JENSEN 1968.

The *Agrostis* species make up a considerable part of the grassy vegetation on the fertilized farm fields in the inner fjord regions, CHRISTENSEN (1955).

Agrostis tenuis SIBTH.

Reference is made to the above-mentioned quotation from CHRISTENSEN (1955) and to the description on p. 35.

Alopecurus pratensis L.

The occurrence in Southwest Greenland derives from sowing in fields and lawns, cp. p. 36. Scandinavian races were included in the experimental work in Julianehåb (JENSEN, 1959); the experiments were continued at the agricultural station in Upernaviârssuk, LOUIS JENSEN, reported 1968.

Avena sativa L.

In Southwest Greenland seed imported from Denmark is usually cultivated in pure growths or in mixed seed with spring rye for hay and

ensilage. At Ingnerûlalik (61°06′) oat produced ripe fruit one year, and this was used successfully in the following year, LOUIS JENSEN, reported 1968.

Brassica rapa L. var. *rapa* (L.) THELL. (Turnip)

Has been cultivated experimentally at the agricultural station. Its yield is modest, but is used to but a small extent, JENSEN (1959 and 1970).

Bromus inermis LEYSS.

A Canadian race was tested at the agricultural station; it died out and was given up, LOUIS JENSEN reported 1968.

Dactylis glomerata L.

Grown in lawns in Southwest Greenland (see p. 38). North Norwegian and Finnish races have been tested at the agricultural station. The experiment did not succeed, but is still in progress. Reported by LOUIS JENSEN 1968.

Festuca pratensis HUDS.

Collected from lawns in Southwest Greenland (p. 39). It has also been tested at the agricultural station in Julianehåb, but has not been found usable as a hay crop, C. A. JØRGENSEN reported 1963.

Festuca rubra L.

The Greenlandic *F. rubra* and a Norwegian race are cultivated in fields at sheep holding places in Southwest Greenland; other races are sown in lawns (p. 39).

Hordeum distichum L.

Norwegian barley (Jotunbyg), commonly cultivated in Southwest Greenland for hay and ensilage, LOUIS JENSEN reported 1968.

Hordeum vulgare L.

Earlier strains from Norway and Sweden have been tested at the agricultural station in Julianehåb. Have not been cultivated in SW Greenland since before World War II, reported by LOUIS JENSEN 1968.

Lolium perenne L.

Sown in lawns in Southwest Greenland (p. 42). Has not been used in experimental work before 1968, LOUIS JENSEN reported 1968.

Phleum pratense L. s. str.

Races from northern Norway and northern Sweden have been tested at the agricultural station, and are at present commonly used in the produc-

tion of hay in Southwest Greenland. It has also been sown in lawns (p. 42). In 1968, as a result of the initiative of Grønlands Tekniske Organisation *P. pratense* was sown as part of a mixture of grass in Julianehåb and other coastal towns by "Sprøjteselskabet af 1948," Kvistgaard, for the purpose of "Terrænpleje" (improvement of grounds), reported by Louis Jensen 1968.

Pisum arvense L.

Danish seed has been tested at the agricultural station, and is now being sown in mixed corn fields in Southwest Greenland, see p. 50.

Poa angustifolia L. coll.

Cultivated in lawns in Southwest Greenland (see p. 42).

Poa pratensis L. s. lat.

Various forms of *Poa pratensis* from northern Norway, northern Sweden, Finland, America, and Greenland have been tested at the agricultural station and are now a part of the hay production in Southwest Greenland, reported by Louis Jensen 1968.

Secale cereale L.

Spring rye commonly is grown, in pure growths or in corn mixed with oat, for hay and ensilage at sheep holding places in Southwest Greenland; winter rye is rare. Reported by Louis Jensen 1968.

Trifolium hybridum L.

Sown in lawns in Southwest Greenland (see p. 50). The species was cultivated at the Royal Veterinary and Agricultural High School in Copenhagen from seeds that were collected in Ivigtut. Thereupon seeds were planted at the agricultural station in Julianehåb, but the yield has not been satisfactory, reported by Louis Jensen 1968.

Trifolium pratense L.

Sown in lawns in Southwest Greenland (see p. 51). Danish seed has been tested at the agricultural station, but the experiment was abandoned, Louis Jensen 1968.

Trifolium repens L.

Sown in lawns in Southwest Greenland (see p. 51). The species was cultivated at the Royal Veterinary and Agricultural High School in Copenhagen from seed collected in Julianehåb. The new seed was then sown at the agricultural station in Julianehåb, but the yield was mediocre, Louis Jensen 1968.

It has neverthelsess been cultivated from seeds in fields of grass and corn in Southwest Greenland, reported by LOUIS JENSEN.

Vicia cracca L.

Has been sown in lawns in Southwest Greenland (see p. 52). It has been cultivated from seed of Greenlandic and Icelandic origin at the agricultural station in Julianehåb and Upernaviârssuk, but this has now been discontinued (JENSEN, 1959, and reported by LOUIS JENSEN 1968).

Vicia sativa L.

Danish seed has been cultivated at the Royal Veterinary and Agricultural High School, and the results have been tested at the experimental station at Julianehåb. The species is currently cultivated in grass and mixed corn fields in South Greenland.

2. Vegetables

The following vegetables are capable of giving good yields in the southern part of Southwest Greenland, many of them also in Christianshåb (68°49′) and Jakobshavn (69°13′). Garden frames are used in the majority of cases in part of the first period of growth. This is particularly true in the cool, less sunny outer coastal towns between Frederikshåb (61°59′) and Egedesminde (68°42′). In heated garden frames and in greenhouses the yield is of course larger, and experiments are also undertaken with yields other than those mentioned here. At the agricultural station at Upernaviârssuk (60°45′) experiments involving different races of vegetables are carried out, partly outdoors, partly in garden frames. The products are sold in Julianehåb. There has been a truck-gardening in Ivigtut (61°12′) for some time, and there are plans for the establishment of new ones. Growing of vegetables has otherwise only been for private use, to date.

Literature: RINK (1857); KORNERUP in the introduction *in* LANGE (1880, pp. XXXIV–XXXVI); M. P. PORSILD (1932, pp. 7–8); A. E. PORSILD (1945); THORV. SØRENSEN (1946, pp. 29–33); MOSEGAARD (1949); BJERGE (1962), and LOUIS JENSEN (1970).

Can be cultivated outdoors in the north as far as Umának on the west coast (70°40′) and Angmagssalik on the east coast (65°37′):

Anthriscus cerefolium (L.) HOFFM. (Chervil).—Can winter outdoors and flower the following year, thus even in Upernavik (72°47′), M. P. PORSILD (1932). Upernavik 1931: "in an open garden frame," F.J., C.

Brassica oleracea L. var. *sabellica* L. (Feathered Cabbage).—Can winter outdoors and flower the following year, M. P. PORSILD (1932). Profuse garden produce in Southwest Greenland.

Lactuca sativa L. var. *capitata* L. (Cabbage Lettuce).

Raphanus sativus L. var. *sativus* (Small Radish).—Cultivated in all gardens, in the North the first crop under glass. Two or three crops of radishes are grown in the inner part of Disko Bugt, at least one of them outdoors, M. P. PORSILD (1932). Upernavik 1931: specimens had survived the winter with no other covering than snow, and flowered the following summer (F.J.), M. P. PORILD (1932). Frequent garden produce in Southwest Greenland.

Can be cultivated in garden frames in the North as far as Umának; towards the south on the west coast these plants are started in frames and then planted outdoors:

Allium cepa L. (Onion).

Allium schoenoprasum L. (Chive).—Has run wild as the result of seed spreading at the meteorological station at Prins Christian Sund (ca. 60°02′ on the east coast), 1970; reported by N.J.

Beta vulgaris L. var. *conditiva* ALEF. (Garden beet).— Can be planted outdoors as far as Christianshåb, SØRENSEN (1946).

Brassica oleracea L. var. *botrytis* L. (Cauliflower).

Brassica oleracea L. var. *sabauda* L. (Savoy Cabbage).

Brassica rapa L. var. *silvestris* (LAM.) BRIGGS f. *praecox* (DC.) MANSF. (Turnip-like Rape).—Common garden produce in Southwest Greenland. A market vegetable from the sheep-farm in the south, JENSEN (1970).

Daucus carota L. ssp .*sativus* (HOFFM.) ARCANG. (Carrot).—Capable of surviving the winter out of doors and flowering in the following year, M. P. PORSILD (1932); can be sown as far as Christianshåb, SØRENSEN (1946). Frequent garden product in Southwest Greenland.

Lepidium sativum L. ssp. *sativum* (Garden Cress).—Cultivated under glass and on free land in all gardens and easily escaping, M. P. PORSILD (1932). Narssarssuaq 1961: run wild from a greenhouse, flowering in July, A.P., C; Egedesminde 1965: flowering and with unripe fruit in September, P.S.H., ! .

Petroselinum crispum (MILL.) NYM. (Parsley).—Capable of surviving the winter out of doors and flowering in the following year, M. P. PORSILD (1932).

Rheum rhaponticum L. (Garden Rhubarb).—Can be cultivated at Disko Bugt (M. P. PORSILD (1932). Ivigtut: flowers readily and is perfectly winter hardy, A. E. PORSILD (1945). Common garden produce in Southwest Greenland. Is grown extensively and is marketed, JENSEN (1970).

Spinacia oleracea L. (Spinach).—Has often run wild from heated greenhouses, can be cultivated out of doors in Julianehåb District, M. P. PORSILD (1932). Upernavik: wintered outdoors under snow (F.J.), M. P. PORSILD (1932).

Solanum tuberosum L. (Potato).—Can be grown favourably as far north as Godthåb, M. P. PORSILD (1932); in Julianehåb District early pre-germinated races, grown outdoors, are marketable, CHRISTENSEN (1953), JENSEN (1970). In regard to races, see JENSEN (1959). Common garden produce in Southwest Greenland.

Can be cultivated in garden frames as far north as Ivigtut (61°12′), and then planted outdoors:

Allium porrum L. (Leek).

Anethum graveolens L. (Dill).

Apium graveolens L. var. *rapaceum* (MILL.) GAUD. (Celery).

Brassica oleracea L. var. *capitata* L. f. *alba* (Cabbage).

Brassica oleracea L. var. *capitata* L. f. *elliptica* (Spring Cabbage).

Cichorium endivia L. (Endive).

Cucumis sativus L. (Cucumber).

Nasturtium officinale R. BR. (Watercress).—Ivigtut 1952: flowering in September, A.R., ! , probably cultivated originally.

Raphanus sativus L. var. *niger* KERNER (Spanish Radish).

3. Fruit Shrubs

Ribes vulgare LAM. (Red Currant).—Ivigtut 1942: common in most Ivigtut gardens, where it is said to bear fruit in good years, A. E. PORSILD (1945).

Rubus idaeus L. (Garden Raspberry).—Ivigtut 1883: a small shoot, on ballast, BERLIN (1884); 1937: planted in a garden near the outskirts of

the town; in September the canes bore immature fruit, but ripe fruit is produced in good seasons. Escapes had successfully invaded a nearby thicket of *Salix glauca*, POLUNIN (1943); 1938: LAGERKRANZ (1950); 1942: four-foot canes with unripe fruit were seen on September 2, A. E. PORSILD (1945); 1957: S.L., C; 1961: A.P., ! .

Sambucus nigra L. (Elder).—Ivigtut 1942: one bush has survived for many years, but has never flowered, A. E. PORSILD (1945).

4. Ornamental Plants

In the period 1961–1967 experiments were carried out at the agricultural station at Upernaviârssuk (60°45′) at Julianehåb for the purpose of developing winter hardy ornamental plants that were distributed among sheepholders and others interested in gardening. Forest Ranger P. BJERGE, who was in charge of the project, accordingly reported the species marked *.

Literature, see under 2. Vegetables.

Achillea ptarmica L.—Julianehåb, see p. 20.

* *Aconitum napellus* L. (*bicolor*).

* *Aconitum* × *cammarum* L.

Anemone nemorosa L.—Ivigtut 1961: cultivated in a garden, flowering in August, A.P., ! .

Anthriscus silvestris (L.) HOFFM.—Godthåb, see p. 64.

* *Aruncus dioicus* (WALT.) FERN. (*A. silvester* KOSTEL).

Bellis perennis L. cult.

* *Bergenia cordifolia* A. BR.

* *Brunnera macrophylla* (M.B.) JOHNST. (*Anchusa myosotidiflora* LEHM.).

Calendula officinalis L.—Southwest Greenland.

Centaurea cyanus L.—Sown in garden frames and greenhouses as a summer flower; the rosettes survive the winter here. It can escape to the garden, and in the southernmost part of Southwest Greenland apparently manages to survive the winter outdoors. Ivigtut: 1899: "in a waste place," J.L., C; 1961: run wild in a garden, A.P., !. Julianehåb 1961: seen cultivated, A.P., ! .
Narssaq 1961: seen cultivated, flowering in July, A.P., ! .

* *Centaurea montana* L.

Chrysanthemum alpinum L.—Arktisk Station at Godhavn: sown by M. P. PORSILD about 1908 together with a number of other European montane plants, some of which, like *C. a.* has reproduced itself by seeds in favourable years (see below), reported by A.E.P. 1967. 1943: A.E.P., C; 1956: "flowering in a *Vaccinium* heath near the station," T.W.B., C; 1961: S.L., ! .

Crocus sp.—Ivigtut 1942: A. E. PORSILD (1945).

* *Delphinium* sp.

Dianthus glacialis HAENKE.—Sown at Arktisk Station at Godhavn, reported by A.E.P.

* *Doronicum orientale* HOFFM.

* *Filipendula ulmaria* (L.) MAXIM.

Galium odoratum (L.) SCOP.—Ivigtut 1951: "cultivated in a garden," with unripe fruit in August, A.R., ! .

* *Geranium grandiflorum* EDGEW.

* *Geum balcanum* K. MALY.

* × *Heucherella tiarelloides* (LEMOINE) WEHRH.

Hyacinthus sp.—Ivigtut: A. E. PORSILD (1945).

Lupinus sp.—Arktisk Station at Godhavn 1931: sterile, M. P. PORSILD (1932). * *Lupinus* sp. ("Alaska-Lupin").

* *Lysimachia vulgaris* L.

Matthiola sp.—Southwest Greenland.

Melandrium rubrum (WEIG.) GARCKE—Ivigtut 1961: male plant cultivated in a garden, flowering in August, A.P., ! .

Myosotis alpestris SCHMIDT—Sown at Arktisk Station at Godhavn, reported by A.E.P.; 1961: reported by S.L.

Nemophila sp.—Southwest Greenland.

Paeonia sp.—Ivigtut 1942: one plant survived for many pears, but has never flowered, A. E. PORSILD (1945).

Papaver nudicaule L.—Sown and naturalized, see p. 48.

* *Polemonium coeruleum* L.

* *Polemonium reptans* L.

* *Polygonum bistorta* L.

Ranunculus acer L.—Godthåb, see p. 60.

* *Ranunculus aconitifolius* L. fl. pl.

Ranunculus repens L.—Godthåb, see p. 61.

Reseda odorata L.—Southwest Greenland.

Sedum rosea (L.) SCOP.—Godhavn: planted at Arktisk Station, M. P. PORSILD (1932); 1961: the same place, S.L., ! . Godthåb 1961: planted in the churchyard, A.P., ! ; Nanortalik 1969: in a garden, N.S., ! . Native in Greenland.

Syringa vulgaris L.—Ivigtut 1942: planted in several gardens, but freezes back in some years when no cover is provided, has never flowered; 1961: seen in a few places, A.P., ! .

Tanacetum vulgare L.—Julianehåb and Narssaq, see p. 25.

Tripleurospermum maritimum (L.) KOCH. ssp. *boreale* (HARTM.) A. PEDERS. Ivigtut, Frederikshåb, and Godthåb, see p. 25.

* *Trollius* sp.

Tropaeolum majus L.—Southwest Greenland.

Tulipa sp.—Ivigtut 1942: A. E. PORSILD (1945).

Veronica aphylla L.—Sown at Arktisk Station at Godhavn, reported by A.E.P.; LAGERKRANZ (1950); 1963: fruit-bearing, S.L., C.

Viola × *wittrockiana* GAMS.—Ivigtut 1942: self-sowing and winter hardy, A. E. PORSILD (1945).

5. Forest Trees

According to P. BJERGE, Forest Ranger, Upernâviarssuk, the trees of Danish or German origin that were planted in the 19th Century at Lichtenau, Sydprøven, Gammel Qagssiarssuk and Qíngua have died out or sheep have eaten them. On the initiative of Professor C. A. JØRGENSEN, the Royal Veterinary and Agricultural High School, and of Dr. agro. C. SYRACH-LARSEN, Head of the Arboretum, experiments with the cultivation of coniferous trees from the northern regions of Europe, Asia, and America were begun in 1949. The first seedlings were sown in Denmark and were planted out in 1953–1954. A large number of them were damaged during transportation. Since 1954 work on the development of these trees was taken over by the newly-established agricultural station in Upernaviârssuk, where the seeds are sown in frames and the seedlings are placed in nurseries, whereupon they are planted out later. To date up to 40,000 trees have been planted out from the station.

Apart from the transplantings mentioned below, more than half of which consist of *Larix sibirica*, the experiments have comprised *Picea engelmanni* (PARRY) ENGELM. and *Picea mariana* (MILL.) B.S.P., both American,

Betula neoalaskana SARG., *Populus tremula* L. × *tremuloides* MICHX. and the indigenous *Alnus crispa* (AIT.) PURSH. In the following list a few reports on garden trees are omitted.

Literature: O. E. OLSEN (1929); C. A. JØRGENSEN (1949); M. B. JØRGENSEN (1955); LOUIS JENSEN (1959); P. BJERGE (1962, 1970) and P. C. NIELSEN (1971).

Abies sibirica LEDEB.

Qanagssiagssat at Qíngua, Tunugdliarfik (ca. 61°13′): a Siberian race planted in 1953, 1954, and 1961, a total of ca. 100 individuals; $^1/_2$ m's growth in 8 years, BJERGE (1962); $^1/_2$–1 m tall in 1968, reported by P. BJERGE.

Fagus silvatica L.

North of Ivigtut 1961: a ca. 10 year old and ca. $2\,^1/_2$ m tall specimen shown by PER MUNCK, A.P., ! .

Larix sibirica LEDEB.

Qanagssiagssat at Qíngua, Tunugdliarfik (ca. 61°13′): a Siberian race planted in 1953, 1954, and 1961, a total of ca. 2,000 individuals; 2 m's growth in the course of 8 years, successful, BJERGE (1962).

Kûgssuak at Tasermiut (60°16′); ca. 23,000 planted 1959–1963 (BJERGE 1962 and reported); $^1/_2$–2 m tall in 1968, reported by P. BJERGE; $1\,^1/_2$–3 m tall, BJERGE (1970).

Upernaviârssuk (60°45′): planted in an enclosure 1960 and 1965, a total of ca. 700 individuals, growth satisfactory, BJERGE (1962 and reported); $^1/_2$–$1\,^1/_2$ m tall in 1968, reported by P. BJERGE.

Picea abies (L.) KARST.

Lichtenau at Agdluitsup kangerdlua (60°33′); planted 1846 by the Herrnhutters. No longer in existence.

Sydprøven at Agdluitsup kangerdlua (60°28′): planted by the Herrnhutters in 1846. Observed 1889: ca. 1 m tall HARTZ (1894 b); 1898: planted by ROSENVINGE; 1923: a specimen 3 m tall, OLSEN (1929). Among other things the plantation provided Sydprøven with Christmas trees in the early 1900's; it is gone today, reported by OVE BAK 1969.

Qíngua, Tunugdliarfik (61°14′): planted in 1892 and 1900 by RYDER, LÜTZEN and ROSENVINGE. Observed 1892 and 1900: a growth taller than a man, OLSEN (1929); 1948: 3 specimens left, M. B. JØRGENSEN (1955). Gone.

Gammel Qagssiarssuk at Igaliko Fjord (60°53′): planted by RYDER and LÜTZEN 1892. Observed 1927–1928: OLSEN (1929). Gone.

Qanagssiagssat at Qíngua, Tunugdliarfik (ca. 61°13′): planted by ROSENVINGE about 1900 ("ROSENVINGE's plantation"). Observed 1948: MOSEGAARD (1949); 1968: a 4–5 m tall tree left, reported by P. BJERGE, cp. photo from 1960 *in* BJERGE (1970) and NIELSEN (1971).

Tasiluk at Julianehåb (60°41′): a small growth planted in 1933 by PAVIA HØEGH; 1957: 1–2 m tall, but later on completely bit down by sheep, reported by P. BJERGE.

Qagssiarssuk at Tunugdliarfik (61°09′): 4,000 individuals of a Swedish race planted in 1953 and 1954; 80 cm's growth in the course of 7 years, BJERGE (1962).

Kangikitsoq fjord north of Augpilagtoq (60°19′): planted in the innermost part of the fjord a few years ago, still alive and 25 cm tall, reported by S. WALTENBURG 1969.

Picea glauca (MOENCH) Voss

Qíngua, Tunugdliarfik (61°14′): planted in 1892 and 1900 by RYDER, LÜTZEN, and ROSENVINGE. Observed 1927–1928: OLSEN (1929). Gone.

Gammel Qagssiarssuk at Igaliko Fjord (60°53′): planted in 1892 by RYDER, and LÜTZEN. Observed 1927–1928: OLSEN (1929). Gone.

North of Ivigtut 1961: a few, ca. $2^1/_2$ m tall specimens, A.P., ! .

Kûgssuak at Tasermiut (60°16′): an Alaskan race planted 1959–1963, a total of 6,200, BJERGE (1962 and reported).

Upernaviârssuk (60°45′): 100 individuals of an Alaskan race planted in 1960 in an enclosure, BJERGE (1962 and reported).

Picea glauca × *sitchensis*

Kûgssuak at Tasermiut (60°16′): an Alaskan race planted 1959–1961, a total of 2,500 individuals, BJERGE (1962 and reported).

Upernaviârssuk (60°75′): 100 individuals of an Alaskan race planted 1960 in an enclosure, BJERGE (1962 and reported).

Picea sitchensis (BONG.) CARR.

Qanagssiagssat at Qíngua, Tunugdliarfik (ca.61°13′): an Alaskan race planted 1953, 1954, and 1961, a total of 2,000 individuals; $^1/_2$ m's growth in the course of 8 years, BJERGE (1962 and reported).

Upernaviârssuk (60°45′): 100 individuals of an Alaskan race planted 1965, reported by P. BJERGE.

Pinus contorta LOUD.

Qanagssiagssat at Qíngua, Tunugdliarfik (ca. 60°16′): ca. 1,000 trees produced from Danish seed of unknown origin planted 1968, reported by P. BJERGE.

Pinus mugo TURRA

Qíngua, Tunugdliarfik (61°14′): planted in 1893 and 1900 by RYDER, LÜTZEN, and ROSENVINGE. Observed 1927–1928, OLSEN (1929). Gone.

Gammel Qagssiarssuk at Igaliko Fjord (60°53′): planted in 1892 by RYDER and LÜTZEN. Observed 1927–1928, OLSEN (1929). Gone.

North of Ivigtut 1961: *Pinus* sp. seen, A.P. "Most of *Pinus* north of Ivigtut belong to *Pinus mugo*," reported by C. A. JØRGENSEN 1963.

Pinus silvestris L.

Qíngua, Tunugdliarfik (61°14′): planted in 1892 and 1900 by RYDER, LÜTZEN, and ROSENVINGE. Observed 1948: 8 specimens left, M. B. JØRGENSEN (1955). Gone.

Qanagssiagssat at Qíngua, Tunugdliarfik (61°13′): planted about 1900 by ROSENVINGE. 1948: 10 specimens, $3^1/_2$ m tall trees, among them an individual cone-bearing, MOSEGAARD (1949); 1960: 10 trees, *cp.* photo in BJERGE (1970) and NIELSEN (1971), which shows the enclosed so-called "ROSENVINGE's plantation;" 1968: 7 individuals, 4–5 m trees remaining, reported by P. BJERGE. 1,500 trees of a Swedish race planted 1953; their growth stagnated, BJERGE (1962 and reported).

North of Ivigtut: planted about 1925. Observed 1942: ca. 20 specimens, A. E. PORSILD (1945).

Upernaviârssuk (60°45′): 100 individuals of a Swedish race planted in an enclosure, BJERGE (1962 and reported).

ACKNOWLEDGEMENTS

I am indebted for good help to the teachers in Greenland who sent me plants at my request, to Manager Louis Jensen and Forest Ranger Poul Bjerge, both Upernaviârssuk, for information about experimental work, to Professor Thorvald Sørensen for most comprehensive assistance in the preparation of my manuscript, to Professor A. Rosenkrantz and to Teacher Per Schiermacher Hansen for giving me access to their herbarium, to Assistant Curator Bent Fredskild, Amanuensis Carlo Hansen and Lektor Kjeld Holmen for many reports, to Professor E. Holtved for information on the use of Greenlandic place names, to Naturhistoriska Riksmuseet in Stockholm for sending me specimens.

My paper was translated from the Danish by Mrs. Karin Fennow.

Anfred Pedersen
Platanvej 15
DK-4760 Vordingborg

REFERENCES

BERGGREN, S., 1871: Bidrag till kännedom om fanerogamfloran vid Diskobugten och Auleitsivik-fjorden på Grønlands vestkyst. — *Öfvers. Kungl. Svenska Vetensk.-Akad. Forhandl.* 1871, nr. **7**.—Stockholm.

BERLIN, A., 1884: Kärlväxter, insamlade under den svenska ekspeditionen till Grønland 1883.—*Ibid.* 1884, nr. **7**.—Stockholm.

BJERGE, P., 1962: Skovplanterne i Grønland.—*Grønland*, 1962.—København.

— 1970: Skovbrug.—*Trap Danmark* **14** (5. udg.), Grønland.—København.

BOWDEN, W. M., 1957: Cytotaxonomy of section *Psammelymus* of the genus *Elymus*.—*Canad. Journ. of Botany* **35**.—Ottawa.

BROWN, R., 1868: Florula Discoana.—*Trans. Bot. Soc.* **9**.—Edinburgh.

BÖCHER, T. W., 1938: Biological distributional types in the flora of Greenland.—*Meddr Grønland* **106**, 2.

— 1948: Contributions to the flora and plant geography of West Greenland, I. *Selaginella rupestris* and *Sisyrinchium montanum*.—*Meddr Grønland* **147**, 3.

— 1950: Contributions to the flora and plant geography of West Greenland, II.—*Meddr Grønland* **147**, 7.

— 1952: Contributions to the flora and plant geography of West Greenland, III. Vascular plants collected or observed during the botanical expedition to West Greenland 1946.—*Meddr Grønland* **147**, 9.

— 1956: Area-limits and isolations of plants in relation to the physiography of the southern parts of Greenland.—*Meddr Grønland* **124**, 8.

— 1966: Experimental and cytological studies of plant species, X. *Sisyrinchium* with special reference to the Greenland representative.—*Botanisk Tidsskrift* **61**.

— K. HOLMEN & KNUD JAKOBSEN, 1957: A synoptical study of the Greenland flora.—*Meddr Grønland* **163**, 1.

— K. HOLMEN & KNUD JAKOBSEN 1968: The flora of Greenland.—København.

— and KAI LARSEN 1950: Chromosome numbers of some arctic or boreal flowering plants.—*Meddr Grønland* **147**, 6.

CHRISTENSEN, K. N., 1953: Grønlands jord under kultur.—*Grønland*, 1953.—København.

— 1953: Selvforsyning med kartofler i Grønland.—*Ibid.*

— 1955: Græsavl i Grønland.—*Ibid.* 1955.

DEVOLD, J. and P. F. SCHOLANDER, 1933: Flowering plants and ferns of Southeast Greenland.—*Skrifter om Svalbard og Ishavet*.—Oslo.

ELSLEY, J. E., 1967: Botany.—*In:* Report of the University of Newcastle upon Tyne Expedition to East Greenland, 1967, to Tugtilik and Kùngmiut.—The Exploration Society Univ. Newcastle.—Newcastle.

FREDSKILD, BENT, 1964: *Agrostis scabra* in Greenland.—*Botanisk Tidsskrift* **60**.—Kbh.

— 1965: To nye fund af *Sisyrinchium* på Grønland.—*Ibid.* **61**.

— 1969: Nordboplanter—vikingernes ukrudt.—*Naturens Verden*.—København.

FREDSKILD, BENT, 1969b: Nordboernes landnam under mikroskop.—*Fra Nationalmuseets Arbejdsmark*, 1969.—København.

GIESECKE, K. L., 1830: Greenland.—*In: Brewster's Edinburgh encyclopaedia.*—Edinburgh.

GLEASON, H., 1952: Illustrated flora of the Northeastern United States and adjacent Canada 1–3.—Lancaster Penn.

GRAAH, W. A., 1832: Undersøgelsesrejse til østkysten af Grønland.—København.

GRÖNTVED, JOHS., 1938: Additions to the flora of South West Greenland.—*Botanisk Tidsskrift* **44**.—København.

— 1942: The Pteridophyta and Spermatophyta of Iceland.—*Botany of Iceland* **4**.—København.

— 1954: *Galium boreale* L., new to Greenland.—*Botanisk Tidsskrift* **51**.—København.

HAGERUP, O., 1941: Nordiske kromosomtal, I.—*Botanisk Tidsskrift* **45**.—København.

HART, H. C., 1880: On the botany of the British Polar expedition of 1875–1876.—*Journal of Botany* **9**.—London.

HARTZ, N., 1894a: Fortegnelse over stednavne i Conspectus Florae Groenlandicae.—*Meddr Grønland* **3**, 3.

— 1894b: Botanisk rejseberetning fra Vestgrønland 1889 og 1890. *Meddr Grønland* **15**.

HEDBERG, I., 1967: Cytotaxonomic studies on *Anthoxanthum odoratum* L., s. lat. 2.—*Symb. Bot. Upsaliensis* **18**, nr. 5.—Uppsala.

HORNEMANN, J. W., 1821: Forsøg til en dansk oekonomisk plantelære. 3. edition.—København.

HULTÉN, E., 1950: Atlas over växternas utbredning i Norden.—Stockholm.

— 1958: The amphi-atlantic plants and their phytogeographical connections.—*Kungl. Svenska Vetensk.-Akad. Handl.* 4. serie, **7**, nr. 1.—Stockholm.

— 1962: The circumpolar plants 1.—*Ibid.* **8**, nr. 5.

— 1968: Flora of Alaska and Neighboring Territories.—Stanford Calif.

HYLANDER, N., 1953 and 1966: Nordisk kärlväxtflora 1–2.—Stockholm.

HÄMET-AHTI, LEENA, 1967: *Tripleurospermum* in the northern parts of Scandinavia, Finland and Russia.—*Acta Bot. Fennica* **75**.—Helsinki.

IVERSEN, JOHS., 1938: Et botanisk vidne om nordboernes vinlandsrejser.—*Naturhistorisk Tidende.*—København.

— 1952–53: Origin of the flora of Western Greenland in the light of pollen analysis.—*Oikos* **4**.—København.

JENSEN, LOUIS, 1959: Statens jordbrugsforsøgsvirksomhed i Grønland.—*In: Arbejdsplan for Statens Forsøg i Plantekultur* 1959–1960. Tillæg.—København.

— 1970: Havebrug.—*Trap Danmark* **14** (5. udg.), Grønland.—København.

JOHNSTRUP, F., (red.), 1878: Gieseckes mineralogiske rejse i Grønland.—København.

JONSELL, B., 1968: Studies in the North-West European species of *Rorippa* s. str.—*Symb. Bot. Upsaliensis* **19**, nr. 2.—Uppsala.

JØRGENSEN, C. A., 1949: Om skovplantning i Sydgrønland.—*Grønlandsposten*, vol. 8, p. 78–80.—Godthåb.

— THORVALD SØRENSEN & M. WESTERGAARD, 1958: The flowering plants of Greenland. A taxonomical and cytological survey.—*Kgl. Danske Vidensk. Selsk. Biol. Skrifter* **9**, nr. 4.—København.

JØRGENSEN, M. BLANGSTRUP, 1955: Træer på Grønland.—*Horticultura* **9**, nr. 2—København.

KRUUSE, CHR., 1906: List of Phanerogams and vascular Cryptogams found in the Angmagssalik district on the east coast of Greenland between 65°30′ and 66°20′ lat. N.—and . . . the coast 75°–66°20′ lat. N of East Greenland.—*Meddr Grønland* **30**.

LAGERKRANZ, J., 1950: Observations on the flora of West and East Greenland made during four voyages 1934, 1936, 1938 and 1946.—*Nova Acta Reg. Upsal.*, ser. IV, vol. **14**:6.—Uppsala.

LANGE, JOHAN, 1857: Oversigt over Grønlands planter.—See RINK 1857.

— 1880 and 1887: Conspectus Florae Groenlandicae I–II. (III, see ROSENVINGE 1892).—*Meddr Grønland* **3**.

LINDHARD, J., 1902: See OSTENFELD 1902.

LÖVE, A., 1944: The dioecious forms of *Rumex* subgenus *Acetosa* in Scandinavia.—*Botaniska Notiser* 1944.—Lund.

— 1970: Íslenzk Ferðaflóra—Reykjavik.

— and D. LÖVE, 1947: Studies on the origin of the Icelandic flora, 1. Cyto-ecological investigations on *Cakile*.—*Univ. Research Inst. Reykjavik. Departm. of Agricult. Reports*, ser. B, 2.—Reykjavik.

— and D. LÖVE, 1954: Cytotaxonomical studies on the Northern Bedstraw.—*The American Midland Naturalist* **52**.—Notre Dame, Indiana.

— and D. LÖVE, 1956: Conspectus of the Icelandic flora.—*Acta Horti Gotoburgensis* **20**.—Göteborg.

MOSEGAARD, H., 1949: Er der muligheder for havebrug på Grønland?—*Haven* 1949.—København.

NIELSEN, P. CHR., 1971: Jordbruget i Sydgrønland.—*Danmarks Natur* **10**.—København.

OLSEN, O. E., 1929: Graner i Grønland.—*Hedeselskabets Tidsskrift*.—Viborg.

OSTENFELD, C. H., 1902: Indslæbte planter fra Ivigtut i 1899.—*Botanisk Tidsskrift* **24**. (Report, page LII–LIV).—København.

— 1926: The flora of Greenland and its origin.—*Kgl. Danske Vidensk. Selsk. Biol. Medd.* **6**, 3.—København.

PEDERSEN, ANFRED, 1965: Adventivfloraen i Ivigtut og Grønnedal.—*Botanisk Tidsskrift* **61**.—København.

POLUNIN, N., 1938: Notes on a botanical journey in SW—Greenland 1937.—*Kew Bull.* **3**.—London.

— 1943: Contributions to the flora and phytogeography of South-Western Greenland: an enumeration of the vascular plants, with critical notes. —*Jour. Linn. Soc., Botany* **52**.—London.

— 1959: Circumpolar arctic flora.—Oxford.

PORSILD, A.E., 1945: A survey of the adventitious flora of Ivigtut in Southwest Greenland.—*The Canadian Field Naturalist* **59**.—Ottawa.

— 1957: Illustrated flora of the Canadian arctic archipelago.—*Natural Museum of Canada, Bull.* **146**, biological series 50.—Ottawa.

PORSILD, M. P., 1920: The flora of Disko Island and the adjacent coast of West Greenland.—*Meddr Grønland* **58**.

— 1930: Stray contributions to the flora of Greenland, 1. The flora of South Greenland 60°–62° n. lat.—*Meddr Grønland* **77**, 1.

— 1932: Alien plants and apophytes of Greenland.—*Meddr Grønland* **92**, 1.

— 1946: Stray contributions to the flora of Greenland, 17. The Greenland *Achillea*.—*Meddr Grønland* **134**, 4.

RAHN, KNUD, 1961: Cytological and taxonomical studies of *Galium boreale* and allied species.—*Botanisk Tidsskrift* **56**.—København.

RASMUSSEN, R., 1927: *Festuca rubra* L. var. *fraterculae* nov. var., a remarkable variety from the Faeroes.—*Nyt Magasin for Naturvid.* **66**.—Oslo.

RAUP, H. M., 1965: The flowering plants and ferns of the Mesters Vig district, Northeast Greenland.—*Meddr Grønland* **166**, 2.

RINK, H., 1857: Grønland, geografisk og statistisk beskrevet.—København.—Including: JOHAN LANGE: Oversigt over Grønlands planter (Naturhistorisk tillæg nr. 6).

ROSENVINGE, L. KOLDERUP, 1892: Andet tillæg til Grønlands Fanerogamer og Karsporeplanter.—*Meddr Grønland* **3**, 3.

— 1896: Det sydligste Grønlands vegetation.—*Meddr Grønland* **15**.

SAMUELSSON, G., 1943: Die Verbreitung der *Alchemilla*-Arten aus der *Vulgaris*-Gruppe in Nordeuropa.—*Acta Phytogeographica Suecica* **16**.—Uppsala.

SEIDENFADEN, G., 1933: The vascular plants of South-east Greenland 60°04′ to 64°30′ N. lat.—*Meddr Grønland* **106**, 3.

SIGURBJÖRNSSON, B., 1963: Taxonomy of the Icelandic *Elymus*.—*Univ. Research Inst. Reykjavik. Departm. of Agricult. Reports*, ser. B, 19.—Reykjavik.

STYLES, B. T., 1962: The taxonomy of *Polygonum aviculare* and its allies in Britain.—*Watsonia* **5**, nr. 4.—London.

SØRENSEN, THORVALD, 1946: Havebruget i Grønland.—*In:* ANTON PEDERSEN (editor): *Nordisk Illustreret Havebrugsleksikon* 3. udg. **2**.—København.

— A revision of the Greenland species of *Puccinellia* PARL.—*Meddr Grønland* **136**, 1.

VAHL, JENS, 1828–1836: Til Grønlands flora.—Manuscript in the Botanical Library of Copenhagen.

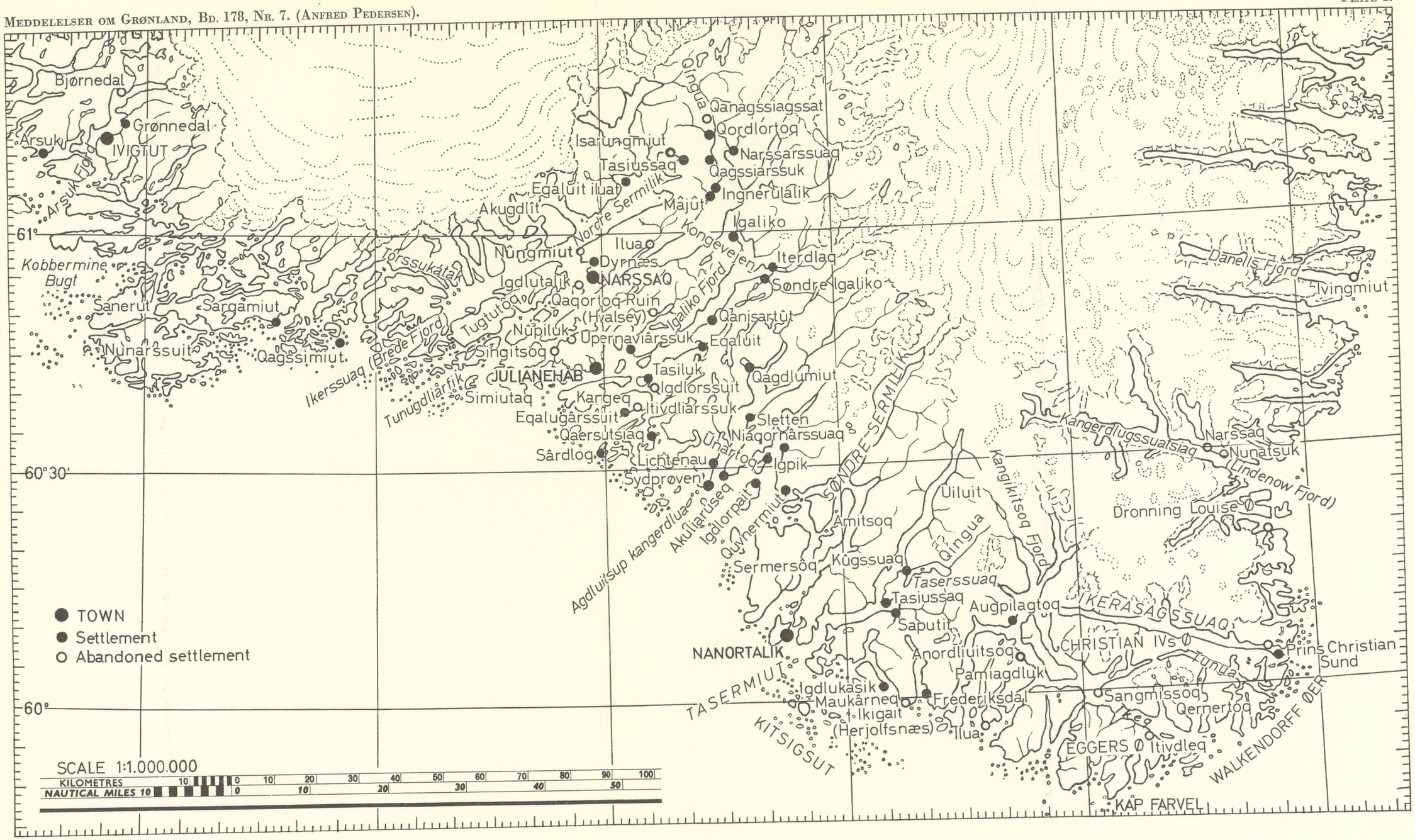
VANHÖFFEN, E., 1897: Botanische Ergebnisse der von der Gesellschaft für Erdkunde zu Berlin unter Leistung von Dr. V. DRYGALSKI ausg. Grönland Expedition. Published by J. ABROMEIT.—*Bibliotheca Botanica* **42**.—Stuttgart.

WARMING, EUGEN, 1888: Om Grønlands vegetation.—*Meddr Grønland* **12**.

— 1890: MORTEN WORMSKIOLD. En biografisk skizze med portræt.—*Videnskabelige Meddelelser fra Naturhistorisk Forening* i København 1889.—København.

WORMSKIOLD, M., 1813: See WARMING 1890.

Færdig fra trykkeriet den 14. april 1972.


Bjørnedal
Grønnedal
Arsuk
IVIGTUT
Arsuk Fj.
61°
Kobbermine Bugt
Sånerut
Sargamiut
Nunarssuit
Qagssimiut
Ikerssuaq (Brede Fjord)
Tunugdliarfik
Tugtutôq
Tôrssukátak
Akugdlît
Nûngmiut
Ilua
Dyrnæs
NARSSAQ
Igdlutalik
Qaqortoq-Ruin (Hvalsey)
Nûpilûk
Upernaviarssuk
Singitsôq
JULIANEHÅB
Simiutaq
Kangeq
Eqalugârssuit
Qaersutsiaq
Sârdlog
Lichtenau
Sydprøven
Akûliarûseq
Igdlorpait
Qûnermiut
Agdluitsup kangerdlua
Sermersôq
Kûgssuaq
NANORTALIK
TASERMIUT
KITSIGSUT
Ingua
Qanagssiagssat
Qordlortoq
Isartungmiut
Narssarssuaq
Tasiussaq
Qagssiarssuk
Egalûit iluat
Ingnerûlalik
Mâjût
Nordre Sermilik
Igaliko
Kongevejen
Iterdlaq
Søndre Igaliko
Igaliko Fjord
Qânisartût
Eqalûit
Tasiluk
Igdlorssuit
Qagdlumiut
Itivdliarssuk
Sletten
Niaqornarssuaq
Ûnârtoq
Igpik
SØNDRE SERMILIK
Amitsoq
Uiluit
Qingua
Kangilitsoq Fjord
Taserssuaq
Tasiussaq
Augpilagtoq
Saputit
Anordliuitsoq
Pamiagdluk
Igdlukasik
Maukârneq
Ikigait (Herjolfsnæs)
Frederiksdal
Ilua
Kangerdlugssuatsiaq
Narssaq
Nunatsuk
(Lindenow Fjord)
Dronning Louise Ø
Danells Fjord
Ivingmiut
KERASAGSSUAQ
CHRISTIAN IVs Ø
Tunua
Prins Christian Sund
Sangmissoq
Qernertoq
EGGERS Ø
Itivdleq
WALKENDORFF ØER
KAP FARVEL
60°30'
60°
TOWN
Settlement
Abandoned settlement
SCALE 1:1.000.000
KILOMETRES 10 0 10 20 30 40 50 60 70 80 90 100
NAUTICAL MILES 10 0 10 20 30 40 50