

CONTRIBUTIONS TO THE FLORA OF ALASKA

A. E. PORSILD

(Continued from p. 183)

ERIOPHORUM ANGUSTIFOLIUM Roth.—ALASKA RANGE: Richardson Highw., between Paxon and Summit, Nos. 519 and 520. HEAD OF CHITINA R.: *H. M. Laing*, No. 15. YUKON DELTA: Kotlik, No. 857. SEWARD PEN.: Port Clarence, Nos. 1416 and 1417; north coast, Buckland R., No. 1526. DIOMEDE ISL.: Nos. 1665 and 1666. Common in wet, marshy places throughout the region.

E. CALLITRIX Cham.—ALASKA RANGE: Mountains between Healy and Moody Creeks, 4000 feet elev., No. 250.

This rare and interesting plant has previously been reported but once from Alaska (Port Clarence, *Kjellm.*). The writer has seen no Alaska material in American herbaria.

E. MEDIUM Anders. in Bot. Not. **62** (1857). *E. Chamissonis* C. A. Mey. var. *albidum* sensu Fern., non Nylander. For discussion of synonymy see Hultén, Fl. Kamtch. **1**: 161 (1927).—CAPE LISBURNE (field notes). DIOMEDE ISL.: No. 1668.

E. OPACUM (Björnstr.) Fern.—FAIRBANKS: College, No. 219. ALASKA RANGE: BroadPass, No. 17. HEAD OF CHITINA R.: *H. M. Laing*, No. 14. According to field notes common throughout the interior.

E. RUSSEOLUM Fries. *E. Chamissonis* C. A. Mey.—YUKON DELTA: Kotlik, No. 858. NORTON SD.: Pastolik, No. 959. SEWARD PEN.: north coast, Buckland R., No. 1525. DIOMEDE ISL.: No. 1667. Occasional in silt by the margins of shallow ponds and lakes throughout the Bering Sea region.

E. SCHEUCHZERI Hoppe.—ALASKA RANGE: Richardson Highw., between Paxon and Summit, No. 521. KOKRINES MTS.: divide towards Melozitna R., No. 707. Common throughout the region.

E. VAGINATUM L.—SEWARD PEN.: south coast, Bluff, No. 1191; Port Clarence, No. 1418.

Exceedingly common in the Bering Sea region where, in the low coastal tundra, it is the dominant species; in the far interior its place is taken by *E. opacum*.

ELEOCHARIS ACICULARIS (L.) R. & S.—SEWARD PEN.: north coast Buckland R., Nos. 1527 and 1528 (the last is var. SUBMERSA (Hj. Nilss.) Svenson). Very common in lakes of the Buckland R. valley.

Not previously recorded from Alaska.

E. PALUSTRIS (L.) R. & S.—YUKON R.: Kokrines, No. 619. (var. TYPICA Rouy).

Not previously recorded from Alaska.

SCIRPUS CESPITOSUS L.—ALASKA RANGE: Broad Pass, No. 11. NORTON SD.: Pastolik, No. 960. SEWARD PEN.: Nome, No. 1315; north coast, Buckland R., No. 1529. Very common in low, coastal tundra of the Bering Sea region; in the interior perhaps limited to the mountains. Our plant is var. CALLOSUS Bigel.

KOBRESIA BELLARDI (All.) Degl.—NORTON SD.: Pastolik, No. 897; Qiqertariaq, No. 1038.

From Alaska previously known only from Port Clarence (*Kjellm.*). We found it quite common in dry turfy or gravelly places in the hills of the Bering Sea region.

K. CARICINA Willd. *K. bipartita* (All.) Dalla Torre.—ALASKA RANGE: Nenana Valley, Lignite, No. 282; mountains between Healy and Moody creeks, No. 252. NORTON SD.: Pastolik, No. 961. SEWARD PEN.: south coast, Bluff, No. 1192. Common in the higher mountains of the region and on the Bering Sea coast.

The species appears not to have been recorded previously from the interior of Alaska.

CAREX HEPBURNII Boott.—ALASKA RANGE: Richardson Highw. between Summit and McCarty, No. 399.

New to the interior of Alaska.

C. CAPITATA L.—ALASKA RANGE: Nenana Valley, Lignite, *J. P. Anderson*, No. 1133 (US).

Not previously recorded from the interior of Alaska, but collected on SEWARD PEN.: Nome, *Blaisdell*, 1900 (US).

C. INCURVA Lightf.—SEWARD PEN.: Port Clarence, No. 1422. Common on sandy sea-shores in the Bering Sea region.

C. CHORDORRHIZA Ehrh. apud L. fil.—SEWARD PEN.: north coast, Buckland R., No. 1545.

Not previously recorded from Alaska.

C. DISPERMA Dewey. *C. tenella* Schk.—FAIRBANKS: in a muskeg, No. 166.

Not previously recorded north of S. E. Alaska.

C. TENUIFLORA Wahlenb.—KOKRINES Mts.: *L. J. Palmer*, No. 1626 (US). SEWARD PEN.: north coast, Buckland R., No. 1532. KADIAK ISL.: *Harriman Exp.* No. 2375 (US).

Not previously recorded from northern or central Alaska.

C. LOLIACEA L.—ALASKA RANGE: Nenana Valley, Lignite, *J. P. Anderson*, July 20, 1931 (US).

New to the flora of Alaska.

C. LACHENALII Schk. *C. lagopina* Wahlenb.—ALASKA RANGE: Richardson Highw., between Paxon and Summit, No. 527; Paxon, No.

573. NORTON SD.: Pastolik, No. 972. SEWARD PEN.: north coast, Buckland R., Nos. 1530 and 1535. DIOMEDE ISL.: Nos. 1660 and 1661-A. Common in turfy places throughout the region.

C. GLAREOSA Wahlenb.—DIOMEDE ISL.: No. 1661 (var. AMPHIGENA Fern.). Common on sea-shores of the Bering Sea region.

C. NORVEGICA Willd.—NORTON SD.: Pastolik, No. 962. In northern Alaska previously known from Port Clarence (*Walpole*, No. 1688, (US)) and Kotzebue Sd.

C. BRUNNESCENS (Pers.) Poir.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 122. YUKON R.: Ft. Gibbon, *Heidenstam*, No. 157 (US). MATANUSKA: *J. P. Anderson*, No. 939 (US). SEWARD PEN.: north coast, Buckland R., No. 1533.

Not previously recorded from northern Alaska.

C. CANESCENS L.—FAIRBANKS: in a muskeg, No. 163; Goldstream Cr. and Pedro Dome, No. 123. ALASKA RANGE: Broad Pass, No. 13. SEWARD PEN.: Nome, No. 1318.

C. GYNOCRATES Wormskj.—FAIRBANKS: in a marl bog, No. 160. ALASKA RANGE: Nenana Valley, Lignite, No. 284; Richardson Highw., between Summit and McCarty, No. 405. NORTON SD.: Pastolik, Nos. 968 and 969.

New to the flora of Alaska.

C. MACLOVIANA d'Urv.—ALASKA RANGE: Richardson Highw., Paxon, No. 529.

Our material does not belong to var. *pachystachya* (Cham.) Kükenth. but agrees well with *C. macloviana* from Greenland and Eastern N. America.

C. PRATICOLA Rydb. *C. pratensis* Drej.—FAIRBANKS: College, No. 220. ALASKA RANGE: Nenana Valley, Healy, No. 329; Lignite, *J. P. Anderson*, No. 1136-B (US).

Not previously recorded from northern Alaska.

C. LEPTALEA Wahlenb.—FAIRBANKS: Nos. 167 and 168. KOKRINES Mts.: *B. Miller*, No. 1627 (US).

Not previously recorded from central or northern Alaska.

C. OBTUSATA Liljebl.—ALASKA RANGE: Nenana Valley, Healy, No. 330.

New to the flora of Alaska.

C. SUPINA Wahlenb.—ALASKA RANGE: Nenana Valley, Healy, No. 331; Richardson Highw., between Summit and McCarty, No. 400.

New to the flora of Alaska.

C. SCIRPOIDEA Michx.—KOKRINES Mts.: Nos. 659 and 660. SEWARD PEN.: south coast, Bluff, Nos. 1193 and 1194; Nome, *Thornton*, No. 448 (T). Common in turfy places throughout the region.

C. CONCINNA R. Br.—FAIRBANKS: No. 161. ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 404. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 17 and 18.

New to the flora of Alaska.

C. RUPESTRIS All.

Kjellman, in Vega Exp. Vetensk. Iakttag. **2**: 58 (1883), reports this species from Port Clarence and later authors have followed him. No one has since collected *C. rupestris* in Alaska, and its general distribution in North America strongly suggests that Kjellman's specimens, which he himself states were sterile, really might have been something else.

C. GLACIALIS Mackenzie. *C. pedata* Wahlenb.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 120.

Previously known from S. E. Alaska only.

C. GARBERI Fern. in RHODORA, **37**: 253 (1935). *C. Hassei* Am. auth. non Bailey, saltem quoad pl. Am. sept.—ALASKA RANGE: Nenana Valley, Lignite, No. 287. Common in the interior, in moist, calcareous places.

New to the flora of Alaska.

C. AUREA Nutt.—FAIRBANKS: No. 164. ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 403; Castner Glacier, No. 468.

New to the flora of Alaska.

C. VAGINATA Tausch. *C. saltuensis* Bailey.—FAIRBANKS: No. 165. SEWARD PEN.: Nome, *Thornton*, No. 82 (T); north coast, Buckland R., No. 1541.

In Alaska previously reported from Port Clarence only (*Kjellman*).

C. CAPILLARIS L.—FAIRBANKS: No. 162. KOKRINES MTS.: No. 661. Apparently common in mountains of the interior.

C. CAPILLARIS L. var. *NANA* (Cham.) Kükenth. in Engler, Pflanzenr. **4**, 20: 591 (1909). *C. nana* Cham. in Steudel, Synops. Cyper. 228 (1855).—ALASKA RANGE: Richardson Highw., Castner Glacier, on fresh moraines near the glacier tongue, No. 467.

Our material of this very striking variety well matches the description in Kükenthal, l. c. The leaves are flat, bright green, almost equalling the culm; the spikelets, numbering from 5 to 7, are from 0.8 to 1.5 cm. long and 10- to 20-flowered, the terminal is gynaeandrous, the lateral pistillate, often branching with one or two, 2- to 5-flowered spikelets from their base. New to the flora of Alaska.

C. WILLIAMSONII Britt. in Bull. N. Y. Bot. Gard. **2**: 159 (1901).—ALASKA RANGE: Richardson Highw., between Summit and McCarty,

No. 406. NORTON SD.: hills back of Pastolik, No. 900; Pastolik, dry tundra and ridges, No. 967; Qiqertariaq, No. 1041. SEWARD PEN.: north coast, Buckland R., No. 1542.

C. Williamsii is well separated from *C. capillaris* and its varieties by its narrow and almost subulate leaves and by its loose-flowered, erect spikelets and zigzag rachis. It flowers earlier than the latter and seldom, if ever, pioneers in open, virgin soil, but grows in wet sphagnum. Rare or occasional throughout the region in sphagnum bogs. New to the flora of Alaska.

C. MISANDRA R. Br.—SEWARD PEN.: south coast, Bluff, No. 1201; Nome, No. 1316. Common on the Bering Sea coast.

C. ATROFUSCA Schk. *C. ustulata* Wahlenb.—ALASKA RANGE: mts. between Healy and Moody Creeks, No. 251; Nenana Valley, Lignite, No. 288. NORTON SD.: hills back of Pastolik, No. 899; Pastolik, No. 970. SEWARD PEN.: south coast, Bluff, No. 1197. Thus far recorded only from Port Clarence (*Kjellman* l. c. 56).

C. RARIFLORA (Wahlenb.) Sm.—YUKON DELTA: Kotlik, Nos. 860 and 861. SEWARD PEN.: Port Clarence, No. 1423; north coast, Buckland R., No. 1543. Common everywhere in wet places on the Bering Sea coast.

C. LIMOSA L.—ALASKA RANGE: Richardson Hwy., between Summit and Paxson, No. 522.

New to the flora of Alaska.

C. PAUPERCULA Michx. *C. magellanica* auth. non Lam.—SEWARD PEN.: north coast, Buckland R., No. 1540.

Mackenzie in N. Am. Fl. 18, 6: 351 (1935) reserves the name *C. magellanica* for the South American plant, following Fernald in RHODORA, 8: 74–75 (1906). Not previously recorded from Alaska.

C. ANGARAE Steud. Synops. Cyper. 190 (1855), based upon *Carex* No. 88, Gmel. Fl. Sib. 1: 146, tab. 31, fig. 1 (1747). *C. VahlII* Schk. var. *inferalpina* sensu Fernald in RHODORA, 35: 220–223, 398, tab. 248 figs. 3, 4, 8 and 9 (1933), non Wahlenb.—FAIRBANKS: Nos. 170, 170-A and 175; College, No. 221. ALASKA RANGE: Broad Pass, No. 15; Nenana Valley, Healy, No. 328. KOKRINES MTS.: divide towards Melozitna R., No. 712. NORTON SD.: hills back of Pastolik, No. 898; hills back of Unalaklet, No. 1138; Golofnin, L. J. Palmer No. 1059 (US). SEWARD PEN.: Nome, July 6, 1900, Flett (US). Very common throughout the interior, in moist woods and muskegs, occasional in thickets of the Bering Sea region north to Seward Pen.

Following Fernald, the above material should all be named *C. VahlII* Schk. var. *inferalpina* Wahlenb. which, as pointed out by him, is abundantly distinct from typical *C. VahlII*. The latter in its distribution is truly arctic-alpine and, in America, is limited to the north-

east; whereas the plant taken by Fernald as var. *inferalpina* is a plant of cold, moist woods, barely reaching north to the tree limit, across the continent from the Strait of Belle Isle to Alaska.

To the writer it seems very doubtful, however, if the American plant discussed by Fernald, l. c., under var. *inferalpina* can be satisfactorily identified with Wahlenberg's plant. Wahlenberg,¹ under *C. alpina* Sw. (*C. VahlII* Schk.) says: "var. *inferalpina*: capsulis oblongis laevibus, spica terminali saepe mascula." In no form of *C. VahlII* known to the writer, including var. *inferalpina* of Fernald and var. *Stevenii* (Holm),² could the perigynia very well be described as "oblongis laevibus," nor have any been seen in which the terminal spikelet is male. As Fernald points out modern European authors have ignored var. *inferalpina*, but in this connection it may be significant to observe that Neuman,³ in a note under *C. alpina* var. *inferalpina*, adds: "anses såsom synonym med *C. holostoma* Drej.",⁴ whereas Steudel, l. c. 203, definitely accepted *C. VahlII* β *inferalpina* Wahlenb. as a synonym of *C. holostoma*. Now, in that species the perigynia may well be described as "oblongis laevibus" and the terminal spikelet is always male. *C. holostoma* was described by Drejer, *Revisio Critica Caricum*, 29 (1841), from material collected in Greenland by Jens Vahl. Drejer (l. c. 30) gives as synonym "*C. VahlII* β *inferalpina* Wahlenb. fl. lapp. p. 241" and remarks: "planta nostra groenlandica exacte cum descriptione cl. Wahlenbergii congruit—." Twenty years later *C. holostoma* was discovered in Norwegian Lapland and in late years it has turned up also in a number of places in arctic Sweden and Finland. Kükenthal and some others have disposed of Wahlenberg's plant as a trivial form of *C. alpina*. Nygren in *Sv. Bot. Tidskr.*, 30: 138 (1936), suggests that Drejer had not seen specimens of var. *inferalpina*, determined by Wahlenberg himself, which he claims "are nothing but subalpine, exceptionally tall specimens of the ordinary *C. Halleri*."⁵ The specimens seen by Kükenthal and Nygren, then, apparently are the cause of the misunderstanding of the true character of var. *inferalpina* but they do not prove that Wahlenberg based his description of var. *inferalpina* on those particular specimens; and,

¹ Fl. Lapp. 241 (1812).

² *CAREX ANGARAE* Steud. var. *Stevenii* (Holm), n. comb. *C. Stevenii* Holm in *Am. Journ. Sci.*, ser. 4, 16: 21 & 27 (1903); *C. VahlII* Schk. var. *Stevenii* (Holm.) Fern. in *RHODORA*, 35: 223, 398, tab. 248, figs. 5 & 10 (1933).

³ *Sveriges Flora*, 699 (1901).

⁴ "is regarded as synonym of *C. holostoma* Drej."

⁵ The writer's translation of Nygren's Swedish text.

since he did not designate a type, we certainly cannot disregard his quite unequivocal description, especially because typical *C. holostoma* has since been discovered in a number of places in arctic Scandinavia.

Kreczetovicz¹ recently has taken up Steudel's name, with *C. alpina* Sw. var. *inferalpina* Wahlenb. and *C. VahlII* C. A. Mey. non Schk. as synonyms. The American plant on the whole agrees with Gmelin's description and rather crude plate (l. c.) as well as with the more concise one of Steudel, whereas Kreczetovicz's recent and more detailed description is at variance chiefly when he states that the spikelets are 1.5–2.0 cm. long, 0.6–0.8 cm. wide. These measurements are so far in discord with those given by other writers (Kükenthal, l. c., for *C. alpina* says 5 to 7 mm long) and with measurements of actual specimens that one cannot but feel that Kreczetovicz's figures must be due to a typographical error. On Herb. Fl. Ross. No. 2387A (*Carex alpina* Sw. var. *inferalpina* Wahl.) cited by Kreczetovicz, l. c., a sheet of which is in the Gray Herbarium, the entire inflorescence is about 12 mm. long and the individual spikelets 5 to 6 mm. long.

Carex angarae was described from Angara R., near Lake Baikal, Siberia and according to Kreczetovicz is common in moist forests and thickets, peat bogs and swampy meadows from arctic Europe to Ochotsk Sea. With the American distribution added it thus becomes circumpolar.

C. STYLOSA C. A. Mey.—NORTON SD.: hills back of Pastolik, No. 901. SEWARD PEN.: south coast, Bluff, No. 1200; Port Clarence, Nos. 1419-A and 1421.

Not previously recorded from the mainland of Alaska.

C. PODOCARPA R. Br. in Richards. App. Narrative Franklin Journ. 751 (1824); Hook. Fl. Bor.-Am. 2: 224, tab. 224 (1840); Kjellm. Vega Exp. 2: 56 (1883). *C. Tolmiei* Boott in Hook. Fl. Bor.-Am. 2: 224 (1840); ? *C. montanensis* Bailey in Bot. Gaz. 17: 152 (1892).—ALASKA RANGE: Richardson Highw., between Paxon and Summit, Nos. 523 and 525. KOKRINES MTS.: No. 662; divide towards Melozitna R., No. 715. SEWARD PEN.: Nome, No. 1317; Port Clarence, Teller, Walpole, No. 1570-C (US); Imuvruk Basin, Walpole, No. 1732 (US).

The above material, with more numerous specimens from mountains west of the Mackenzie Delta, well matches the excellent description in Kükenthal, l. c. 411, and also Brown's brief but lucid diagnosis which reads: "370 *C. podocarpa*: spica mascula solitaria, femineis binis pendulis oblongis, stigmatibus tribus, fructibus ellipticis

¹ Fl. U. R. S. S. 3: 270 (1935).

brevissime rostellatis integris laevibus acheniisque pedicellatis, foliis caulinis inferioribus brevioribus lanceolatis. *Brown, M. S.*" The very short and firm, almost bract-like lower cauline leaves are very conspicuous, especially in mature specimens. Hooker's plate is rather poor; it shows a very young immature plant.

Although, as pointed out by Hultén, *Fl. Aleut.* 115 (1936), *C. podocarpa* has been much misunderstood, it is a most striking species, in our region at least, not easily confused with anything else. It is a characteristic species of moist, alpine meadows where the snow remains late, in mountains of Alaska and the Yukon Territory, east to the Mackenzie. It forms large, very compact tussocks. The leaves are fresh green, very broad, firm and flat, in age conspicuously tipped with black; the spikelets are long-peduncled, drooping, and from a distance look coal-black.

To the writer it has always seemed strange that Richardson failed to collect *C. atrofusca*, although it is one of the most common sedges of arctic northwest Canada, and it is possible that he himself, in the field, confused it with *C. podocarpa*.

C. kokrinensis, n. sp. (TAB. 551, FIG. 1-3). Laxe caespitosa stolonibus brevissimis; culmo phyllopodico 25-35 cm. alto, erecto, gracili et debili, aliquantulum complanato, foliis superante; vaginis inferiore parte purpureis; foliis planis, circa 2.0 mm. latis; spiculis cylindraceis 10-20 mm. longis, erectis, plerumque 4, terminale gynocandra, lateralibus femineis (apice plerumque paucis floribus masculinis) tribus superioribus breviter pedunculatis dense aggregatis, reliquis, si sint, remotiusculis pedunculo dimidio brevioribus quam spiculo; bractea superiore inflorescentiam aequante, inferiore eam multo superante; squamis atro-fuscis, lanceolatis acuminatis quam perigynia semper angustioribus, brevioribusque vel ea aequantibus, nervo dorsali apicem attingente, conspicuo subviridi; perigyniis ovato-orbiculatis plano-convexis membranaceis, sessilibus enerviis cineraceo-subviridibus laevibus non papillois; rostro brevissimo subintegro; stigmatibus 2.

Loosely caespitose with very short rootstocks; culm phyllopodic, 25 to 35 cm. high, erect, slender and weak, somewhat flattened, slightly exceeding the leaves; sheaths purplish at the base; leaves flat, about 2 mm. wide; spikelets cylindrical, 10 to 20 mm. long, erect, usually four, the terminal gynaeceandrous, the lateral pistillate but generally with a few male flowers near the summit, the upper three short-peduncled, closely aggregated, the fifth when present somewhat distant on a peduncle half as long as the spikelet; uppermost bract equalling, the lower much exceeding the inflorescence; scales black, lanceolate, acuminate, shorter or almost equalling, but distinctly narrower than

the perigynia, with a conspicuous greenish midvein reaching to the apex; perigynia ovate-orbicular, flattened on one side, membranaceous, sessile, nerveless, pale grayish-green, smooth, not papillose; beak very short, sub-entire; stigmas 2.—TYPE: KOKRINES MOUNTAINS: divide towards Melozitna River, in moist alpine meadows, *A. E. & R. T. Porsild*, No. 711. Known thus far only from the type locality.

Apparently a well marked species of the sub-section *Vulgares* Asch., perhaps nearest related to *C. Hindsii* C. B. Clarke.

C. NESOPHILA Holm.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 121. ALASKA RANGE: Broad Pass, Nos. 15 and 16. NORTON SD.: Qigertariaq, No. 1073. SEWARD PEN.: north coast, Buckland R., No. 1534. DIOMEDE ISL.: No. 1664. Rare or occasional on moist, gravelly mountain slopes.

C. GMELINI Hook. & Arn.—NORTON SD.: Pastolik, No. 964; St. Michaels, No. 1028; Qigertariaq, Nos. 1039 and 1076. SEWARD PEN.: Port Clarence, No. 1419.

C. Gmelini is common in the Norton Sd. region where it is a characteristic plant in stabilized dunes, associating here with *Poa eminens* and *Elymus arenarius*. Hultén, Fl. Kamtch. 1: 192 (1927), observes that the species in Kamtchatka is also found inland. We never saw it except near the seacoast. Hooker, Fl. Bor.-Am. 2: 216, reports *C. Gmelini* as having been collected at Kotzebue Sd. by Beechey; otherwise thus far it has not been recorded from north of the Aleutian chain and the Pribilof Islands.

C. ATROSQUAMA Mackenzie in Proc. Biol. Soc. Wash. 25: 51 (1912).—ALASKA RANGE: Broad Pass, Nos. 12 and 14; Richardson Highw., between Paxon and Summit, No. 526. Moist, peaty soil in *Picea mariana* muskeg.

New to the flora of Alaska.

C. ALBO-NIGRA Mackenzie in Rydb. Fl. Rocky Mts. 137 (1917).—ALASKA RANGE: Nenana Valley, Healy, No. 327.

New to the flora of Alaska.

C. CONCOLOR R. Br.—SEWARD PEN.: Port Clarence, No. 1420.

Apparently not common in Alaska.

C. AQUATILIS Wahlenb.—FAIRBANKS: Nos. 172 and 174. ALASKA RANGE: Nenana Valley, Lignite, No. 283; Richardson Highw., between Paxon and Summit, No. 528. YUKON R.: Kokrines, No. 621. KOKRINES MTS.: divide towards Melozitna R., No. 710. SEWARD PEN.: north coast, Buckland R., Nos. 1538-B and 1539. Common in wet places throughout the region.

C. AQUATILIS Wahlenb. var. *STANS* Drej.—YUKON DELTA: Kotlik,

No. 862. DIOMEDE ISL.: No. 1663. Occasional in low tundra of the Bering Sea region.

C. LUGENS Holm in Am. Journ. Sci. **4**, 10: 269 (1900) fig. A-D on p. 268. ? *C. consimilis* Holm; ? *C. yukonensis* Britt. in Bull. N. Y. Bot. Gard. **2**, 6: 159 (1901).—FAIRBANKS: *L. J. Palmer*, No. 242 (US). YUKON R.: Ruby, *Murie*, No. 21 (US); Marshall, No. 843. NORTON SD.: Pastolik, Nos. 965 and 971; Qiqertariaq, Nos. 1040, 1074 and 1075; Unalaklet, No. 1137. SEWARD PEN.: south coast, Bluff, No. 1195; Port Clarence, No. 1424; north coast, Buckland R., Nos. 1531 and 1538-A.

The above material fairly well matches the description of this little known *Carex*. A sheet said to be part of the type number (Kussilof Isl., Alaska, *Walter H. Evans*, No. 725 (Can)), like most of ours, has a few male flowers at the summit of the lateral spikelets. *C. lugens* is a characteristic species of luxuriant, climax-tundra throughout Alaska and Yukon Territory east to the Mackenzie. It forms large, firm tussocks and seems best developed near the northern edge of the coniferous forest, but is not truly arctic.

C. LYNGBYEI Hornem.—YUKON DELTA: Kotlik, No. 863. NUNIVAK ISL.: *B. Miller*, No. 197-C (US). SEWARD PEN.: Nome, THORNTON, No. 362 (US).

In the Bering Sound region apparently rare north of the Yukon delta but has been recorded from Port Clarence (*Kjellman*).

C. MICROGLOCHIN Wahlenb.—ALASKA RANGE: Nenana Valley, Lignite, No. 286, *J. P. Anderson*, No. 1131 (US). SEWARD PEN.: south coast, Bluff, No. 1196; Port Clarence, Teller, *Walpole*, No. 1962 (US). Rare or occasional throughout the region.

C. PHYSOCARPA Presl.—FAIRBANKS: No. 173. ALASKA RANGE: Nenana Valley, Lignite, No. 281; Richardson Highw., between Summit and McCarty, No. 401; between Paxson and Summit, Nos. 524 and 530. KOKRINES MTS.: divide towards Melozitna R., No. 708. SEWARD PEN.: north coast, Kiwalik R., No. 1458. Appears to be common throughout the region but not previously recorded north of the Pribilof Islands.

C. MEMBRANACEA Hook. *C. membranopacta* Bailey.—See Mackenzie in N. Am. Fl. **18**: 454 (1935).—FAIRBANKS: No. 169. ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 402. KOKRINES MTS.: divide towards Melozitna R., No. 714. NORTON SD.: hills back of Unalaklet, No. 1139. SEWARD PEN.: south coast, Bluff, Nos. 1198 and 1199. Apparently common throughout the region, but rare in the lowlands of the interior.

C. ROTUNDATA Wahlenb.—NORTON SD.: Pastolik, Nos. 963 and 966; St. Michaels, *Fr. Funston*, No. 229 (G, US); Golofnin B., No.

1172. SEWARD PEN.: Nome, *Flett*, 1900 (US); north coast, Buckland R., Nos. 1536 and 1537. Common on the Bering Sea coast.

C. melozitnensis, n. sp. (TAB. 551, FIG. 4). Rhizomate brevis stolones longos tenues emittente (*C. chordorrhizae* simulante); culmis 30–40 cm. altis gracilibus laevibus obtusangularibus phyllopodiceis; foliis culmo paullo brevioribus angustis laevibus valde involutis vel conduplicatis; vaginis pallidis membranaceis; spiculis 3–5, terminalibus 2–4 masculis, subclavatis-linearibus, subsessilibus; unica feminea remotiuscula breviter pedunculata erecta ca. 15 mm. longa, cylindrica, bractea foliosa inflorescentiam superante subtenta; squamis ovatis violaceis, marginibus albis hyalinis, nervo dorsali pallido; perigyniis (immaturis) divaricatis ovalibus inflatis pluri-nervosis laevibus subnitidis flavescentibus, apice in rostrum conicum breve, obscure bidentatum, subito contractis; stigmatibus 3.

Rootstocks short, emitting long, slender and scaly stolons (like those of *C. chordorrhiza*); the culms 30–40 cm. high, slender and smooth with rounded angles, phyllopodic; leaves somewhat shorter than the culms, narrow, smooth, strongly involute or conduplicate; sheaths pale, membranaceous; spikelets 3 to 5, the terminal 2 to 4 staminate, subclavate-linear, subsessile; the single pistillate spikelet remote, short-peduncled, erect, about 15 mm. long, cylindrical, subtended by a leafy bract which slightly exceeds the inflorescence; scales ovate, purplish-brown with white hyaline margins and a pale midvein; perigynia spreading, ovoid, inflated, strongly nerved, smooth and somewhat shiny, greenish straw-coloured, abruptly contracted into a short, conical obscurely bidentate beak; (achenes immature); stigmas 3.—KOKRINES MOUNTAINS: divide towards Melozitna River, growing in shallow water in low wet meadows, June 23 to July 5, 1926, *A. E. & R. T. Porsild*, No. 713 (TYPE). Thus far only known from the type locality where it was very abundant.

A curious species of the *Physocarpae* Drejer of subsect. *Vesicariae* Tuckerm., in habit somewhat similar to *C. rotundata* Wahlenb. but amply separated from it by the long, slender stolons and by the number of staminate spikelets.

C. ROSTRATA Stokes.—FAIRBANKS: Goldstream Cr. and Pedro Dome, Nos. 119 and 119-A; Fairbanks, No. 171. ALASKA RANGE: Richardson Highw., between Summit and McCarty (field notes). YUKON R.: Kokrines, No. 620; Holy Cross, No. 823. SEWARD PEN.: North coast, Buckland R., No. 1544. Common on slough and lake margins throughout the interior, noted on the Yukon River almost to its delta, rare in the Bering Sea region, north to Kotzebue Sound.

CALLA PALUSTRIS L.—FAIRBANKS: Smith Lake near College (noted). YUKON R.: Ft. Gibbon, *Heidemann*, No. 73 (US). Occasional in wet marshy places in the Fairbanks region and on the lower Tanana River.

New to the flora of Alaska.

JUNCUS ALBESCENS (Lange) Fern. See RHODORA 26: 202 (1924).—ALASKA RANGE: Mts. between Healy and Moody Cr., No. 246; Nenana Valley, Lignite, No. 290. HEAD OF CHITINA R.: *H. M. Laing*, No. 22. SEWARD PEN.: Port Clarence, *Walpole*, No. 1938 (G). Apparently common in moist, calcareous soil in mountains of the interior, less common in the Bering Sea region.

New to the flora of northern Alaska. *Juncus albescens* is certainly very closely related to the Eurasian *J. triglumis* L., but, even in Alaska, where the two species occur together, they may easily be distinguished. To the distinguishing characters given by Fernald, l. c., might be added that the seeds of *J. albescens*, in addition to being smaller than those of *J. triglumis*, are smooth and of a darker brown, whereas in the latter they are somewhat rough and grayish.

Most earlier records of *J. triglumis* from Alaska should be referred to this species.

J. BALTICUS Willd. var. *HAENKEI* (E. Mey.) Buch.—FAIRBANKS: No. 177. ALASKA RANGE: Broad Pass, No. 19; Nenana Valley, Lignite, No. 291; Richardson Highw., Castner Glacier, No. 471. YUKON R.: Kokrines, No. 622. SEWARD PEN.: south coast, Bluff, No. 1204; Nome, No. 1321; Port Clarence, No. 1426. Common on sandy lake shores and river banks throughout the region.

J. BIGLUMIS L.—ALASKA RANGE: Broad Pass, Nos. 18 and 20; Mts. between Healy and Moody Cr., No. 247; Richardson Highw., between Summit and McCarty, No. 407. KOKRINES MTS.: No. 663. SEWARD PEN.: south coast, Bluff, No. 1203; north coast, Buckland R., No. 1546. DIOMEDE ISL.: Nos. 1674 and 1675. Common on wet cliffs and on moist clayey margins of small ponds throughout the region.

J. BUFONIUS L.—FAIRBANKS: College, No. 217 (near a cow pasture).

J. CASTANEUS Sm.—FAIRBANKS: No. 176. ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 409; Castner Glacier, Nos. 469 and 470; between Paxon and Summit, No. 534. KOKRINES MTS.: divide towards Melozitna R., No. 717. NORTON SD.: hills back of Unalaklet, No. 1140. SEWARD PEN.: Nome, 1320; Port Clarence, No. 1427; north coast, Kiwalik R., No. 1459; Buckland R., Nos. 1547 and 1548. Common in alluvial deposits throughout the region; but perhaps as a rule restricted to calcareous soils.

J. NODOSUS L. var. *GENUINUS* Engelm.—YUKON R.: Kokrines, No. 636 (near the hot springs).

New to the flora of Alaska.

J. TRIGLUMIS L.—ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 408. NORTON SD.: Pastolik, Nos. 973 and 974. SEWARD PEN.: south coast, Bluff, No. 1202.

In Alaska *J. triglumis* appears to be less common than *J. albescens*. It is the more arctic-alpine of the two and along the north coast of Alaska reaches a short distance east of the Mackenzie where *J. albescens* is absent. *J. triglumis*, unlike *J. albescens*, is not limited to calcareous soils. As noted above most earlier records of *J. triglumis* from Alaska should be referred to *J. albescens*.

LUZULA ARCUATA Wahlenb.—SEWARD PEN.: Port Clarence, *Harri-man, Alaska Exp.* No. 1931 (G); Nome, *Thornton*, No. 210 (US).

L. arcuata is a Eurasian species and barely enters western North America. Samuelsson's statement, in Hultén Fl. Kamtch. 1: 224 (1927) and idem. Fl. Aleut. 125 (1937), "America: from Alaska to Ellesmereland and Labrador and in the Canadian Rocky Mts. W. and E. Greenland" is certainly erroneous. All *L. "arcuata"* east of the Rocky Mts. no doubt should be referred to *L. confusa* Lindebl.

L. CONFUSA Lindebl. *L. hyperborea* R. Br. in part.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 125. ALASKA RANGE: Mountains between Healy and Moody Cr., Nos. 248 and 249; Nenana Valley, Healy, No. 332. SEWARD PEN.: north coast, Buckland R., No. 1550. DIOMEDE ISL.: Nos. 1672 and 1673. Common on the Bering Sea coast; in the interior apparently restricted to high mountains.

L. JAPONICA Buch.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 126; College, No. 218; Fairbanks, *L. J. Palmer*, No. 245 (US); Ft. Gibbon (near Junction of Tanana R.), *Heidemann*, No. 5 (US). ALASKA RANGE: Broad Pass, No. 22.

Rare or occasional in open, dry *Picea glauca* woods of Central Alaska and the mountains of Yukon Territory. The somewhat questionable record of *L. pilosa* from Kotzebue Sd. in Ledeb. Fl. Ross. 4: 215, erroneously credited to "Beechey apud Hook.," and copied from Ledebour by Rothrock and other writers, no doubt refers to the present species. The material in our collection matches specimens of *L. japonica* from eastern Asia and differs from *L. saltuensis* Fern. of eastern North America by the caespitose habit, shorter and narrower leaves and much shorter peduncles of the inflorescence. It is new to the flora of Alaska.

L. MULTIFLORA s. l.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 127. ALASKA RANGE: Broad Pass, No. 21; Richardson Highw., between Paxon and Summit, No. 531. YUKON DELTA: Marshall, No. 845-A; Kotlik, No. 859. NORTON SD.: Pastolik, No. 975; Qiqertariaq, No. 1042. SEWARD PEN.: Nome, No. 1319.

The above material belongs to a form of the polymorphic *L. multi-*

flora, which is common across sub-arctic North America, from Alaska at least to Hudson Bay. By Professor Samuelsson it has been tentatively segregated as a possibly undescribed species. It may prove to be merely *L. multiflora* (Retz.) Lej. var. *frigida* (Buch.) Sam. It is common throughout the region in dry tundra and reaches north to the edge of the timber.

L. NIVALIS (Laest.) Beurl.¹—DIOMEDE ISL.: No. 1671.

In Alaska known thus far only from Diomed Islands.

L. NIVALIS (Laest.) Beurl. var. *LATIFOLIA* (Kjellm.) Samuelsson.—YUKON DELTA: Marshall, No. 845. NORTON SD.: Pastolik, No. 902. SEWARD PEN.: Nome, *Thornton*, No. 80 (T); Port Clarence, *Walpole*, No. 1963 (G); north coast, Buckland R., No. 1549. DIOMEDE ISL.: Nos. 1669 and 1670. Very common in the Bering Sea region.

L. PARVIFLORA (Ehrh.) Desv.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 124. ALASKA RANGE: Richardson Hwy., between Paxon and Summit, No. 533. KOKRINES MTS.: divide towards Melozitna R., No. 716. SEWARD PEN.: Nome, *Blaisdell*, 1900 (US). Apparently common throughout the interior in open woods and in willow thickets.

L. SPICATA (L.) DC.—ALASKA RANGE: Richardson Hwy., between Paxon and Summit, No. 532.

Common in the Alaska range but rare or absent in the Bering Sea region. Hultén (1937) is hardly correct in giving the distribution of this from "Arctic coast of Alaska to Baffin Island."

L. WAHLENBERGII Rupr. *L. spadicea* var. *Wahlenbergii* Buch.—ALASKA RANGE: Broad Pass (field notes). YUKON DELTA: Marshall, No. 844; Kotlik, No. 864. NORTON SD.: Pastolik, No. 976; *Miller*, Nos. 8-C and 10-C (as *L. arcuata*) (US); St. Michaels, *Fr. Funston*, No. 228 (G). SEWARD PEN.: Port Clarence, No. 1425; north coast, Buckland R., No. 1551.

Luzula Wahlenbergii is very common on the Bering Sea coasts in wet sphagnum tundra. The writer has seen a large series from the region in U. S. National Herbarium, lying chiefly under *L. parviflora*. The species has but recently become recognized in North America but is common from Bering Strait to Hudson Bay and southern Baffin Island. Practically all records in literature of *L. parviflora* from north of the limit of trees should be referred to *L. Wahlenbergii*.

TOFIELDIA COCCINEA Richards.—ALASKA RANGE: Nenana Valley, Healy, No. 334; Richardson Hwy., between Summit and McCarty,

¹ For the determination of material in the writer's collection of *Luzula nivalis* and its var. *latifolia*, *L. parviflora*, *L. spicata*, and *L. Wahlenbergii* the writer is indebted to Professor G. Samuelsson, Stockholm.

No. 414; Castner Glacier, No. 475. KOKRINES MTS.: divide towards Melozitna R., No. 719. NORTON SD.: hills back of Pastolik, No. 903; Qiqertariaq, No. 1043; hills back of Unalaklet, No. 1141. SEWARD PEN.: south coast, Bluff, No. 1208. Common on moist gravelly places and occasionally in peaty soil on the Bering Sea coasts and on high mountains of the interior.

T. NUTANS Willd.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 128. YUKON R.: between Ramparts and Tanana, *L. J. Palmer*, No. 40 (US). NORTON SD.: Pastolik, No. 978; Unalaklet, *Palmer & Miller*, No. 1253 (US). GOODNEWS B.: *Harrington*, No. 82 (US). KATMAI REGION: *Hagelbacher*, No. 184 (US). ALASKA PEN.: Lake Illiamna, *Gorman*, No. 104 (G, US). ALEUTIAN ISL.: Akutan, June 1935, *J. Rudd* (G). SEWARD PEN.: Nome, *Thornton*, Nos. 331 and 130-B (US). Apparently rare or occasional in sterile, gravelly places of the mountain regions throughout the region of Alaska and Yukon Territory, east to the mountains west of Mackenzie delta.

Hultén, in *Fl. Kamtch.* 1: 230 (1927) revived Willdenow's *T. nutans* and was the first to report it from North America (*Gorman* No. 104) but, in his recent *Fl. Aleut.* 130 (1937), he has come to the conclusion that *T. nutans* cannot satisfactorily be kept separate from *T. coccinea*. To the writer, who is familiar with both species in the field, *T. nutans* seems well enough distinct from *T. coccinea* and, moreover, as pointed out by Hultén l. c. 230, has a well defined geographical range of its own. In the latter the flowers are very short-pedicelled and never deflexed, the inflorescence is dense, more or less globose, rarely elongated in fruit; while in *T. nutans* the inflorescence is racemose, with distinctly deflexed pedicels equalling the length of the perianth.

T. PALUSTRIS Huds.—ALASKA RANGE: Broad Pass, No. 7; Nenana Valley, Healy, No. 333; Richardson Highw., Castner Glacier, No. 476; between Paxon and Summit, No. 535. KOKRINES MTS.: No. 665. NORTON SD.: Pastolik, No. 977. SEWARD PEN.: Nome, *Thornton*, Nos. 19 and 330 (T); north coast, Buckland R., No. 1552. Common in peaty soil of dry muskegs and tundra throughout the region.

ZYGADENUS ELEGANS Pursh. *Z. chloranthus* Richards.—ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 413; Nenana Valley, No. 337. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 24, 25 and 26. KOKRINES MTS.: No. 664. SEWARD PEN.: south coast, Bluff, No. 1206; Nome, No. 1322. Common in dry sandy places in the mountains of the interior; occasional in the Bering Sea region.

ALLIUM SCHOENOPRASUM L.—YUKON R.: Birches, No. 605; Kokrines, No. 623. SEWARD PEN.: south coast, Nome, *Thornton*, Nos. 222 and 317 (T); Bluff, No. 1207. A common species on alluvial banks throughout the interior; on the Bering Sea coast noted north to Kotzebue Sd.

VERATRUM ALBUM L. ssp. OXYSEPALUM (Turcz.) Hultén.—KOKRINES MTS.: divide towards Melozitna R., No. 718. SEWARD PEN.: Nome, Anvil Hill, No. 1323; Port Clarence, *Walpole*, Nos. 1619 and 1804 (US). Rare or occasional on fertile but rather dry slopes.

Not previously recorded from the interior of Alaska.

FRITILLARIA CAMSCHATCENSIS (L.) Ker-Gawl.—Noted from several places in the Alaska Range, along the Alaska Railroad, south of Broad Pass but not observed north of the divide. TALKETNA MTS.: *J. P. Anderson*, No. 1053 (US).

The early records from Seward Pen. and Norton Sd. by Rothrock (1867) and by Turner (1886) need verification.

LLOYDIA SEROTINA (L.) Rchb.—ALASKA RANGE: Broad Pass, No. 6. HEAD OF CHITINA R.: *H. M. Laing*, No. 27. NORTON SD.: Pastolik, No. 979. SEWARD PEN.: Solomon Mt., *Thornton*, No. 325 (T); Port Clarence, *Walpole*, Nos. 2005, 2048 and 1421 (US).

A common species in dry grassy places throughout the region, but in the interior of Alaska restricted to high mountains. *Lloydia serotina* flowers soon after the snow leaves the ground. When past flowering it is very hard to see and for this reason is easily overlooked.

STREPTOPUS AMPLEXIFOLIUS (L.) DC. var. AMERICANUS Schultes.—See Fassett in RHODORA, 37: 88–113 (1935).—ALASKA RANGE: Curry on the Alaska Railroad, south of divide (field notes); Richardson Highw., Castner Glacier, No. 472. Rare or occasional in the Alaska Range, north to the divide.

Previously not recorded except from the south coast. The record by Turner (1886) from St. Michaels in Norton Sd. needs verification.

IRIS SETOSA Pall.—FAIRBANKS: No. 211. YUKON DELTA: Kotlik, No. 865. SEWARD PEN.: Nome, *Thornton*, Nos. 121 and 487 (T). Common in marshy places of the interior; on the Bering Sea coast often in wet, brackish meadows, north to Kotzebue Sd.

CYPRIPEDIUM GUTTATUM Sw.—FAIRBANKS: College, No. 224; Fairbanks, *L. J. Palmer*, No. 1154 (US). ALASKA RANGE: Nenana Valley, Lignite, *J. P. Anderson*, No. 1150 (US). Apparently rare, in open woods.

Not previously recorded from the interior of Alaska.

C. PASSERINUM Richards.—HEAD OF CHITINA R.: *H. M. Laing*, No. 28.

New to the flora of Alaska.

ORCHIS ROTUNDIFOLIA Banks.—ALASKA RANGE: Nenana Valley, Lignite, No. 294. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 36 and 37. Rare or occasional in moist peaty soil.

No previous records from northern Alaska.

HABENARIA VIRIDIS (L.) R. Br. var. *INTERJECTA* Fern. in *RHODORA* 28: 175 (1926). SEWARD PEN.: Nome, No. 1324.

No previous records from north of the Aleutian chain and the south coast.

H. HYPERBOREA (L.) R. Br.—FAIRBANKS: No. 178; Richardson Highw., Taylor's Fox Ranch, No. 376. ALASKA RANGE: Nenana Valley, Lignite, Nos. 292 and 293; Richardson Highw., between Summit and McCarty, No. 412; Castner Glacier; No. 473. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 34 and 35. Occasional on alluvial banks.

No previous records from northern Alaska.

H. OBTUSATA (Pursh) Richards.—FAIRBANKS: No. 181; College, No. 223. ALASKA RANGE: Mountains between Healy and Moody Creeks, No. 253; Nenana Valley, Healy, No. 336; Richardson Highw., Castner Glacier, No. 474. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 31–33. NORTON SD.: Pastolik, No. 980. SEWARD PEN.: Nome, Thornton, No. 327 (T).

No previous records from the interior of Alaska. A common species of muskegs and cold spruce forest of the interior. Rare or occasional on the Bering Sea coast, north to Kotzebue Sd.

SPIRANTHES ROMANZOFFIANA Cham. & Schlecht.—FAIRBANKS: Common in calcareous bog, No. 594.

GOODYERA REPENS (L.) R. Br. *Epipactis repens* (L.) Crantz.—FAIRBANKS: No. 179. YUKON R.: between Ramparts and Tanana, *L. J. Palmer*, No. 36. HEAD OF CHITINA R.: *H. M. Laing*, No. 38-A.

No previous records from interior of Alaska.

LISTERA BOREALIS Morong.—FAIRBANKS: No. 182. HEAD OF CHITINA R.: *H. M. Laing*, No. 38.

New to the flora of Alaska.

CORALLORRHIZA TRIFIDA Chatelain.—FAIRBANKS: No. 180; College, No. 222. ALASKA RANGE: Nenana Valley, Healy, No. 335; Richardson Highw., between Summit and McCarty, No. 411; between Paxson and Summit, No. 536. HEAD OF CHITINA R.: *H. M. Laing*, No. 29. YUKON R.: Holy Cross, No. 824; common in wooded parts of the region. Recorded from the Kotzebue Sd. region also, but not observed by us.

CALYPSO BULBOSA (L.) Oakes.—HEAD OF CHITINA R.: *H. M. Laing*, No. 30.

POPULUS TACAMAHACCA Mill. *P. balsamifera* DuRoi, not L.—ALASKA RANGE: Richardson Highw., between Paxson and Summit, No. 537. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 49–51. KOTZEBUE SD.: Napaktolik R., 25 miles above its mouth, No. 6200.

Common on alluvial soils throughout the wooded part of the region; in the mountains its altitudinal limit is considerably above that of the

white spruce. Known in the Bering Sea region at considerable distance from the coast, on the Noatak R., north at least to 68° N.

P. TREMULOIDES Michx.—ALASKA RANGE: Nenana Valley, Lignite, No. 295.

The aspen is common in rich alluvial soils of Central Alaska but neither reaches as high altitudes nor latitudes as does the poplar.

SALIX ALAXENSIS (Anders.) Coville.¹—ALASKA RANGE: Mts. between Healy and Moody Creeks, No. 254; Nenana Valley, Lignite, No. 296. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 41, 46 and 48. NORTON SD.: Unalaklet, No. 1105; hills back of Unalaklet, No. 1143.

Common throughout the region in well drained alluvial soils, in the Bering Sea region on the Noatak R., north at least to 68° N. In spring the young leaves are very fragrant, like those of *Populus tacamahacca* or even more so.

S. ARBUTIFOLIA Pall.—YUKON DELTA: Kotlik, No. 867. NORTON SD.: Qiqertariaq, No. 1046. A common trailing willow on old sand dunes.

S. ARCTICA Pall. ? \times *CUNEATA*.—ALASKA RANGE: Broad Pass. Common on snow flushes in the alpine zone, No. 25-B.

S. BARRATTIANA Hook.—HEAD OF CHITINA R.: *H. M. Laing*, Nos. 216 and 222.

S. BARCLAYI Anders.—HEAD OF CHITINA R.: *H. M. Laing*, No. 223.

S. BEBBIANA Sarg.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 130. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 43, 45 and 218. A common shrub 10–12 feet high on alluvial banks in the interior.

S. CHAMISSONIS Anders.—SEWARD PEN.: Nome, No. 1326. Common on dry slopes.

S. CRASSIJULIS Trautv. NORTON SD.: Unalaklet, No. 1142.—SEWARD PEN.: Nome, No. 1329. DIOMEDE ISL.: No. 1676-B. The last two \times *OVALIFOLIA*.

S. CUNEATA Turcz.—NORTON SD.: Qiqertariaq, No. 1047; Unalaklet, No. 1142 (\times *SEEMANII*). Occasional on barren windswept hill tops of the Bering Sound region.

An E. Asiatic species new to the flora of N. America.

S. GLACIALIS Anders.—SEWARD PEN.: Nome, Anvil Hill, No. 1330. Common along ditches in the mining district.

S. MYRTILLIFOLIA Anders.—FAIRBANKS: in a wet muskeg, No. 184; HEAD OF CHITINA R.: *H. M. Laing*, No. 221.

S. NIPHOCLADA Rydb.—ALASKA RANGE: Richardson Highw., Castner Glacier, on fresh moraines near the glacier, No. 478.

S. OVALIFOLIA Trautv.—DIOMEDE ISL.: No. 1676-A. Common in wet places in the Bering Sound region.

¹ The willows in the collection were named by Dr. B. Floderus, Stockholm.

S. PHLEBOPHYLLA Anders.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 129. ALASKA RANGE: Richardson Highw., Castner Glacier, No. 477. NORTON SD.: hills back of Pastolik, No. 904; hills back of Unalaklet, No. 1144. SEWARD PEN.: south coast, Bluff, No. 1211 (f. *NANA*); Nome, No. 1327; north coast, Buckland R., 1553. DIOMEDE ISL.: No. 1677. Common on barren windswept hill tops throughout the region but in the interior perhaps restricted to the higher mountains.

S. PSEUDOPOLARIS Floderus.—ALASKA RANGE: Broad Pass, on snow flushes in the alpine zone, No. 25-A. HEAD OF CHITINA R.: *H. M. Laing*, No. 39.

S. PULCHRA Cham.—SEWARD PEN.: north coast, Kiwalik R., No. 1462. DIOMEDE ISL.: No. 1678.

One of the most common willows of the "Barren Grounds" of Alaska. It is nearly always found along small streams and brooks where it forms almost pure thickets from 5 to 12 feet high. The leaves remain on the branches throughout the greater part of the winter, and on gently sloping coastal plains the dark narrow fringes of this willow clearly stand out against the snow covered landscape, beautifully outlining the drainage system of the slope.

The buds of *S. pulchra* are subject to the attack of a gall-fly and in some years nearly all specimens are infested with galls.

S. RETICULATA L.—ALASKA RANGE: Broad Pass, No. 24. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 44 and 47. SEWARD PEN.: south coast, Bluff, No. 1209 (var. *ORBICULARIS* (Anders.) Floderus).

Perhaps the most common willow on dry tundra ridges and hilltops. Common in such places throughout the region.

S. RICHARDSONII Hook.—HEAD OF CHITINA R.: *H. M. Laing*, No. 42.

S. ROTUNDIFOLIA Trautv.—SEWARD PEN.: Nome, No. 1328.

S. SEEMANII Rydb.—NORTON SD.: Qiqertariaq, No. 1048. SEWARD PEN.: south coast, Bluff, No. 1210 (forma); Port Clarence, No. 1429; north coast, Kiwalik R., No. 1463. Common in the Bering Sea region.

S. SITCHENSIS Sanson.—HEAD OF CHITINA R.: *H. M. Laing*, No. 40.

ALNUS CRISPA (Ait.) Pursh.—ALASKA RANGE: Broad Pass, No. 23. NORTON SD.: Qiqertariaq, No. 1045. SEWARD PEN.: north coast, Kiwalik R., No. 1461.

According to Hultén, Fl. Kamtch. 2: 38 (1928) and Fl. Aleut. 154 (1937), the alder of northern Alaska is *A. fruticosa* Rupr., but the writer must admit that he is unable to distinguish the alder seen in Alaska by him from that of northern Canada, Labrador and Green-

land, for which recent writers, following Gray's *Man.* ed. 7, use the above name.

On mountains, above the timber-line and on the lower, unforested hills of the Bering Sea coasts *A. crispa* in many places forms a dense, almost impenetrable belt, very similar to that described from Kamtchatka by Hultén (1928) under *A. fruticosa*. Due to snow-pressure the branches are decumbent or ascending. In sheltered river valleys and on rich alluvial soils *A. crispa* develops straight trunks and branches, often 25 feet high. In the Kotzebue Sd. region, in places where no timber or drift wood is available, the alder often supplies the bulk of the firewood used at the Eskimo villages. The wood is generally used green and even in this condition makes quite a hot fire.

BETULA GLANDULOSA Michx.—HEAD OF CHITINA R.: *H. M. Laing*, No. 52. SEWARD PEN.: north coast, Kiwalik R., No. 1460.

Typical *B. glandulosa* is common in the interior but appears to be rare or at least less common in the Bering Sea region where it seems to be replaced by the following.

B. GLANDULOSA Michx. var. SIBIRICA (Ledeb.) Blake in RHODORA, 17: 87 (1915). *B. nana* var. *sibirica* Ledeb. Fl. Ross. 3: 654; ? *B. exilis* Sukatch. (compare Hultén 1929 p. 28 and 1937 p. 153).—ALASKA RANGE: Broad Pass, No. 23-A. KOKRINES MTS.: divide towards Melozitna R., No. 720. YUKON DELTA: Kotlik, No. 866. NORTON SD.: Qiqertariaq, No. 1044. SEWARD PEN.: Nome, No. 1325; Port Clarence, No. 1428.

The above six numbers are practically glandless, except for the young branchlets. The leaves are reniform, somewhat broader than long. In No. 886 the wing is half as wide as the nutlet whereas in typical *B. glandulosa* the wing is but from one-quarter to one-third as wide. Also, in the above series the ament-scales are not so deeply lobed as in *B. glandulosa*.

B. PAPYRIFERA Marsh.

The paper birch is common in the interior of Alaska but was not observed in the coastal region except at a considerable distance from the sea coast.

URTICA GRACILIS Ait.—TANANA R.: Hot Springs, No. 637 (near abandoned settlement). Common near human habitations.

GEOCAULON LIVIDUM (Richards.) Fern. in RHODORA, 30: 21 (1928). *Comandra livida* Richards.—FAIRBANKS: No. 202. HEAD OF CHITINA R.: *H. M. Laing*, No. 53. Common in the interior and in southern Alaska, but apparently absent from the Bering Sea regions.

KOENIGIA ISLANDICA L.—SEWARD PEN.: Nome, No. 1331; Port Clarence, No. 1430. Probably common throughout.

OXYRIA DIGYNA (L.) Hill.—ALASKA RANGE: Broad Pass, No. 27. HEAD OF CHITINA R.: *H. M. Laing*, No. 54. KOKRINES MTS.: No. 666. SEWARD PEN.: Nome, *Thornton*, No. 171 (T). DIOMEDE ISL.: No. 1679. Common in the mountains of the interior; very common on the coast.

RUMEX ACETOSA L.—SEWARD PEN.: south coast, Bluff, No. 1213. DIOMEDE ISL.: No. 1681. Observed only on bird cliffs.

R. ARCTICUS Trautv.—KOKRINES MTS.: divide towards Melozitna R., No. 721. NORTON SD.: volcanic hills back of Pastolik, moist places in alder thickets, No. 905. SEWARD PEN.: south coast, Bluff, No. 1214; north coast, Buckland R., wet tundra, No. 1555. DIOMEDE ISL.: No. 1682.

Common or occasional in not too wet tundra throughout the region, but in the interior perhaps restricted to the alpine zone. Our Nos. 905 and 1555 are tall, almost one meter high, with valves 0.6 to 0.7 cm. long, simulating *R. occidentalis* or *R. fenestratus* but, in all, the radical leaves are lanceolate with cuneate, not at all cordate leaf-bases.

R. GRAMINIFOLIUS Lamb.—SEWARD PEN.: Port Clarence, *Walpole*, Nos. 1870 and 1894 (US). Also known from Alaska Pen., Chignik Lake, *Schmitt*, No. 1911, and Kuskokwim Bay, *Sargent*, No. 21 (both US).

R. PALLIDUS Bigel. See Reehinger in Field Mus. Nat. Hist. Bot. Ser. 17, 1: 71–74, fig. 13 (1937).—YUKON R.: Holy Cross, *Palmer & Miller*, No. 1280 (US). Common on alluvial banks along the Yukon R.

POLYGONUM ALPINUM All. var. LAPATHIFOLIUM Cham. & Schlecht. in *Linnaea* 3: 38 (1828). *P. polymorphum* L. var. *lapathifolium* (Cham. & Schlecht.) Ledeb., Fl. Ross. 3: 525 (1850) (Kotzebue Sd.). *P. phytolaccaefolium* Meisn. in Small, Bull. Torr. Bot. Cl. 19: 360 (1892). *Arconogonum phytolaccaefolium* (Meisn.) Small in Rydb. Fl. Rocky Mts. 238, 1961 (1917).—KOKRINES MTS.: divide towards Melozitna R., No. 722. YUKON R.: Anvik, *J. W. Chapman*, No. 12 (G). NORTON SD.: Unalaklet, *Palmer & Johnston*, Aug. 6, 1920 (G); St. Michaels, *J. Muir*, No. 180 (G). SEWARD PEN.: Port Clarence, *Walpole*, Nos. 1606 and 1647 (US); north coast, Buckland R., Nos. 1554 and 1556. Common throughout, but particularly in the Bering Sea region on well drained, alluvial soils.

It is one of the first perennials to pioneer on new soil, such as slumping riverbanks, landslides, abandoned mining dumps and ditches.

P. BISTORTA L.—ALASKA RANGE: Broad Pass, No. 26; Richardson Hwy., Castner Glacier, No. 479. KOKRINES MTS.: divide towards Melozitna R., No. 723. NORTON SD.: hills back of Pastolik, No. 906.

SEWARD PEN.: south coast, Bluff, No. 1212; north coast, Buckland R., No. 1558. DIOMEDE ISL.: No. 1680. Common throughout the region, in not too wet tundra but in the interior restricted to alpine regions. It is one of the most conspicuous species of dry upland tundra.

P. ? MINIMUM Wats.—SEWARD PEN.: Port Clarence, *Walpole*, No. 1716 (US) as *Koenigia islandica*.

P. ? NATANS A. Eat.—NORTON SD.: Unalaklet, No. 1145 (sterile).

P. VIVIPARUM L.—FAIRBANKS: No. 185. ALASKA RANGE: Nenana Valley, Lignite, No. 297; Head of Chitina R., *H. M. Laing*, No. 55. KOKRINES MTS.: divide towards Melozitna R., No. 724. YUKON DELTA: Kotlik, No. 868. SEWARD PEN.: north coast, Buckland R., No. 1557. Common in rather dry, turfy places throughout the region.

ATRIPLEX GMELINI C. A. Mey.—NORTON SD.: Qigertariaq, No. 1078. KOTZEBUE SD.: Eschscholtz B., *B. Miller*, No. 67-C (US). Occasional on sandy sea-shores, north to Kotzebue Sd.

CORISPERMUM HYSSOPIFOLIUM L.—YUKON R.: between Ramparts and Tanana, *L. J. Palmer*, No. 13 (US, Can). PORCUPINE R.: *O. Murie*, No. 49 (US).

New to the flora of Alaska. The record from "Pt. Barrow to Mackenzie R." in Pullen's list¹ certainly must be due to a confusion of labels.

CHENOPODIUM CAPITATUM (L.) Asch.—ALASKA RANGE: Richardson Hwy., between Summit and McCarty, No. 415. HEAD OF CHITINA R.: 2500 feet above sea level, *H. M. Laing*, No. 56. TANANA R.: Hot Springs, No. 638 (probably introduced). YUKON R.: Birches, No. 606.

MONTIA LAMPROSPERMA Cham.—YUKON DELTA: Kotlik, No. 869. NORTON SD.: Pastolik, No. 981; Unalaklet, No. 1106. SEWARD PEN.: Nome, No. 1332; Port Clarence, No. 1431. Common in brackish meadows of the Bering Sea coast.

CLAYTONIA ACUTIFOLIA Willd.—Port Clarence (*Kjellm.*).

C. ESCHSCHOLTZII Cham. in *Linnaea* 4: 561.—ALASKA RANGE: Mts. between Healy and Moody Creeks, alpine slope in wet clay, 3000 feet, No. 258. KOKRINES MTS.: *L. J. Palmer*, No. 1547 (US).

C. Eschscholtzii has not previously been recorded from North America but is known from Eastern Asia. Our specimens match the description in *Ledeb. Fl. Ross.* 2: 147. The flowers are very large and creamy-white, in 2-5-flowered racemes. Our specimens are much less robust than *C. acutifolia* Willd., known from both shores of Bering Strait.

C. SARMENTOSA C. A. Mey.—ALASKA RANGE: Broad Pass, No. 34; Richardson Hwy., between Summit and Paxon, No. 538. HEAD OF CHITINA R.: *H. M. Laing*, No. 227. NORTON SD.: Unalaklet, No. 1146.

¹ B. Seemann, Bot. Voy. H. M. S. "Herald," 1845-1851, London (1852).

SEWARD PEN.: south shore, Bluff, No. 1215; Nome, No. 1333. DIOMEDE ISL.: No. 1683.

This pretty, pink-flowered *Claytonia* blossoms throughout the summer, and flowers and mature capsules may be found together; the seeds are lentil-shaped, about 1.7 mm in diam., very shiny and black. On bird cliffs at Bluff and on Diomedes Isl. the species formed large, almost pure clumps.

C. TUBEROSA Pall.—SEWARD PEN.: Port Clarence, *Walpole*, Nos. 1812 and 1872 (US). DIOMEDE ISL.: No. 1684.

The edible tubers are gathered by the Eskimo (See Porsild, Fl. Diomedes Isl. 29 (1937)).

STELLARIA CALYCANTHA (Ledeb.) Bong.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 132. SEWARD PEN.: Nome, No. 1342; north coast, Buckland R., Nos. 1561 and 1563.

Not recorded previously from north of Pribilof Isl. and S. E. Alaska.

ST. CRASSIFOLIA Ehrh.—ALASKA RANGE: Nenana Valley, Lignite, No. 298. TANANA R.: Hot Springs, No. 640. NORTON SD.: Unalakleet, No. 1150. SEWARD PEN.: Nome, No. 1341; Port Clarence, No. 1433; north coast, Buckland R., No. 1562. Common in wet meadows throughout the region.

Not previously recorded from Alaska.

ST. HUMIFUSA Rottb.—NORTON SD.: Qiqertariaq, No. 1081. DIOMEDE ISL.: No. 1686. Common in brackish meadows of Bering Sea coasts.

ST. LONGIPES Goldie.—ALASKA RANGE: Broad Pass, No. 28; Nenana Valley, Healy, No. 344; Richardson Hwy., Castner Glacier, No. 485. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 58 and 59. KOKRINES MTS.: divide towards Melozitna R., No. 729. YUKON DELTA: Kotlik, No. 870. SEWARD PEN.: north coast, Buckland R., Nos. 1559 and 1560. DIOMEDE ISL.: No. 1685. Common throughout the region.

CERASTIUM BEERINGIANUM Cham. & Schlecht.—ALASKA RANGE: Broad Pass, No. 31; Richardson Hwy., Castner Glacier, No. 487. HEAD OF CHITINA R.: *H. M. Laing*, No. 57. SEWARD PEN.: north coast, Kiwalik R., No. 1465; Buckland R., No. 1564. Occasional throughout the region, but never very common.

In Alaska *C. Beeringianum* seems to take the place of *C. alpina* of which no specimens were seen by us.

C. EARLEI Rydb. in Bull. Torr. Bot. Cl. **30**: 249 (1903).—ALASKA RANGE: Richardson Hwy., Castner Glacier, about 4000 feet, No. 486.

With its purplish, acuminate, papery and transparent-margined sepals the above clearly matches typical specimens of this Cordilleran

species, heretofore known only from mountains of Alberta and British Columbia, south to Arizona.

C. FISCHERIANUM Ser.—KOKRINES MTS.: No. 668; divide towards Melozitna R., No. 728. NORTON SD.: Pastolik, No. 986. SEWARD PEN.: Nome, B. Miller, No. 236-C (US); north coast, Kiwalik, B. Miller, No. 37-C (US). DIOMEDE ISL.: No. 1689. Appears to be common in the Bering Sea region north to Kotzebue Sd.

Not with certainty recorded previously from north of the Aleutian chain.

C. MAXIMUM L.

This handsome, large-flowered *Cerastium* appears to have been collected but once in Alaska, in the Endicott Mts. of northern Alaska: Koyukuk R., Schrader, 1899 (US). It is not uncommon in the mountains of northern and central Yukon, north to the arctic coast west of the Mackenzie R. Hultén (1928), no doubt misled by the report of Macoun and Holm in Rep. Can. Arct. Exp. 5A: 11 (1921), which was based upon *C. alpina* (Cape Krusenstern, J. R. Cox, No. 751), erroneously gives the American distribution: "Arctic coast of Alaska, eastwards to Coronation Gulf."

SAGINA CAESPITOSA (J. Vahl) Lge.—ALASKA RANGE: Richardson Hwy., Paxson, south of divide, No. 574.

S. INTERMEDIA Fenzl. *S. micrantha* (Bunge) Fern. (fide Hultén).—ALASKA RANGE: Richardson Hwy., Castner Glacier, No. 489. NORTON SD.: Pastolik, No. 985; hills back of Unalaklet, No. 1148. SEWARD PEN.: Nome, No. 1340; Port Clarence, No. 1432. DIOMEDE ISL.: 1689-A. Fairly common in wet tundra.

ARENARIA ARCTICA Stev.—ALASKA RANGE: Mountains between Healy and Moody Creeks, No. 256. NORTON SD.: Unalaklet, No. 1149. SEWARD PEN.: south coast, Bluff, No. 1219; Nome, Nos. 1337 and 1343; north coast, Buckland R., Nos. 1565 and 1566. Very common in gravelly places of the Bering Sea region; in the interior common on high mountains only.

A. DAWSONENSIS Britton in Bull. N. Y. Bot. Gard. 2: 169 (1901). FAIRBANKS: wet place in a muskeg, No. 187. Although described from Yukon Territory, *A. dawsonensis* does not appear to have been recorded previously from Alaska.

A. HUMIFUSA Wahlenb. *A. ciliata* L. var. *norvegica* auth.; *A. cylindrocarpa* Fern. For a full discussion of the species and its synonymy see Nordhagen, Bergens Mus. Årbog (1935).—ALASKA RANGE: Nenana Valley, Healy, No. 339. SEWARD PEN.: Nome, No. 1344. On moist cliffs in crevices of rock.

A. LATERIFLORA L. *Moehringia lateriflora* (L.) Fenzl.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 132-A; Fairbanks, No.

186. ALASKA RANGE: Nenana Valley, Healy, No. 338. TANANA R.: Hot Springs, No. 639. NORTON SD.: Pastolik, No. 982. SEWARD PEN.: Nome, *Thornton*, Nos. 23, 175 and 310 (T). A woodland species, common in the interior but rare or occasional in willow thickets of the Bering Sea region.

A. MACROCARPA Pursh.—ALASKA RANGE: Broad Pass, Nos. 32 and 33; Mountains between Healy and Moody Creeks, No. 257. SEWARD PEN.: south coast, Bluff, No. 1220; Nome, *Thornton*, No. 52 (T). Common in moist, gravelly places throughout, but in the interior on high mountains only.

A. NARDIFOLIA Ledeb. Fl. Altaica 2: 166 (1830). *A. capillaris* Am. auth. non Poir.—ALASKA RANGE: Nenana Valley, Healy, 2000 feet, No. 341.

Hultén (1928, p. 85) states that all American material so named differs from either *A. nardifolia* or *A. capillaris* in having "scale-like basal leaves." The above number, with numerous others from the Yukon and N. W. Mackenzie, perfectly matches Ledebour's description as well as Hook. Fl. Bor.-Am. 1: tab. 32 (1840). *A. nardifolia* inhabits the most barren and dry mountain ridges. It has a strong tap-root with a subligneous caudex and is glabrous throughout, except for the serrate-ciliate margins of the long, linear leaf-blades. The inflorescence is 1-4-flowered, the sepals scarious-margined, half as long as the petals.

A. OBTUSILOBA (Rydb.) Fern. See RHODORA, 21: 14 (1919).—ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 416; Nenana Valley, Healy, No. 340. KOKRINES MTS.: divide towards Melozitna R., Nos. 725-727. NORTON SD.: hills back of Pastolik, No. 909; Pastolik, No. 987; Qiqertariaq, Nos. 1049 and 1050. Common in dry, sandy places; in the interior on high mountains only.

f. *rosea*, n. forma, petalis roseis, unguibus atropurpureis.

Petals rose-coloured, with deep purplish claws. SEWARD PEN.: Sawtooth Range, *Thornton*, Nos. 504 (TYPE) and 505 (T and US).

The rose-colored form is not uncommon; it is found also in the mountains of Yukon and west of the Mackenzie Delta. *A. obtusiloba* apparently is new to the flora of Alaska.

A. PEPLOIDES L. var. MAJOR Hook. *Honckenya peploides* (L.) Ehrh. subsp. *major* (Hook.) Hultén.—NORTON SD.: Qiqertariaq, Nos. 1079 and 1080. Common everywhere on sandy beaches along the Bering Sea shores.

A. PHYSODES DC. *Merckia physodes* Fisch.—KOKRINES MTS.: No. 667; divide towards Melozitna R., No. 731. NORTON SD.: Pastolik, No. 983. SEWARD PEN.: Nome, No. 1339; north coast, Kiwalik R., No. 1467; Buckland R., No. 1567. Common on moist

sandy lake- and riverbanks throughout the region; on the Bering Sea shores often in brackish meadows.

A. ROSSII R. Br. in *Chloris Melv.* 14 (1823); Simmons, Fl. Ellesm. 116, fig. 4-6 (1906).—ALASKA RANGE: Mts. between Healy and Moody Creeks, No. 255. NORTON SD.: Pastolik, No. 984. SEWARD PEN.: Nome, Anvil Hill, Nos. 1334-1336; Bluff, No. 1222. Occasional on moist gravelly soil of high mountains.

A. VERNA L. var. PUBESCENS (Cham. & Schlecht.) Fern.—See RHODORA, 21: 21-22 (1919).—ALASKA RANGE: Broad Pass, No. 30; Nenana Valley, Healy, Nos. 342 and 343; Richardson Highw., between Summit and McCarty, Nos. 417 and 418; Castner Glacier, No. 490. KOKRINES MTS.: No. 669. SEWARD PEN.: south coast, Bluff, Nos. 1221-1224; north coast, Kiwalik, No. 1464. Common in sandy and gravelly places throughout the region.

CHERLERIA DICRANOIDES Cham. & Schlecht. *Stellaria dicranoides* Fenzl; Seem. l. c. 26. tab. 3 (1852).—SEWARD PEN.: Nome, in dry lichen mats, No. 1338; Mt. Tumit, Thornton, No. 421-B (US); Port Clarence, Walpole, Nos. 1449 and 1862 (US).

Our material matches the description as well as Seemann's beautiful plate. Previously known from Alaska only from Seemann's collection (Cape Lisburne).

SILENE ACAULIS L. var. EXSCAPA (All.) DC.—ALASKA RANGE: Richardson Highw., Castner Glacier, No. 488. HEAD OF CHITINA R.: H. M. Laing, No. 60. NORTON SD.: Pastolik, No. 908. Fairly common throughout the region, but in the interior limited to high mountains.

S. REPENS Patr.—ALASKA RANGE: Nenana Valley, Healy, No. 345; Broad Pass, L. J. Palmer, No. 1875 (US). Rare or occasional on dry, sandy slopes in mountains of central Alaska.

S. WILLIAMSII Britt. in Bull. N. Y. Bot. Gard. 2: 168 (1901); see Porsild in RHODORA, 40: 212 (1938).—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 131; Fairbanks, No. 225. HEAD OF CHITINA R.: H. M. Laing, Nos. 61 and 62. KOKRINES MTS.: divide towards Melozitna R., No. 732.

Apparently an endemic species of central Alaska and the Yukon Territory.

MELANDRIUM AFFINE (J. Vahl) Hartm. *M. pauciflorum* (Ledeb.) Ostf.; *Lychnis furcata* (Raf.) Fern.—ALASKA RANGE: Broad Pass, No. 29. HEAD OF CHITINA R., H. M. Laing, No. 228. SEWARD PEN.: south coast, Bluff, Nos. 1217 and 1218; north coast, Kiwalik R., No. 1466; Buckland R., L. J. Palmer, No. 1040 (US). DIOMEDE ISLAND: No. 1687. Occasional in rocky places throughout; in the interior perhaps restricted to high mountains.

M. APETALUM (L.) Fenzl.—ALASKA RANGE: Richardson Highw., Castner Glacier, No. 484. KOKRINES MTS.: divide towards Melozitna

R., No. 730; Kokrines Mts., No. 670. NORTON SD.: hills back of Pastolik, No. 907; Pastolik, No. 988. SEWARD PEN.: Bluff, No. 1216; DIOMEDE ISL.: 1688. Common or occasional in wet tundra throughout the region, but in the interior on the highest mountains only.

M. macrospermum, n. sp. (TAB. 552, FIG. 1-3). Planta perennis cum caudicibus plurimis foliosis e radice crassa; caulibus paucis, 15-25 cm. altis dense breviterque pubescentibus non glandulosis, erectis vel aliquantulum adscendentibus, conspicue flexuosis, duobus vel tribus paribus bractearum angustarum attenuatarum purpurascentium foliacearum 2-4 cm. longarum amplexicaulium vel connatarum munitis, nodis valde incrassatis; foliis basilaribus numerosis lanceolatis, 4.0-8.0 cm. longis, 0.4-0.5 cm. latis, prominenter uninerviis, in petiolos atropurpureos alatos attenuatis marginibus nervisque pubescentibus; floribus 1-2 in pedunculis 5-10 cm. longis infra calycem bracteolatis; calyce paullo inflato 1.5 cm. longo, 1.0 cm. lato adpresse lanato, pilibus septatis, nervis purpurascentibus diffusis infra lobos confluentibus; petalis vix exsertis, roseis; semine reniformi, cinnamomeo, 2.0-2.4 mm. lato, 1.8 mm. longo, valde punctato, ala lata inflata.

Perennial from strong, many-headed leafy caudex; stems few, 15 to 25 cm. high, nonglandular, densely pubescent, erect or somewhat ascending, conspicuously flexuous, with 2 to 3 pairs of narrow, attenuate purplish leafy bracts 2-4 cm. long, clasping or connate at much thickened joints; basal leaves numerous, oblanceolate, strongly one-nerved, tapering into dark purplish winged petioles, blade pubescent along the margins and midrib; inflorescence 1-2 flowered, the flowers borne on peduncles 5-10 cm. long, each with a bracteole well below the calyx; calyx urn-shaped, 1.5 cm. long and 1.0 cm. wide, pubescent, with purplish diffuse veins joined below the lobes; petals barely exserted, rose; seeds reniform, pale brown, 2.0-2.4 mm. wide and 1.8 mm. long, strongly punctate, with broad, inflated wing.—NORTON SD.: volcanic hills 15 miles back of Unalaklet, alpine, gravelly slopes 1000-2000 ft, July 29, 1926, *A. E. & R. T. Porsild*, No. 1147 (TYPE). Thus far only known from the type locality.

DIANTHUS REPENS Willd.; Seem. l. c. 27, tab. 4 (1852).—KOKRINES MTS.: divide towards Melozitna R., No. 733. NORTON SD.: Qiqertariaq, No. 1051; Unalaklet, *B. Miller*, No. 251-C (US). SEWARD PEN.: north coast, Kiwalik R., No. 1468. Rare or occasional on volcanic gravels.

Our material matches Seemann's beautiful plate. From Alaska previously known only from the Bering Sea region.

NUPHAR VARIEGATUM Engelm.—FAIRBANKS: No. 595. HEAD OF CHITINA R., *H. M. Laing*, No. 63. YUKON R.: Holy Cross, No. 827. The yellow water lily is common in the lowlands of the interior; along the Yukon it was observed almost to the delta.

CALTHA LEPTOSEPALA DC. *C. Macounii* Greene, Pitt. 4: 77 (1899).—ALASKA RANGE: Talketna on the Alaska Railroad, *J. P. Anderson*, No. 1016 (US).

Previously known from S. E. Alaska (Sitka).

C. NATANS Pall.—NORTON SD.: Pastolik, No. 992. SEWARD PEN.: Nome, *Thornton*, No. 440 (T); north coast, Buckland R., No. 1569. Fairly common in tundra lakes and bogs of the Bering Sea region.

C. PALUSTRIS L. var. *ASARIFOLIA* (DC.) Huth. *C. arctica* R. Br.; *C. palustris* L. f. *radicans* (Forst.) Hartm.—FAIRBANKS: No. 190 (with mature fruit on June 14). NORTON SD.: Pastolik, No. 993. SEWARD PEN.: Nome, *Thornton*, No. 72 (T); north coast, Buckland R., No. 1570. Common throughout, in bogs and shallow ponds.

AQUILEGIA BREVISTYLA Hook.—HEAD OF CHITINA R.: *H. M. Laing*, Nos. 73 to 76.

DELPHINIUM MENZIESII DC., Syst. 1:355 (1818). ? *D. Middendorffii* Trautv. in Midd. Sib. Reise, 1, 2: 63, tab. 1 (1847); *D. Blaisdellii* Eastw. in Bot. Gaz. 33: 142 (1902).—SEWARD PEN.: south coast, Bluff, No. 1230; Nome, *Thornton*, Nos. 17, 193 and 399-A (T). KOTZEBUE SD.: Kivalina, *L. J. Palmer*, No. 213 (US). CAPE LISBURNE: *Washburn*, July 27, 1904 (US). Also known from mountains along the Alaska-Yukon boundary, 65° 30' N. 141° W., *Mertie*, No. 27 (US).

Eastwood, l. c., says of *D. Blaisdellii*, that the peduncles are "2 mm. long" and "the spur slender, 2.5 cm. long, and tapering to an obtuse apex less than 1 mm. wide." The writer has seen no specimen by Eastwood designated as the type, but in a number of sheets from Seward Pen., including some from the type-locality (Nome), the peduncles are from 2 to 4 cm. long while the spur is from 1.0 to 1.5 cm. long and about 1.5 mm. in diameter. The "dark spot" near the apex of the calyx-lobes described by Eastwood is very conspicuous in life but not always evident in herbarium material. In some specimens the corolla measured 4.2 cm. in diameter.

D. SCOPULORUM Gray var. *GLAUCUM* Gray. *D. Brownii* Rydb.—ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 419. HEAD OF CHITINA R.: alt. about 4000 ft., *H. M. Laing*, No. 77. YUKON R.: just above the delta, No. 834. NORTON SD.: Egavik, *Palmer and Johnston*, No. 87 (US). SEWARD PEN.: Port Clarence, *Walpole*, Nos. 1777, 1864 and 1955 (US). Rare or occasional in moist, grassy places, willow thickets and herb-mats.

ACONITUM DELPHINIFOLIUM DC.—ALASKA RANGE: Richardson Highw., Paxon, No. 576. HEAD OF CHITINA R.: *H. M. Laing*, No. 78. KOKRINES MTS.: divide towards Melozitna R., No. 734. NORTON SD.: hills back of Pastolik, No. 910; Qiqertariaq, No. 1052. SEWARD PEN.: Nome, *Thornton*, No. 391 (T); north coast, Buckland R., No. 1568. DIOMEDE ISL.: Nos. 1690 and 1691 (the first is var. *ALBIFLORUM* A. E. Porsild, Trans. Roy. Soc. Can. Ser. 3, sect. 5, 32: 29 (1938)). Apparently rare or occasional in the mountains of the interior, common on the Bering Sea coasts, north to Cape Lisburne.

ANEMONE DRUMMONDII S. Wats., Bot. of Calif. **2**: 424 (1880); *A. baldensis* Hook., Fl. Bor.-Am. **1**: 5, non L.—NORTON SD.: hills back of Pastolik, No. 912; Qiqertariaq, No. 1053. SEWARD PEN.: south coast, Bluff, Nos. 1226 and 1229; Port Clarence, *Walpole*, No. 2006 (as *A. multiceps*) (US). Rare or occasional on volcanic gravels of Norton Sd. and Seward Pen.; also known from the north coast of Alaska east to the Mackenzie.

New to the flora of Alaska.

A. MULTIFIDA Poir. var. HUDSONIANA DC. *A. globosa* Nutt.—HEAD OF CHITINA R.: *H. M. Laing*, Nos. 64–66.

A. NARCISSIFLORA L. *A. zephyra* A. Nels.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 134. ALASKA RANGE: Broad Pass, No. 35. NORTON SD.: hills back of Pastolik, No. 913; Pastolik, Nos. 990 and 991; Qiqertariaq, No. 1054. SEWARD PEN.: south coast, Bluff, No. 1228; Nome, No. 1349. DIOMEDE ISL.: No. 1692. Common in dry, gravelly places, north to Seward Pen.

A. PARVIFLORA Michx.—ALASKA RANGE: Broad Pass, No. 36; Nenana Valley, Lignite, Nos. 299 and 300; Healy, No. 346; Richardson Hwy., between Paxon and Summit, No. 542. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 67–69. KOKRINES MTS.: No. 671. SEWARD PEN.: south coast, Bluff, No. 1227; Nome, No. 1350. Common throughout the region in rather dry turfy places. The most common of the anemones.

A. RICHARDSONII Hook.—ALASKA RANGE: Broad Pass, No. 39; Richardson Hwy., between Paxon and Summit, No. 541. HEAD OF CHITINA R.: *H. M. Laing*, No. 70. KOKRINES MTS.: divide towards Melozitna R., No. 738. NORTON SD.: hills back of Unalaklet, No. 1151. SEWARD PEN.: Nome, No. 1348; Shismareff, *L. J. Palmer*, No. 1021 (US). Occasional throughout, in moist thickets north to Kotzebue Sd.

PULSATILLA MULTICEPS Greene, Erythraea **1**: 4 (1893). *Anemone Cairnesiana* Greene in Ott. Nat. **25**: 146 (1912).—NORTON SD.: Unalaklet, *L. J. Palmer*, No. 230 (US). SEWARD PEN.: Nome, *B. Miller*, No. 99-c; *Thornton*, Nos. 69, 127 and 302 (T); Port Clarence, *Walpole*, No. 1455 (US).

There seems to be little doubt that *A. Cairnesiana* is merely a young form of *Pulsatilla multiceps*. From a letter preserved on the files in the National Museum of Canada, dated Nov. 11, 1912, it appears that Greene suspected this possibility but reserved judgment until mature specimens could be obtained. At any rate, three sheets collected by Cairnes, near the type locality for a *A. Cairnesiana*, Yukon: 67° N. 141° W., *D. D. Cairnes*, Nos. 83069–83071, labelled *A. Cairnesiana* on Greene's authority, certainly cannot be distinguished from the co-type of *P. multiceps* (Porcupine R.: *J. H. Turner*, 1891, ex Herb.

Greene No. 2114 (Can)). According to a letter by Macoun, dated Nov. 8, 1912, the type of *A. Cairnesiana* was sent to Greene but apparently was never returned, for there are no specimens now in the National Herbarium of Canada of the type collection of 1911.

Pulsatilla multiceps no doubt is closely related to *P. ludoviciana* (Nutt.) Heller, from which it is distinguished by its much smaller, rotate flowers and generally dwarfed stature; it also appears to be much later-flowering and to have a range distinct from that of *P. ludoviciana*. The two dozen sheets or more seen by the writer of *Pulsatilla* from mountain regions of Alaska all belong here. The fruit of *P. multiceps* is still unknown and a sheet thus labelled from Seward Pen., Port Clarence (*Walpole* 2006, US) proved to be *Anemone Drummondii*.

OXYGRAPHIS GLACIALIS (Fisch.) Bunge in Suppl. Alt. 46 (1836). *Ranunculus kamtschaticus* DC., Prod. 1: 43 (1824).—SEWARD PEN.: Port Clarence, *Walpole*, Nos. 1479 and 1874 (US).

A very rare plant in Alaska. On the mainland thus far collected but a few times on Seward Peninsula.

RANUNCULUS CHAMISSONIS Schlecht. Animadv. Ran. 1: 12 (1819). See Porsild in Trans. Roy. Soc. of Can. Ser. 3, sect. 5, 32: 30 (1938).—SEWARD PEN.: Nome, *Thornton*, No. 401 (T); Cape Pr. of Wales (field notes). DIOMEDE ISL.: No. 1693. A rare plant in Alaska, known only from the above collections.

R. CYMBALARIA Pursh.—NORTON SD.: Qiqertariaq, No. 1082. SEWARD PEN.: Nome, No. 1347; Port Clarence, No. 1435. Common along the shores of Bering Sea, north at least to Kotzebue Sd.

R. ESCHSCHOLTZII Schlecht.—ALASKA RANGE: Richardson Highw., between Summit and Paxon, No. 539.

The report from Kotzebue Sd., and Cape Lisburne by Seemann needs verification. New to the interior of Alaska.

R. HYPERBOREUS Rottb.—ALASKA RANGE: Nenana Valley, Lignite, No. 302. NORTON SD.: Pastolik, Nos. 994 and 995; Unalaklet, No. 1107. SEWARD PEN.: Nome, *Thornton*, No. 133 (T); Port Clarence, No. 1434. Common throughout, in wet moss on margins of small ponds and stagnant sloughs.

R. LAPPONICUS L.—FAIRBANKS: No. 188; College, No. 226. KOKRINES MTS.: divide towards Melozitna R., Nos. 736 and 737. NORTON SD.: Unalaklet, No. 1152. SEWARD PEN.: north coast, Buckland R., No. 1572. DIOMEDE ISL.: No. 1696. Occasional in wet sphagnum bogs and muskegs throughout the region. The flowers are very fragrant.

R. MACOUNII Britt.—FAIRBANKS: in alluvial soil by a stream 10 miles east of the town, No. 189.

Probably new to the flora of Alaska.

R. NIVALIS L.—ALASKA RANGE: Broad Pass, No. 38; Richardson Highw., between Summit and Paxon, No. 540. SEWARD PEN.: Nome, Thornton, Nos. 18, 140 and 403 (T). DIOMEDE ISL.: Nos. 1694 and 1695. Rare or occasional on high mountains of the interior; common in herb mats on the Bering Sea coasts.

R. PALLASII Schlecht.—YUKON DELTA: Kotlik, No. 871. NORTON SD.: Pastolik, No. 996; Unalaklet, No. 1108. SEWARD PEN.: Nome, No. 1345; Port Clarence, Walpole, No. 1686 (US); north coast, Buckland R., No. 1575. Common in moss and on floating margins of ponds and sloughs along the Bering Sea shores and the north coast of Alaska.

R. PEDATIFIDUS Sm. var. *LEIOCARPUS* (Trautv.) Fernald in RHODORA, **19**: 138 (1917). See also Fernald in RHODORA, **36**: 93–96 and plates 279, 280 (1934). *R. affinis* R. Br. *R. auricomus* Hook. non L., nec Ledeb.—HEAD OF CHITINA R.: H. M. Laing, Nos. 71 and 72. Noted by us on the north coast of Alaska; apparently rare or absent in central and western Alaska.

R. PURSHII Richards. ssp. *yukonensis* (Britt.), n. comb. *R. yukonensis* Britt. in Bull. N. Y. Bot. Gard. **2**: 168 (1901).—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 133. KOKRINES MTS.: divide towards Melozitna R., No. 735. YUKON R.: Holy Cross, No. 825. NORTON SD.: Pastolik, No. 997; hills back of Unalaklet, No. 1153. SEWARD PEN.: north coast, Kiwalik R., No. 1469; Buckland R., No. 1571.

The ssp. *yukonensis* is common in wet moss and on floating margins of ponds throughout Alaska and Yukon eastwards to Bear Lake and Coronation Gulf.

When a large series of *R. Purshii* from across the North American continent is examined it becomes evident that the plant of the northwest differs from that of Atlantic America by the consistently smaller leaves and flowers. There is nothing, however, in Britton's description, l. c., by which it can be satisfactorily distinguished from the eastern plant. In view of the considerable variation in *R. Purshii* it may not be advisable to treat the western plant as a species, but its distinct distribution, on the other hand, suggests a geographical race with a distribution centering around E. Asia and N. W. America. For this the new combination is proposed.

R. PYGMAEUS Wahlenb.—SEWARD PEN.: Nome, No. 1346.

Apparently rare or occasional. Not seen by us in the interior.

R. REPENS L.—YUKON R.: Kokrines, on river banks with *Potentilla pacifica*, No. 624.

New to the flora of Alaska.

R. REPTANS L.—ALASKA RANGE: Nenana Valley, Lignite, No. 301; Richardson Highw., between Summit and McCarty, No. 420. SEWARD PEN.: north coast, Buckland R., Nos. 1573 and 1574. Clay margins of ponds and streams, probably common throughout.

Not reported previously from north of Pribilof Isl. and S. E. Alaska.

R. SCELERATUS L.—NORTON SD.: Qigertariaq, in a wet meadow bordering lagoon, No. 1083.

New to the flora of Alaska.

R. SULPHUREUS Sol.—

Although this species appears to be common on islands in Bering Strait (Pribilof I., Hall I. etc.) and is known from the north coast (Camden B.), thus far it does not appear to have been recorded from the area visited by us.

R. TRICHOPHYLLUS Chaix var. TYPICUS W. B. Drew in RHODORA, 38: 18 (1936). *R. aquaticus* L. var. *capillaceus* DC.—ALASKA RANGE: Nenana Valley, Lignite, No. 303. YUKON R.: Holy Cross, No. 826. Probably common throughout the interior.

The var. *eradicatus* (Laest.) W. B. Drew is known from the Aleuts and Pribilof I., but was not seen by us.

THALICTRUM ALPINUM L.—ALASKA RANGE: Richardson Highw., Paxon, No. 575. NORTON SD.: Pastolik, No. 989. SEWARD PEN.: south coast, Bluff, No. 1225.

Rare or occasional in the mountains of the interior; on the Bering Sea coast frequently growing with *Euphrasia mollis* on the side and base of large *Eriophorum vaginatum* tussocks or "nigger-heads" in rather dry tundra.

T. SPARSIFLORUM Turcz.—FAIRBANKS: College, No. 229. TANANA R.: Hot Springs, No. 641. YUKON R.: Holy Cross, No. 828. Fairly common in rich woods of the interior.

Previously known from the south coast only.

PAPAVER ALASKANUM Hultén, Fl. Aleut. 190, tab. 10 (1937). *P. nudicaule* auth. non L. saltem quoad pl. Am. occid. extr.—ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 421. KOKRINES MTS.: divide towards Melozitna R., No. 740. DIOMEDE ISL.: No. 1697.

The above numbers no doubt belong to *P. alaskanum*, which is closely related to *P. radicum* Rottb. but which differs from that species by the more slender scapes, narrower and more deeply dis-

sected leaves and by the long-persisting old stipules. *P. alaskanum* is nearly always found in turfy or peaty soil, in closed vegetation, whereas *P. radiculatum* grows in sandy or gravelly places. From *P. microcarpum* and *P. Macounii*, as pointed out by Hultén, l. c., it is at once distinguished by the absence of the central projection of the stigma.

Papaver alaskanum is apparently common in the mountains of the interior, the Bering Sea region and on the arctic coast of Alaska east to Cape Bathurst.

P. MACOUNII Greene, Pitt. 3: 247 (1897); Macoun, Fur Seal & Fur Seal Isl. of N. Pacific, 3: 562, tab. 88 (1899).—NORTON SD.: Unalaklet, in old overgrown dunes, near the sea-shore, No. 1109.

P. MICROCARPUM DC.—SEWARD PEN.: south coast, Bluff, No. 1232; Nome, No. 1351. Rare or occasional on dry hillsides.

P. Walpolei, n. sp. (TAB. 552, FIG. 4–10). Herba dense caespitosa perennis radice crassa verticali; foliis dense confertis breviter petiolatis, 1.5–4.0 cm. longis, integris vel tri-lobatis tantum, omnino glabris, saturate viridibus et aliquantulum coriaceis; stipulis veteribus longe marcescentibus; scapo 6–16 cm. alto parte inferiori subglabro, superiori submolliter hirsuto, erecto etiam ante anthesi; floribus 2.0 (raro 4.0) cm. diametro, petalis sulfureis vel gilvis, siccatis viridescentibus; capsula 1.5 cm. longa, obovoideo-pyriformi, in stigma latissimum valde attenuata, lobis stigmatis aliquantulum auriculatis; semine 1.0–1.2 mm. longo, lunato, subnitido.

Densely caespitose perennial, with a stout tap root; leaves densely crowded, short-petioled, 1.5 to 4.0 cm. long, the blade entire or merely 3-lobed, entirely glabrous, dark green and somewhat coriaceous; the old stipules long persisting; scape 6 to 16 cm. high, glabrous below, hirsute-strigose above, erect even in pre-anthesis; the flowers 2.0 (rarely 4.0) cm. in diameter, petals pale yellow or creamy white, turning green in drying; capsule 1.5 cm. long obovoid-pyriform strongly tapering from the very broad stigma, stigma-lobes somewhat auricled; seed 1.0 to 1.2 mm. long, crescent-shaped and somewhat shiny.—SEWARD PEN.: Nome, Anvil Hill, gravelly mountain slope and cliffs, August 6–10, 1926, *A. E. & R. T. Porsild*, No. 1352 (TYPE); Bluff, No. 1231; Nome, *B. Miller*, No. 137-C (US); *Thornton*, Nos. 304-A and 404-B (US, T); Port Clarence, *Walpole*, Nos. 1432, 1470 and 1473 (US). Thus far known only from mountains of Seward Peninsula.

Papaver Walpolei is named for *F. A. Walpole*, who, in 1901, appears first to have collected this strikingly distinct species. It appears to be well distinguished from all other boreal or arctic members of the genus by its sub-entire or few-lobed, entirely glabrous, almost coriaceous, dark green leaves. It is marked also by its very distinctive obovoid-pyriform capsule, strongly tapering from the broad stigma.

CORYDALIS PAUCIFLORA (Steph.) Pers.—ALASKA RANGE: Broad Pass, No. 40. Rare or occasional on high mountains of the interior of Alaska and Yukon. Also known from Norton Sound, Seward Pen. and islands in the Bering Sea.

C. SEMPERVIRENS (L.) Pers.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 135. KOKRINES MTS.: divide towards Melozitna R., No. 739. Occasional on gravelly mountain slopes of the interior.

The record in Pullen's list (Seem. l. c.) "from Pt. Barrow to Mackenzie" certainly must be due to confusion of labels.

SUBULARIA AQUATICA L.—ALASKA RANGE: Richardson Highway, between Paxson and Summit, elevation 3000 feet, No. 546-A. SEWARD PEN.: north coast, Buckland R., No. 1576. Rare, or perhaps often overlooked, on muddy, calcareous margins of small ponds and lakes.

Not previously recorded from central or northern Alaska.

COCHLEARIA OFFICINALIS L. s. l.—NORTON SD.: Qigertariaq, No. 1084. SEWARD PEN.: Port Clarence, No. 1436. DIOMEDE ISL.: Nos. 1700 and 1701. Common along the sea-shores of the Bering Sea region.

As pointed out by Hultén, Fl. Kamtch. 2: 146–147 (1928), the various attempts to subdivide the circumpolar *C. officinalis* have not produced very satisfactory results. There does seem, however, to be a western and an eastern race. The above belongs to the western race, distinguished by its longer pods.

APHRAGMUS ESCHSCHOLTZIANUS Andrz.—SEWARD PEN.: Sawtooth Mountains, Grand Central Peak, *Thornton*, No. 409 (US, T).

This very rare species, outside of the Aleutian Islands, in Alaska is known but from the above collection, where it was found in one place only.

EUTREMA EDWARDSII R. Br.—ALASKA RANGE: Broad Pass, in open spruce woods, No. 51-A; Mts. between Healy and Moody Creeks, No. 260. NORTON SD.: Pastolik, No. 1002; hills back of Pastolik, No. 911. SEWARD PEN.: Nome, *Flett* (US); Cape Lisburne (68° 50') No. 1860. Common in not too wet tundra in the Bering Sea region; rare or occasional on high mountains of the interior.

SINAPIS ARVENSE L.—ALASKA RANGE: Richardson Hwy., between Summit and McCarty, along roadsides, No. 425 (introduced).

BARBAREA ORTHOCERAS Ledeb.—ALASKA RANGE: Broad Pass, No. 46 (probably introduced). SEWARD PEN.: Nome, *Thornton*, No. 42 (T).

RORIPPA barbareaefolia (DC.) n. comb. *Camelina barbareaefolia* DC. Syst. 2: 517 (1821). *Tetrapoma barbareaefolium* (DC.) Turcz. ex Fisch. & Mey. Ind. Sem. Hort. Petrop. 1: 39 (1835). *T. Kruhsianum*

Fisch. & Mey. l. c. *T. pyriforme* Seem. Bot. Voy. Herald, 24, t. 2 (1852), illegitimate substitute name for the two earlier ones cited above.—SEWARD PEN.: north coast, Buckland R., No. 1578.

Seemann, l. c., without formally describing his plant under his new name, united *T. barbareaefolium* Turcz. and *T. Kruhsianum* Fisch. & Mey. (*T. Crusianum* Turcz.). His plate shows a perfectly glabrous plant, although in the text he says about the leaves: "like the whole plant, more or less covered with hair."

Our plant is biennial, the stems are simple or somewhat branching above, hispid-pubescent, 30 to 50 cm. high, stem and radical leaves lanceolate, pinnate, sparingly hispid; the siliques are 4-valved and have 4 (sometimes joined) cells and are further distinguished by being dehiscent at the apex; the style is about 0.75 mm. long, stout, with a truncated stigma; the seeds are small, oblong, punctate and very numerous, 0.6 x 0.4 mm.

Seemann, l. c., says that he has reason to believe that "*T. pyriforme*" was brought to St. Michaels by the Russians, but that it has since become "perfectly wild."

Rorippa barbareaefolia, with *Descurainia sophioides* and *Senecio palustris*, is ubiquitous in all mining camps visited by us. So common are these species on fresh mining-dumps that placer miners in that region believe that the seed has been dug up from the mines with frozen "muck." The truth no doubt is that the above species are amongst the pioneers on new soil. *Senecio palustris* is hapaxanthic and the other two are biennials; all produce an abundance of small, light seed suitable for dispersal by wind and for these reasons are able to spread with amazing rapidity. On the other hand these pioneers cannot successfully compete with the weedy type of perennials, such as *Arctagrostis arundinacea*, *Polygonum alpinum* var. *alaskanum* and *Artemisia Tilesii*, which in a few years succeed them. For this reason *Rorippa barbareaefolia* and its associates are in evidence on fresh mining dumps only.

Rorippa barbareaefolia is not uncommon in suitable places in the Norton Sd. and Kotzebue Sd. regions, far from past and present human habitation. While it might perhaps have been introduced at St. Michaels, the species, no doubt, is indigenous to Alaska.

In addition the writer has seen specimens from YUKON R.: between Ramparts and Tanana, Aug. 9, 1932, L. J. Palmer, No. 12 (sub *Radicula clavata* (Rydb.) Macoun) (US) and from the YUKON TERRITORY:

Klondike flats, *Macoun*, No. 58.377 and Hunker Cr., *idem*, No. 58.378 (both Can). The last two sheets were first named *Radicula hispida* but later (by Theo. Holm) changed to *Rorippa Williamsii* Britt. Bull. N. Y. Bot. Gard. **2**: 171 (1901). The writer in 1937 failed to locate the type of *R. Williamsii* in N. Y. Botanical Garden herbarium, described (l. c.) as being but 15 cm. tall and glabrous, with no mention of tetramerous siliques.

R. PALUSTRIS (L.) Bess.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 136 (var. *GLABRATA* (Lunell) Vict.); same place, No. 137 (var. *HISPIDA* (Desv.) Rydb.).

CARDAMINE BELLIDIFOLIA L.—ALASKA RANGE: Broad Pass, No. 47; KOKRINES MTS.: divide towards Meložitna R., No. 742; same place, No. 743 (var. *LAXA* Lge.). NORTON SD.: hills back of Unalaklet, No. 1154. Rare or occasional on moist cliffs throughout the region but in the interior perhaps limited to high mountains.

C. BELLIDIFOLIA L. var. *BERINGENSIS* A. E. Porsild in Trans. Royal Soc. of Can. ser. 3, sect. 5, **32**: 31 (1938).—DIOMEDE ISL.: No. 1699. Shores and islands of the Bering Sea region. Also known from mountains of central Alaska, STEESE HIGHW.: Eagle Summit, 109 miles n. of Fairbanks, 3880 ft. elevation, *E. Scamman*, No. 781 (G).

C. BLAISDELLII Eastw. in Bot. Gaz. **33**: 146 (1902). *C. digitata* Kjellm. (non Richards.) f. *oxyphylla* Trautv. Vega Exp. **2**: 44 (1883); *C. hyperborea* Schultz, Mon. Card. 550 (1903) saltem quoad pl. As. orient. et Am. occid. extr. See Porsild in Trans. Royal Soc. Can. ser. 3, sect. 5, **32**: 31 (1938).—KOKRINES MTS.: No. 672; divide towards Meložitna R., No. 744. SEWARD PEN.: south coast, Bluff, No. 1243-A; Nome, No. 1354; same place, *Thornton*, No. 309-A (US); Port Clarence *Walpole*, No. 1897 (US). DIOMEDE ISL.: Nos. 1698 and 1699-A. Rare or occasional in moist, springy places.

C. PRATENSIS L.—FAIRBANKS: No. 191. KOKRINES MTS.: No. 673; divide towards Meložitna R., No. 745. NORTON SD.: Pastolik, Nos. 1004 and 1004-A. SEWARD PEN.: Nome, Nos. 1353, 1353-A and 1354-A. Occasional in marshy places.

The above material, except Nos. 191, 673 and 1004, belongs to a form which has the leaf-blade and petiole densely covered with strigose pubescence. The var. *angustifolia* Hook., common elsewhere in the Arctic, was not seen by us in Alaska.

C. PENNSYLVANICA Muhl.—SEWARD PEN.: north coast, Buckland R., No. 1577. Sterile leaf-rosettes from a creeping stolon.

C. PURPUREA Cham. & Schlecht.—ALASKA RANGE: Broad Pass, No. 49; Mts. between Healy and Moody Creeks, No. 259. KOKRINES MTS.: *Miller*, No. 1607 (US). NUNIVAK ISL.: *L. J. Palmer*, No. 165 (US). SEWARD PEN.: south coast, Bluff, No. 1243; Nome, *Grace Hill*, No. 63 (US); Port Clarence, *Walpole*, Nos. 1413 and 1941 (US).

The numbers cited from U. S. National Herbarium are labelled *C. Blaisdellii*. In our No. 1243 the siliques are linear, 18 mm. long and 1.8 mm. wide, short-acuminate, with a short and stout style bearing a capitate stigma; the seeds, of which there are but 2 or 3 in each cell, are greenish-brown, 2.0 mm. long and 1.4 mm. wide. Rare or occasional on moist cliffs. In the interior on high mountains only, in the Bering Sea region north to Wainwright Inlet.

C. UMBELLATA Greene, Pitt. 3: 154 (1897).—ALASKA RANGE: Richardson Highw., Castner Glacier, very rare, on fresh moraines, near the glacier, No. 480. NUNIVAK ISL.: *L. J. Palmer*, No. 191 (US). SEWARD PEN.: Nome, *Thornton*, No. 804 (US, T) and *B. Miller*, No. 209-C.

New to the interior of Alaska.

LESQUERELLA ARCTICA (Wormskj.) Wats. var. *PURSHII* Wats. in Proc. Am. Acad. (whole ser.) 23: 254 (1888).—HEAD OF CHITINA R.: *H. M. Laing*, Nos. 91 and 92. SEWARD PEN.: south coast, Bluff, No. 1241; Nome, *Thornton*, No. 308 (T).

Previously recorded from Alaska but once, from Port Clarence (*Kjellm.*).

CAPSELLA BURSA-PASTORIS (L.) Medic.—FAIRBANKS: College, No. 227. TANANA R.: Hot Springs, No. 642. SEWARD PEN.: Nome, *Thornton*, Nos. 33 and 408 (T). Common north to the limit of horticulture.

DRABA AUREA M. Vahl.¹—ALASKA RANGE: Broad Pass, No. 43; Nenana Valley, Healy, No. 350; Richardson Highw., between Paxon and Summit, No. 545. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 81, 82 and 85-87. Rare or occasional in dry calcareous soil on mountains of the interior.

DR. CRASSIFOLIA Grah.—ALASKA RANGE: Richardson Highw., between Paxon and Summit, No. 544.

Not previously recorded from northern Alaska.

DR. DENSIFOLIA Nutt. in Torr. & Gray, N. Am. Fl. 1: 104 (1838); Ekman, Sv. Bot. Tidskr. 25, 4: 486 (1931).—ALASKA RANGE: Broad Pass, on dry, gravelly slope, No. 61; Nenana Valley, Healy, *J. P. Anderson*, No. 1673 (NY). NORTON SD.: hills back of Unalaklet, No. 1155.

This rare, cordilleran *Draba* forms small, dense cushions on dry, gravelly slopes of high mountains. The flowers are pale yellow. New to the flora of Alaska.

¹ The *Drabae* in the writer's collection, except *Dr. hyperborea*, were named by the late Mrs. El. Ekman, Stockholm; the annotations are by the writer.

DR. EXALATA El. Ekman in Sv. Bot. Tidskr. **25**, 4: 489 (1931), pl. 5, fig. 3.—SEWARD PEN.: south coast, Bluff, No. 1233 (TYPE).

Our specimens are in fruit but in field notes the flowers are said to be yellow.

DR. FLADNIZENSIS Wulfen \times LACTEA Adams.—ALASKA RANGE: Richardson Hwy., Paxon, No. 543; Nenana Valley, Healy, No. 348-A.

The writer is inclined to agree with Fernald, RHODORA, **36**: 286 (1934) that *Dr. fladnizensis* and *Dr. lactea* (*Dr. Wahlenbergii*), at least as far as our region is concerned, cannot be separated.

DR. GLABELLA Pursh. *Dr. daurica* DC. See Fernald in RHODORA, **36**: 333 (1934).—ALASKA RANGE: Broad Pass, No. 44; Richardson Hwy., between Summit and Paxon, No. 546; Paxon, No. 577. KOKRINES MTS.: No. 674. SEWARD PEN.: south coast, Bluff, Nos. 1236 and 1237. Common on the Bering Sea coasts, but in the interior in alpine stations only.

Mrs. El. Ekman saw a hybrid (*Dr. daurica* \times *aurea*) in Nos. 546 and 577; to the writer there is nothing in these numbers to suggest *Dr. aurea*; they are not typical *Dr. daurica* but resemble *Dr. MacCallae* Rydb., generally treated as a variety of *Dr. glabella*.

DR. HYPERBOREA Desv.; see Porsild, in Trans. Royal Soc. Can. ser. 3, sect. 5, **32**: 32 (1938); for complete synonymy, see Hultén, Fl. Aleut.—DIOMEDE ISL.: No. 1702. Common on moist sea-cliffs.

Thus far not known from the American shores of Bering Strait.

DR. INCERTA Payson in Am. Journ. Bot. **4**: 261 (1917). *Dr. alpina* var. *hebecarpa* sensu Macoun Cat. **1**: 49 (1883) and *Dr. alpina* var. *glacialis* (in part), *ibid.* p. 50.—HEAD OF CHITINA R.: dry, rocky slopes between 4500 and 4800 ft., *H. M. Laing*, Nos. 79 and 80.

Draba incerta apparently is a characteristic species of the higher peaks of the Canadian Rockies. It is new to the flora of Alaska.

DR. LANCEOLATA Royle. *Dr. stylaris* of auth. See Fernald in RHODORA, **36**: 357 (1934).—ALASKA RANGE: Broad Pass, No. 45 (*Dr. Thomasii* \times *cinerea*, according to El. Ekm.); Nenana Valley, Healy, No. 349. YUKON R.: just above delta, No. 835. SEWARD PEN.: south coast, Bluff, No. 1234 and 1235.

Not previously recorded from the Bering Sea region, nor from the interior.

DR. LONGIPES Raup in Contr. Arnold Arb. **6**: 165, pl. 6, fig. 2 (1934).—HEAD OF CHITINA R.: cleft in wall of canyon, alt. 4500 ft., *H. M. Laing*, No. 84.

Draba longipes, previously known only from mountains of northern British Columbia, is common also in mountains west of the Mackenzie

delta and in the Caribou Hills east of the delta. A large series in the writer's collection from here were by the late Mrs. El. Ekman doubtfully referred to *Dr. daurica* (*Dr. glabella* Pursh). Raup (l. c.) suggests that *Dr. longipes* is perhaps nearest related to *Dr. borealis* DC.

DR. NIVALIS Liljebl.—ALASKA RANGE: Broad Pass, No. 42; Nenana Valley, Healy, No. 348. NORTON SD.: Qiqertariaq, No. 1055. Rare or occasional in sandy or dry gravelly places.

DR. PILOSA DC.—ALASKA RANGE: Broad Pass, No. 41. SEWARD PEN.: Nome, Anvil Hill, Nos. 1355 and 1356.

The above numbers clearly belong to the same species, although El. Ekman referred the first to "*Dr. alpina* L. f. ad *Dr. algidam* Adams." The few-headed or simple, much elongated caudices are densely covered by the marcescent leaf-bases. The strongly one-nerved somewhat fleshy leaves are glabrous above with simple or forked hairs on the underside and along the margins. The naked scape is sparingly pubescent; the flowers are large and pale yellow.

DR. STENOLOBA Ledeb., Fl. Ross. 1: 154 (1842).—ALASKA RANGE: Richardson Highw., Castner Glacier, on fresh moraines, No. 483.

The above material matches the original description and, like Ledebour's, the plants are biennial. New to the interior of Alaska.

SMELOWSKIA CALYCINA (Steph.) C. A. Mey. var. INTEGRIFOLIA (Seem.) Rollins. See Rollins in RHODORA, 40: 294–301 (1938).—KOKRINES MTS.: divide towards Melozitna R., on dry gravelly slopes, No. 741; Kokrines Mts., L. J. Palmer, Nos. 1566 and 1588 (US). NORTON SD.: hills back of Qiqertariaq, No. 1056. SEWARD PEN.: south coast, Bluff, Nos. 1240 and 1240-A; Nome, Anvil Hill, No. 1358; Thornton, No. 307 (US, T); B. Miller, No. 128-C (US); Port Clarence, Walpole, Nos. 1444 and 2041 (US). Rare or occasional on volcanic gravels of mountains of western Alaska.

Our No. 741 differs from the remainder of the material cited above by having all leaves entire, narrowly ligulate, 20 to 40 mm. long and 3 to 4 mm. wide, finely clothed with a thin but very dense stellate pubescence. Although Rollins, l. c., has shown that in the morphological characters of flower and fruit the var. *integrifolia* entirely agrees with the species, the writer, in view of its distinct geographical range, thinks it should perhaps be considered of more than varietal rank. The range of the species (var. *typica*) has recently been extended in the Rocky Mts. north to the Arctic Ocean (Porsild ined.).

DESCURAINIA SOPHIA (L.) Webb.—ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 423 (introduced).

D. SOPHIOIDES (Fisch.) O. E. Schultz in Engler, Pflanzenr. **4**, 105: 316 (1924).—NORTON SD.: Qiqertariaq, No. 1057. SEWARD PEN.: Nome, *Thornton*, No. 59 (T); north coast, Buckland R., No. 1579; Kiwalik R., No. 1734. Common on freshly exposed soil such as slumping banks, mining-dumps etc. See notes under *Rorippa barbaeaeifolia*.

ARABIS HIRSUTA (L.) Scop. ? *A. pycnocarpa* Hopkins var. *typica* Hopkins in RHODORA, **39**: 112–113 (1937).—FAIRBANKS: College, sandy soil in open spruce forest, No. 228.

Hopkins (l. c.) points out that the plant which in North America has passed as *Arabis hirsuta* L. differs from *A. hirsuta* of the Old World in some important characters, such as length of the style, relative width of the wing of the seed, etc. The American plant, by Hopkins named *A. pycnocarpa*, according to him is represented by four varieties of which var. *typica* in Canada is said to extend from eastern Quebec to the Yukon Territory.

It appears to the writer that the plant of western Canada and Alaska is intermediate between those of eastern America and Eurasia and that in the seed-character and in the length of style it is inseparable from the latter. More material from Alaska and Yukon is needed, however, before this point may be satisfactorily settled. Our No. 228 from central Alaska is inseparable from material collected in the Wood Buffalo Park, Mackenzie Basin by Hugh M. Raup, Nos. 2492, 2495, 2498 and 2500 (Can).

A. LYRATA L. var. *GLABRA* (DC.) Hopkins in RHODORA, **39**: 93 (1937).—ALASKA RANGE: Broad Pass, No. 48; Nenana Valley, Healy, No. 347; Richardson Highw., Castner Glacier, No. 482; Paxon, No. 578. Common in the interior in moist, sandy or gravelly places.

Although previously known from Yukon Territory and from the Pacific coast of Alaska the var. *glabra* does not appear to have been recorded from central Alaska.

A. LYRATA L. var. *KAMCHATICA* Fisch.—ALASKA RANGE: Richardson Highw., Castner Glacier, No. 481 (approaching var. *glabra*). YUKON R.: just above delta, No. 837.

A. RETROFRACTA Graham. See Hopkins in RHODORA, **39**: 179–183 (1937).—ALASKA RANGE: Richardson Highw., between Summit and McCarty, Nos. 424 and 424-A. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 93 and 94. On dry calcareous slopes.

The above localities should be added to the distribution given by Hopkins (l. c. and map 30). Although known from northern British Columbia and central Yukon the species does not appear to have been recorded previously from Alaska.

ERYSIMUM CHEIRANTHOIDES L.—YUKON R.: alluvial banks just above the delta, No. 836.

E. INCONSPICUUM (S. Wats.) McMill.—HEAD OF CHITINA R.: *H. M. Laing*, Nos. 95–98.

Not previously recorded from Alaska.

ALYSSUM AMERICANUM Greene, Pitt. 2: 224 (1892).—Of this very rare plant the writer has seen the following specimens: ENDICOTT MTS.: upper Koyukuk R., Old Man Cr., *Mendenhall*, July 8, 1901 (US, Can). YUKON R.: Coal Cr. near International Boundary, *Fr. Funston*, No. 77 (US, Can). PORCUPINE: Ramparts, *Fr. Funston*, No. 178 (US).

PARRYA NUDICAULIS (L.) Regel in Bull. Mosc. 34, 2: 654 (1861). *P. macrocarpa* R. Br. in Parry's 1st. Voy. App. 270 (1824); Hook. Fl. Bor.-Am. 1: 47, tab. 15 (1840).—ALASKA RANGE: Broad Pass, No. 51. SEWARD PEN.: south coast, Bluff, No. 1242; Nome, No. 1357.

The above specimens belong to Hooker's var. ASPERA which differs from the plant of arctic Canada by being more or less glandular-pubescent and by its somewhat shorter siliques, tapering at both ends and containing but two (or one) seeds in each cell (Hook. tab. 15 B). Rare or occasional on moist, alpine slopes.

BRAYA HUMILIS (C. A. Mey.) Robins., Syn. Fl. N. Am. 1: 141 (1895). *Sisymbrium humile* C. A. Mey. in Ledeb. Fl. Alt. 3: 137 (1831); *Torularia humilis* (C. A. Mey.) Schultz in Fedde, Repert. 12: 390 (1922).—ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 422. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 89 and 90. SEWARD PEN.: south coast, Bluff, No. 1238; Nome, *Thornton*, No. 306 (US, T). KOBUK R.: *L. J. Palmer*, No. 661 (US). Rare or occasional on alluvial banks.

BR. PURPURASCENS (R. Br.) Bunge.—SEWARD PEN.: south coast, Bluff, No. 1239; Port Clarence, *Walpole*, No. 1934 (US). Rare or occasional on mountains of Seward Pen.

DROSERA ROTUNDIFOLIA L.—FAIRBANKS: No. 599. KOKRINES MTS.: divide towards Melozitna R., No. 786. SEWARD PEN.: north coast, Buckland R., No. 1615. Occasional, or no doubt perhaps often overlooked, in sphagnum bogs.

Not previously recorded from northwestern Alaska.

RHODIOLA INTEGRIFOLIA Raf. in Atl. Journ. 1: 146 (1832). *Sedum frigidum* Rydb. in Bull. Torr. Bot. Cl. 28: 282 (1901); *Sedum Rhodiola* auth. non L. quoad pl. Alask.—ALASKA RANGE: Broad Pass, No. 52; Talketna Mts., *J. P. Anderson*. KOKRINES MTS.: divide towards Melozitna R., No. 748. SEWARD PEN.: Nome, *Thornton*, No. 314 (US); Port Clarence, No. 1437.

Hultén, Fl. Aleut. 206, maintains that it does not seem possible to keep *Rhodiola rosea*, *R. integrifolia* and *R. alaskana* apart. While

that may apply to the last two, these seem well enough distinct from *R. rosea* of Europe and eastern N. America, where it is confined to Greenland, Labrador south to cold ravines in N. Y. and Pa. Any *Rhodiola* occurring in arctic America west of the Mackenzie certainly should be referred to *R. integrifolia*. The latter grows in moist, calcareous meadows whereas *R. rosea* is a plant of dry, rocky ledges.

BOYKINIA RICHARDSONII (Hook.) Bray.—ALASKA RANGE: Broad Pass, No. 59; Mts. between Healy and Moody Creeks, No. 263. KOKRINES MTS.: divide towards Melozitna R., No. 750. SEWARD PEN.: Nome, No. 1367; Port Clarence, *Walpole*, No. 1550 (US). Rare or occasional in moist alpine meadows north to Cape Lisburne, east to mountains of Yukon Territory.

SAXIFRAGA BRACTEATA D. Don.—DIOMEDE ISL.: No. 1707.

From N. W. Alaska recorded previously from Kotzebue Sd. only (fide Hultén, Fl. Aleut.).

S. BRONCHIALIS L. ssp. **FUNSTONII** (Small) Hultén. See his Fl. Kamtch. 3: 14–17 (1929).—ALASKA RANGE: Nenana Valley, Healy, No. 353. SEWARD PEN.: south coast, Bluff, No. 1252; Port Clarence, *Walpole*, No. 1586 (US); north coast, Buckland R., No. 1582. DIOMEDE ISLAND: No. 1710. Occasional in alpine, gravelly places.

S. CESPITOSA L.—SEWARD PEN.: Port Clarence, *Walpole*, No. 2060.

Not seen by us.

S. CERNUA L.—ALASKA RANGE: Richardson Hwy., Castner Glacier, No. 492. SEWARD PEN.: south coast, Bluff, No. 1247; Nome, No. 1362; Port Clarence, *Walpole*, No. 1916 (US); north coast, Kiwalik, No. 1470. Common throughout, but in the interior restricted to alpine places.

S. ESCHSCHOLTZII Sternb.—ALASKA RANGE: Broad Pass, Cantwell, *L. J. Palmer*, Nos. 1911 and 1966 (US). SEWARD PEN.: Nome, *Thornton*, No. 421-A (US, T); Port Clarence, *Walpole*, Nos. 1452 and 1533 (US); Cape Prince of Wales, No. 1733. KOTZEBUE SD.: Kiwalina, *L. J. Palmer*, No. 214 (US). Occasional in alpine, gravelly places.

New to the interior of Alaska.

S. FLAGELLARIS Willd.—NORTON SD.: hills back of Pastolik, No. 915; Qiqertariaq, No. 1058. SEWARD PEN.: Nome, No. 1365. Common on dry, gravelly slopes on mountains of north and northwest Alaska.

S. FOLIOLOSA R. Br.—*S. stellaris* L. var. *comosa* Retz.—SEWARD PEN.: Nome, No. 1364; *Thornton*, No. 305 (US, T). DIOMEDE ISL.: No. 1706. Common on islands and shores of Bering Sea; apparently rare or absent in mountains of the interior.

S. HIERACIFOLIA W. & K.—ALASKA RANGE: Broad Pass, No. 54; Richardson Hwy., between Summit and McCarty, No. 426. KOK-

RINES Mts.: *L. J. Palmer*, No. 1553 (US). SEWARD PEN.: south coast, Bluff, No. 1246; Nome, No. 1366. Common in dry upland tundra of northwest Alaska; in the interior perhaps limited to high mountains.

S. HIRCULUS L.—ALASKA RANGE: Mts. between Healy and Moody Creeks, No. 261; Nenana Valley, Lignite, No. 305; Healy, No. 354; Richardson Highw., between Summit and McCarty, No. 427. KOKRINES Mts.: divide towards Melozitna R., No. 749. NORTON SD.: Pastolik, Nos. 1000 and 1001 (the last with flowers 3.0 to 3.5 cm. diam.); Unalaklet, No. 1111. SEWARD PEN.: south coast, Bluff, No. 1249; Nome, No. 1361 (a form 4 cm. high with very narrow, deflexed petals); north coast, Buckland R., No. 1583. Perhaps the most common member of the genus in Alaska.

The usual form in northwestern Alaska is the ferrugineous-villous var. *ALPINA* with large, deep orange-colored flowers; the pale yellow, small-flowered var. *PROPINQUA* is not uncommon, however, and there are plenty of transitional forms.

S. INTEGRIFOLIA Hook., Fl. Bor.-Am. 1: 249, tab. 86 (1832).—SEWARD PEN.: north coast, Buckland R., in a wet swale by a brook near summit of Clem Mt., No. 1581.

The above collection matches Hooker's description and plate, except that the scape, which is that of the mature fruiting plant, is now almost glabrous, except for a few remaining glandular hairs. Apparently new to the flora of Alaska.

S. NIVALIS L.—DIOMEDE ISL.: No. 1711.

Not observed by us on the mainland of Alaska. Most, if not all, previous records from Alaska probably refer to *S. reflexa*.

S. NUDICAULIS D. Don.—SEWARD PEN.: Nome, *Flett* (US); Port Clarence, *Walpole*, No. 1724 (US). DIOMEDE ISL.: No. 1709. Rare or occasional on moist cliffs of shores and islands of the Bering Sea.

S. OPPOSITIFOLIA L.—ALASKA RANGE: Mts. between Healy and Moody Creeks, No. 262. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 99–101. KOKRINES Mts.: No. 675. SEWARD PEN.: south coast, Bluff, No. 1250. Common on gravelly mountain slopes of northwest Alaska; in the interior perhaps limited to the high mountains.

S. OPPOSITIFOLIA L. var. *SMALLIANA* E. & I. *S. pulvinata* Small in Bull. N. Y. Bot. Gard. 2: 172 (1901). SEWARD PEN.: Bluff, gravelly mountain slopes, No. 1251.

Of the several varieties or forms of *S. oppositifolia* the var. *Smalliana* certainly is one of the most remarkable. It differs from the typical form of the species by having the leaves densely imbricated in 4 rows, like a *Cassiope tetragona*, and by having its flowers on short, naked

peduncles. It was described from mountains of Yukon Territory and has not been reported before from Alaska.

S. PUNCTATA L. sens. lat.—ALASKA RANGE: Broad Pass, No. 55; Nenana Valley, Healy, No. 356; Richardson Highw., between Summit and McCarty, No. 428. SEWARD PEN.: Port Clarence, No. 1438. DIOMEDE ISL.: No. 1704.

As pointed out by Hultén (Fl. Aleut. pp. 213–214) it does not seem possible to segregate in a satisfactory manner the American representatives of *S. punctata* L. The plant most common in our area may be characterized by its short, erect root-stock, green foliage and stem, with leaf-petioles more than twice as long as the blade and with inflorescence in anthesis more or less capitate. The plant of arctic Canada east of the Mackenzie more closely approaches *S. aestivalis*, but differs by its almost black capsules and purplish scapes and leaves, in which characters it approaches ssp. *insularis* Hultén.

S. RADIATA Small in N. Am. Fl. **22**, 2: 128 (1905). *S. exilis* Steph. in Sternb. 1st. Suppl. Rev. Saxifr. 8 (1822), non Pall.—SEWARD PEN.: Nome, Thornton, No. 424 (US, T); Port Clarence, Walpole, Nos. 1599, 1754 and 1881, (US); Cape Espenberg, Jas. T. White (US); north coast of Alaska, Camden B., Can. Arct. Exp. Nos. 3 and 111 (sub. *S. cernua*). Moist places in the mountains of northwest Alaska and the Yukon, east along the arctic coast to Mackenzie.

S. REFLEXA Hook., Fl. Bor.-Am. **1**: 249, tab. 85 (1840). *S. radulina* Greene, Pitt. **3**: 308 (1898); *S. yukonensis* Small in N. Am. Fl. **22**, 2: 145 (1905).—ALASKA RANGE: Broad Pass, No. 56; Nenana Valley, Lignite, J. P. Anderson. NORTON SD.: Qigertariaq, No. 1059. SEWARD PEN.: south coast, Bluff, No. 1248. Occasional on gravelly mountain slopes of northwest Alaska, north to Seward Pen.; in the interior on high mountains only.

New to the flora of Alaska. Most, if not all, earlier records of *S. nivalis* from the mainland of Alaska probably belong here.

S. RIVULARIS L.—ALASKA RANGE: Broad Pass, No. 57. SEWARD PEN.: Nome, No. 1363; Port Clarence, No. 1439. DIOMEDE ISL.: No. 1705. Rare or perhaps often overlooked; in moist, sandy places of the Bering Sea shores; in the interior perhaps on high mountains only.

S. SERPYLLIFOLIA Pursh.—ALASKA RANGE: Broad Pass, Cantwell, L. J. Palmer, No. 1908. SEWARD PEN.: Nome, Thornton, No. 426-A-B (T). WRANGEL ISLAND: Dr. Ross (Cruise of Corwin) (US). DIOMEDE ISL.: No. 1708. Rare or occasional on moist, gravelly mountain slopes on islands and shores of Bering Sea, as well as on high mountains in the interior.

New to the flora of central Alaska.

S. SPICATA D. Don. in Trans. Lin. Soc. **13**: 354 (1821). *S. galacifolia* Small in Bull. N. Y. Bot. Gard. **2**: 172 (1901); *Micranthes spicata* (D. Don) Small in N. Am. Fl. **22**, 2: 146 (1905).—YUKON R.: Anvik, *J. W. Chapman*, No. 35 (G); just above delta, No. 838. NORTON SD.: Pastolik, No. 999; hills back of Pastolik, No. 914; St. Michaels, *Bannister* (G, US). SEWARD PEN.: Nome, *Thornton*, No. 803 (US). Rare or occasional in moist herb-mats in mountains of Norton Sd. and Seward Pen.

S. STELLARIS L.—SEWARD PEN.: Port Clarence, *Harriman Exp.* No. 1883 (US).

The writer has seen no other true *S. stellaris* from western North America.

S. TRICUSPIDATA Rottb.—ALASKA RANGE: Broad Pass, No. 53; Nenana Valley, Healy, No. 355. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 102 and 103. Rare or occasional in high mountains of the interior, apparently rare in the Bering Sea region.

S. UNALASCHKENSIS Sternb.—ALASKA RANGE: Broad Pass, Cantwell, *L. J. Palmer*, No. 1945 (sub. *S. Lyallii* (US)). SEWARD PEN.: Port Clarence, *Walpole*, Nos. 1450 and 1477. DIOMEDE ISL.: No. 1709-A.

New to the mainland of northwest Alaska.

CHRYSOSPLENIUM BERINGIANUM Rose.—SEWARD PEN.: Nome, *Thornton*, Nos. 419 and 420 (T). DIOMEDE ISL.: No. 1703. Rare or occasional on moist cliffs of islands and shores of Bering Sea.

C. TETRANDUM Fries.—ALASKA RANGE: Broad Pass, No. 58, with mature seeds on June 8–11; Nenana Valley, Healy, No. 352. KOKRINES MTS.: divide towards Melozitna R., No. 746. SEWARD PEN.: south coast, Bluff, No. 1245; Nome, No. 1360; Port Clarence, *Walpole*, No. 1961 (US); Cape Lisburne, *Washburn* (US). Common in moist, shaded places.

Because of its strong preference for manured soil *C. tetrandum* is commonly found in old abandoned Eskimo dwellings, graves, etc.

PARNASSIA KOTZEBUEI Cham. & Schlecht.—ALASKA RANGE: Broad Pass, No. 60; Nenana Valley, Lignite, No. 304; Richardson Highw., Castner Glacier, No. 491. SEWARD PEN.: Nome, No. 1359; north coast, Buckland R., No. 1580. Common in calcareous soil; in the interior perhaps on high mountains only.

P. PALUSTRIS L.—NORTON SD.: Pastolik, No. 998; Qiqertariaq, No. 1085. SEWARD PEN.: south coast, Bluff, No. 1244. Common in moist, calcareous meadows.

P. PALUSTRIS L. var. *NEOGAEA* Fernald in RHODORA, **39**: 311 (1937).—FAIRBANKS: in a muskeg, No. 192. ALASKA RANGE: Nenana Valley, Healy, No. 351. KOKRINES MTS.: divide towards Melozitna R., No. 747. HEAD OF CHITINA R.: *H. M. Laing*, No. 230.

Fernald, l. c., has shown that the American representative of *P. palustris* differs from that of Eurasia, chiefly in the shape of the cauline leaf which is deltoid as contrasted to the "round-ovate" one of the Eurasian plant. To the characters given by Fernald for his var. *neogaea* could be added that in the Eurasian plant the hypanthium, sepals and petals and also the immature capsule are densely marked by oblong to linear, rust-colored parallel streaks or spots. Such markings are but rarely seen in American material (outside the Bering Sea region where the typical form of the species occurs). Of 75 sheets of var. *neogaea* examined by the writer but two, from Labrador, showed traces of spots.

RIBES TRISTE Pall.—ALASKA RANGE: Broad Pass, flowering specimens were recorded very rare on June 8. (The single specimen collected was subsequently lost.)

From the Bering Sea region this species has been reported, as *R. rubrum*, on Seward Pen. at Port Clarence by *Rothrock* and from Kotzebue Sd. at Buckland R., by *Seemann*. As far as the writer is aware no one has collected it since.

SPIRAEA BEAUVERDIANA Schneid. in Bull. Herb. Boiss. 2, 5: 348 (1905). *S. betulifolia* Am. auth. not Pall.; *S. Stevenii* (Schneid.) Rydb. in N. Am. Fl. 22, 3: 247 (1908); see also Hultén, Fl. Kamtch. 3: 38–41 (1929).—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 138. KOKRINES MTS.: divide towards Melozitna R., No. 751. SEWARD PEN.: Nome, *Thornton*, No. 45 (T); north coast, Buckland R., No. 1591.

Hultén, l. c., is no doubt correct when he suggests that the var. *Stevenii* is merely an alpine form of *S. Beauverdiana*, not worthy of specific rank. Throughout its American range this small-leaved and much branched low form is found in exposed places; whereas in more favored habitats, particularly where ample snow-cover is assured, *S. Beauverdiana* attains a height of one meter or more, with large-leaved current year's shoots 35 cm. long. In America it seems nearest related to the more southern *S. lucida* Dougl., from which it may always be distinguished by the strongly reflexed sepals. *Spiraea Beauverdiana* is common in muskegs throughout the region, north to Kotzebue Sd.

[**S. SALICIFOLIA**. In Capt. Pullen's list (*Seemann*, l. c. p. 52) this species is recorded from "Point Barrow to Mackenzie River." The writer very much doubts that any *Spiraea* grows along the north shore of Alaska; at any rate, if so, it would most certainly be *S. Beauverdiana* and not *S. salicifolia*. But Pullen's list on the whole is most unreliable and the above, with some other curious records such as, for example, *Ribes lacustre*, for which the same distribution is given, no doubt is due to confusion of labels.]

[*S. PECTINATA* (? *Luetkea pectinata*) of Rothrock's list "about Behring's Strait" no doubt is based upon the very dubious record in Hooker, Fl. Bor.-Am. 1: 254 of a specimen collected and so labelled by Menzies.]

AMELANCHIER FLORIDA Lindl. ? *A. alnifolia* Nutt.—HEAD OF CHITINA R.: a small shrub 50 cm. high, elevation 2000 ft., *H. M. Laing*, No. 121. Not previously recorded from Alaska.

RUBUS ACAULIS Michx.—FAIRBANKS: in a muskeg, No. 195; College, No. 230. Common throughout the interior, on alluvial banks and in cold spruce woods.

R. ARCTICUS L.—KOKRINES MTS.: divide towards Melozitna R., Nos. 754 and 755.

Because of the calyx-lobes, which are pubescent on both sides and somewhat glandular, and because of the short-clawed, obovate petals the above is referred with some doubt to *R. arcticus*, rather than to *R. acaulis*.

R. CHAMAEMORUS L.—ALASKA RANGE: Broad Pass, No. 64. HEAD OF CHITINA R.: *H. M. Laing*, No. 104. KOKRINES MTS.: divide towards Melozitna R., Nos. 752 and 753. SEWARD PEN.: north coast, Buckland R., Nos. 1588 and 1589. DIOMEDE ISL.: No. 1712. Common in not too wet tundra throughout the region. One of the dominant species of low tundra in northwest Alaska.

R. IDAEUS L. var. *CANADENSIS* Richards.—HEAD OF CHITINA R.: in a burn, alt. 2500 ft., *H. M. Laing*, No. 105.

R. STELLATUS Sm.—SEWARD PEN.: Nome, No. 1368; north coast, Kiwalik R., No. 1471.

The first is typical, with 3-lobed very firm leaves and firm, brown stipules; the calyx-lobes are glandular-pubescent and strongly deflexed. On Seward Pen. *R. stellatus* is probably sterile; our specimens, on August 10, were just past flowering. No. 1471 did not appear to have flowered that season.

FRAGARIA SP.

At least one species of wild strawberry is very common on alluvial banks along the Yukon R., between Tanana and Holy Cross. Unfortunately specimens collected here were lost.

POTENTILLA BIFLORA Willd.—SEWARD PEN.: south coast, Bluff, No. 1258; Nome, No. 1369; *Thornton*, Nos. 184 and 492 (T). Rare or occasional on alpine slopes of Seward Pen. in *Dryas* heath on gravelly soil.

This is among the latest flowering species, but appears to mature fruit in normal years. The petals are pale yellow. Also known from Sadlerochit R., on the north coast of Alaska (Can. Arct. Exp.). Reported from there by Holm and Macoun (1921) as *Dryas integrifolia*.

P. ELEGANS Cham. & Schlecht.—SEWARD PEN.: Mt. Tumit in the Sawtooth Range, 3068 ft. above sea level, *Thornton*, No. 416 (T).

A small but apparently typical specimen of what appears to be the first and only American collection of this pretty species of north-eastern Asia, was found in the Thornton collection. We searched for it unsuccessfully in a number of places.

P. EMARGINATA Pursh.—DIOMEDE ISL.: No. 1713. Appears to be rare on the mainland of Alaska (Cape Vancouver, *J. M. Macoun*, No. 19.919 (Can).)

P. FRUTICOSA L.—FAIRBANKS: No. 232. ALASKA RANGE: Broad Pass, No. 65-A; Richardson Highw., between Paxon and Summit, No. 547. HEAD OF CHITINA R.: *H. M. Laing*, No. 110. KOKRINES MTS.: divide towards Melozitna R., No. 758. SEWARD PEN.: south coast, Bluff, No. 1259. Common throughout the region in muskegs, dry heath and willow thickets north to Kotzebue Sd.; also known from the north coast of Alaska on the Sadlerochit R.

P. GLAUCOPHYLLA Lehm.—ALASKA RANGE: Richardson Highw. between Paxon and Summit, No. 548. Common on moist, grassy mountain slopes.

New to the flora of Alaska.

P. HIPPIANA Lehm.—ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 429.

New to the flora of Alaska.

P. HOOKERIANA Lehm. Delect. Sem. Hort. Hamb. 10 (1849).—HEAD OF CHITINA R.: very common on dry hillsides, between 2500 and 3000 ft. elev., *H. M. Laing*, Nos. 115–117.

This little known species, previously known only from foothills and plains of Saskatchewan, Alberta and Montana, appears to be fairly common on limestone cliffs and on dry, calcareous slopes throughout the Yukon Territory east to Great Bear Lake, N.W.T. The above numbers with more abundant material in the writer's collection from Northwest Canada matches the description and the beautiful plate in Lehmann, *Revisio Potentillarum*, tab. 55 (1856). By its firm, stiffly erect flowering stems and by its small flowers in dense, many-flowered cymes *P. Hookeriana* seems well separated from all forms of the polymorphous *P. nivea*.

P. NORVEGICA L.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 139. ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 430. HEAD OF CHITINA R.: *H. M. Laing*, No. 111. TANANA R.: Hot Springs, No. 643. Common in the interior, in alluvial soil and in wet meadows.

P. PACIFICA Howell.—YUKON R.: Birches, No. 607; Kokrines, No.

625. NORTON SD.: Qiqertariaq, No. 1060. Abundant on banks of the Yukon and Tanana rivers.

P. PALUSTRIS (L.) Scop.—FAIRBANKS: Smith Lake, No. 597. KOKRINES MTS.: divide towards Melozitna R., No. 759. HEAD OF CHITINA R.: *H. M. Laing*, No. 109. YUKON DELTA: Kotlik, No. 872. SEWARD PEN.: Nome, *Thornton*, Nos. 32 and 480 (T); north coast, Kiwalik R., No. 1472; Buckland R., No. 1590. Common in wet, swampy places throughout the region.

P. PENSYLVANICA L. ?*P. virgulata* Nelson, saltem quoad pl. Alaska.—SEWARD PEN.: Port Clarence, No. 1449-A. Rare or occasional in sandy places, often on stabilized dunes near the sea-shore east to the Mackenzie delta.

P. UNIFLORA Ledeb. in Mém. Acad. St. Petersb. 5: 543 (1812). *P. villosa* Pall. var. *uniflora* Ledeb., Fl. Ross. 2: 58 (1844); *P. subquinata* var. *Pedersenii* Rydb. in Bull. Torr. Bot. Cl. 28: 182 (1901) in part; *P. Pedersenii* Rydb. in N. Am. Fl. 22, 4: 332 (1908) in part.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 140-A. ALASKA RANGE: Broad Pass, No. 65; Mountains between Healy and Moody Creeks, No. 264; same place, but larger-flowered, No. 264-A. HEAD OF CHITINA R.: *H. M. Laing*, No. 112. NORTON SD.: hills back of Pastolik, No. 916. SEWARD PEN.: south coast, Bluff, No. 1255; same place (second flowering) No. 1257; Nome, Anvil Hill, No. 1370.

After much time spent trying to divide in a satisfactory manner the very copious material in his own collection from Bering Strait to Hudson Bay, the writer, at least for the time being, has thought it best to treat *P. uniflora* as a polymorphous species having a phylogenetic affinity in the east to *P. Vahlia* and in the west to *P. villosa*.

The following three numbers perhaps are nearest related to *P. uniflora* but in some respects, particularly by the very prominent venation of the underside of the leaves, more than the rest approach *P. villosa*.—NORTON SD.: hills back of Pastolik, No. 917. SEWARD PEN.: south coast, Bluff, on bird cliffs, No. 1256; north coast, Buckland R., Clem Mt. No. 1586. *P. uniflora* appears to be common on alpine, gravelly slopes throughout the region, east through the mountains of Yukon Territory at least to the Mackenzie R.

P. VILLOSA Pall. *P. fragiformis* var. *villosa* of auth.—YUKON R.: on alluvial banks, just above delta, No. 839.

P. villosa is a plant of the Pacific coast and barely enters our region. Seemann's report from Kotzebue Sd. certainly needs verification.

SIBBALDIA PROCUMBENS L.—ALASKA RANGE: Richardson Highw., between Paxon and Summit, No. 549. Rare or occasional on high mountains of the interior; common on islands of Bering Sea but rare or absent from the mainland of northwest Alaska.

Not previously recorded from the interior of Alaska.

GEUM GLACIALE Adams.—SEWARD PEN.: Nome, *Thornton*, No. 417 (T); Anvil Hill (field notes); Cape Prince of Wales, near the summit at 2300 ft. elevation, October 5, 1926. Rare or occasional on gravelly mountain slopes of the Bering Sea region, north to Cape Lisburne.

G. ROSSII (R. Br.) Sér.—SEWARD PEN.: Nome, Anvil Hill, No. 1371; Nome, *Thornton*, Nos. 174 and 384 (T).

Our specimens are from 25 to 35 cm. high, with flowers and immature fruit on August 6–10.

G. SP.

A tall *Geum* was seen from the railroad train in a muskeg between Fairbanks and Nenana. It most likely was *G. macrophyllum* Willd. var. *perincisum* (Rydb.) Raup, known from S. and S. E. Alaska, Yukon Territory and N. W. Mackenzie.

SANGUISORBA OFFICINALIS L.—ALASKA RANGE: Richardson Highw., between Summit and McCarty, sandy slopes and riverbanks, No. 431. YUKON R.: between Ramparts and Tanana, *L. J. Palmer*, No. 45. SEWARD PEN.: south coast, Bluff, No. 1253; north coast, Buckland R., in wet meadows by a lake, No. 1587.

Hultén, Fl. Kamtch. 3: 84 (1929), maintains that the American plant which Rydberg (N. Am. Fl. 22, 4: 387 (1908)) treated under *S. microcephala* Presl cannot be separated from the Eurasian *S. officinalis*. This view undoubtedly is correct, as least with regard to the plant of Alaska and Yukon Territory. *S. canadensis*, reported from Kotzebue Sd., Buckland R., by Seemann probably belongs here.

S. SITCHENSIS C. A. Mey.—ALASKA RANGE: Richardson Highw., moist, alpine slopes near Castner Glacier, No. 494-A; moist places by a brook near Paxon, No. 579.

In Alaska *S. sitchensis*, with *Geranium cilianthum*, *Heracleum lanatum*, *Swertia* and others, belongs to the flora of the moist Pacific slope and in the Alaska Range does not cross the divide.

DRYAS DRUMMONDII Richards.—ALASKA RANGE: Richardson Highw., gravel bars in a stream near Castner Glacier, No. 494. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 118 and 119.

Not previously recorded from north of S. E. Alaska.

DR. INTEGRIFOLIA M. Vahl.—ALASKA RANGE: Broad Pass, common locally on dry mountain slopes, No. 63. HEAD OF CHITINA R.: *H. M. Laing*, No. 120. Rare or occasional on high mountains of the interior. Thus far not known from the Bering Sea region.

DR. INTEGRIFOLIA M. Vahl var. SYLVATICA Hultén in Sv. Bot.

Tidskr. 30, 3: 527, fig. 2a (1936).—ALASKA RANGE: Nenana Valley, on gravel bars in a river flat near Lignite, No. 306.

The var. *sylvatica*, although strikingly different in its extreme form, may perhaps prove nothing more than an ecological form. It is not uncommon throughout the Yukon and N. W. Mackenzie, in shaded places in the lowland, where, as a rule, numerous transitional forms may be seen. A parallel form is found in *Dr. octopetala*. Hultén, l. c., in the diagnosis describes var. *sylvatica* as having scapes 20 mm. high. This is evidently a typographical error for in the figure, said to be half natural size, the scape measures 7.5 cm.

DR. OCTOPETALA L.—ALASKA RANGE: Nenana Valley, dry, gravelly mountain slopes near Healy (near var. ARGENTEA Blytt), No. 357; Richardson Hwy., Castner Glacier, No. 493 (a peculiar form with quite flat, almost pinnately lobed leaves 3 cm. long). KOKRINES MTS.: divide towards Melozitna R., No. 756 (var. ARGENTEA). NORTON SD.: hills back of Qiqertariaq, No. 1061 (var. ARGENTEA). SEWARD PEN.: south coast, Bluff, No. 1254; Nome, Thornton, Nos. 14 and 390 (T); north coast, Buckland R., Clem Mt., No. 1585.

Fairly common in gravelly places throughout the region, but in the interior limited to high mountains. The var. *argentea* Blytt, with leaves tomentose on both sides, is generally found on calcareous rock. *Dr. octopetala* sometimes flowers a second time late in the season. When this happens no elongation of the scapes takes place and the flowers are hidden among the leaves (No. 1061).

ROSA ACICULARIS Lindl.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 140; in a muskeg, east of the town, No. 194; College, No. 231. HEAD OF CHITINA R.: H. M. Laing, Nos. 106–108. KOKRINES MTS.: divide towards Melozitna R., No. 757. NORTON SD.: hills back of Unalaklet, No. 1156. SEWARD PEN.: Port Clarence, Teller, Thornton, No. 415 (T); north coast, Buckland R., No. 1584.

Common throughout the region, north to Kotzebue Sd. The material is remarkably uniform throughout. The plant reported by Seemann from Kotzebue Sd., Buckland R., as *R. blanda*, no doubt belongs here.

LUPINUS ARCTICUS Wats. in Proc. Am. Acad. Arts & Sci. 8: 526 (1873). *L. perennis* Hook., Fl. Bor.-Am. 1: 163 (1840) not DC.; *L. nootkatensis* var. *Kjellmanii* Ostf., Gjöa Exp. 52 (1909); *L. yukonensis* Greene, Leaflets 2:233 (1912).—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 141. ALASKA RANGE: Broad Pass, No. 69; Richardson Hwy., between Paxson and Summit No. 550. HEAD OF CHITINA R.: H. M. Laing, Nos. 122, 125, 126, 128 and 233. KOKRINES MTS.: divide towards Melozitna R., No. 763. SEWARD PEN.: north coast,

Kiwalik R., No. 1473. Common throughout the region on dry, alpine slopes and tundra, north to the arctic coast.

Although Ostenfeld, l. c., maintains that his *L. nootkatensis* var. *Kjellmanii* has no relation to *L. arcticus* Wats., the writer is quite unable to see any real difference when a long series of specimens is examined, or when the species is studied throughout the season in the field. In the type collection of *L. nootkatensis* var. *Kjellmanii*, King Pt. June-July, *Godfred Hansen* (C, Can) the stem and leaf-petioles are thinly covered by long, yellow, villous hairs, but studies in the field or examination of a larger series than Ostenfeld had at his disposal shows that these hairs are caducous. On the whole the Alaska-Yukon material of *L. arcticus* is more hirsute than that of arctic Canada, which perhaps may show relationship to *L. nootkatensis*, but none of it has the obtuse rounded apices of the leaflets so characteristic of that species.

TRIFOLIUM HYBRIDUM L.—ALASKA RANGE: Richardson Highw., between Summit and McCarty, No. 432. YUKON R.: Kokrines, No. 627. In both places introduced.

ASTRAGALUS ALPINUS L.—ALASKA RANGE: Richardson Highw., Castner Glacier, No. 496. HEAD OF CHITINA R.: *H. M. Laing*, No. 129. NORTON SD.: Pastolik, No. 1005. KOKRINES MTS.: No. 676. SEWARD PEN.: south coast, Bluff, No. 1260; Port Clarence, No. 1440; north coast, Buckland R., No. 1593-A. Common in dry tundra at the coast and on alpine, sandy slopes in the interior, north to the arctic coast.

A. FRIGIDUS (L.) Bunge var. LITTORALIS (Hook.) Wats., *Bibl. Ind.* 193 (1878); *Ostf., Gjöa Exp.* 54 (1909). *Phaca frigida* var. *littoralis* Hook., *Fl. Bor.-Am.* 1: 140.—ALASKA RANGE: Broad Pass, No. 66; Nenana Valley, Healy, No. 358; Richardson Highw., between Summit and Paxon, No. 580. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 127 and 128.

Hooker, l. c., by “calycibus leguminibusque nigro-hirsutis, caule humiliore, foliolis subtus pubescenti-incanis” well describes the plant from arctic N. W. America which extends from the arctic coast west of Mackenzie through the high mountains of Yukon and Alaska, reaching south almost to the 60th parallel, and which no doubt is the same as var. *parviflora* Ledeb., *Fl. Ross.* 1: 576.

A. **linearis** (Rydb.), n. comb. *Atelophragma lineare* Rydb. in *Bull. Torr. Bot. Cl.* 40: 50 (1913).—NORTON SD.: volcanic hills back of Pastolik, No. 918.

Our specimens match the description as well as material in the

National Herbarium of Canada determined by Rydberg. *A. linearis* is clearly separated from *A. aboriginum* by the fresh green color of the leaves, by the leaflets being glabrous above, narrow and revolute; also the pods are purplish brown and more turgid than in the latter species. New to the flora of Alaska.

A. POLARIS Benth. apud Hook., in Trans. Linn. Soc. **23**: 323 (1861). *Phaca polaris* (Benth.) Rydb. in N. Am. Fl. **24**, 6: 349.

Of this striking species thus far known only from the type locality (Eschscholtz B. in Kotzebue Sd.) there is an apparently unpublished record in the National Herbarium of Canada, from Cape Vancouver, south of the Yukon Delta, *J. M. Macoun*, No. 19.543. We looked for *A. polaris* everywhere but failed to discover it.

OXYTROPIS FOLIOLOSA Hook., Fl. Bor.-Am. **1**: 146 (1840).—HEAD OF CHITINA R.: *H. M. Laing*, Nos. 131 and 132.

New to the flora of Alaska.

O. HUDSONICA (Greene) Fern. See RHODORA, **30**: 142, pl. 172 (1928).—ALASKA RANGE: Richardson Highw., Castner Glacier, No. 495. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 136 and 137.

New to the flora of Alaska.

O. kokrinensis, n. sp. (TAB. 553). Herba subcaulescens e radice crassa verticali; caudicibus longis stipulis ferrugineis longe persistentibus petiolis adnatis, dense tectis; parte libera stipulae prominenter uninervia longe deltoidea acuta, juventute sericeo-villosa, aetate tantum ciliata et deinde quasi glabrata; foliis longe petiolatis 3–5 cm. longis impari-pinnatis, foliolis 3–4-jugis margine revolutis longe sericeo-villosis; scapis folia vix superantibus; inflorescentia plerumque biflora bracteis scariosis, pedicellis valde brevioribus; calyce violaceo villosa, dentibus subulatis quam tubo dimidio minor; corolla purpurea, 1.0–1.5 cm. longa; legumine recto intra calycem stipitato 2.0–2.5 cm. longo 0.6–0.8 cm. lato, pubescentia adpressa brevi nigro-canesciente cooperto.

Sub-caulescent from strong many-headed tap-root, the long caudices densely covered by long persisting, ferruginous stipules with attached petioles; free part of the stipule strongly nerved, long-triangular, acute, when young silky-villous, in age merely ciliate and at length almost glabrous; leaves long-petioled 3–5 cm. long with 3–4 pairs of revolute leaflets, long silky-villous; scapes barely exceeding the leaves; inflorescence mostly two-flowered, with scarious bracts much shorter than the pedicels; calyx purplish-brown, villous, the teeth subulate, half as long as the tube; corolla purple, 1.0 to 1.5 cm. long; legume straight, stipitate within the calyx, 2.0 to 2.5 cm. long, 0.6 to 0.8 cm. wide, with a short grayish-black, appressed pubescence.—KOKRINES Mts.: divide towards Melozitna R., June 23 to July 5, 1926, elevation

2000 to 4000', *A. E. and R. T. Porsild*, No. 762 (TYPE); same place No. 761.

Oxytropis kokrinensis is probably closely related to *O. rubricaudex* Hultén, Fl. Kamtch. 3: 110, fig. 14a-b, tab. 2 fig. e-f (1929) but differs in being 2-flowered and by having non-glandular stipules. From *O. revoluta* Ledeb. it differs in having the free part of the stipules acute and from *O. nigrescens* and *O. pygmaea* by its very conspicuous, dark-ferrugineous stipules and the long-marcescent leaf-petioles 1-2 cm. long. *O. kokrinensis* flowers very early; in the type number there are mature pods and flowers just opened in the same plant.

O. MAYDELLIANA Trautv. *O. campestris* var. *melanocarpa* Hook.—KOKRINES MTS.: divide towards Melozitna R., No. 760. SEWARD PEN.: south coast, Bluff, No. 1262; Nome, *Thornton*, No. 186 (T). Rare or occasional on high mountains, north to the arctic coast.

O. MERTENSIANA Turcz.; Eastwood in Bot. Gaz. 33: 206 (1902).—SEWARD PEN.: Nome, Anvil Hill, No. 1372; *Thornton*, No. 321 (T); Cape Nome, 1900, *Blaisdell* (NY).

This eastern Asiatic species thus far has been found nowhere else in America. A plant reported by *Seemann* (l. c. p. 28) from Cape Lisburne as *O. arctica* was referred with some doubt by Asa Gray in Proc. Am. Acad. n. s. 12: 7 (1884) to *O. Mertensiana*. Eastwood's record presumably is correct, although the description given, "leaves 3-5 or solitary etc.," is somewhat ambiguous.

O. NIGRESCENS (Pall.) Fisch. See Fernald in RHODORA, 30: 153 (1928).

Fernald, l. c., has shown that the plant of arctic and alpine parts of northwest America which generally has passed for *O. nigrescens* should really be called *O. pygmaea*. This view, undoubtedly, is correct on the whole, but there are specimens from the Bering Sea region of true *O. nigrescens* that well match Pallas' description. *O. nigrescens* is loosely caespitose, with long, forking caudices, densely covered by old, pale gray stipules with persisting leaf petioles. The stipules and their acuminate free part are black-villous. Typical specimens of *O. nigrescens* are: HALL ISL.: *J. M. Macoun*, No. 19.545; *Harriman Exp.* No. 2014; ST. MATHEW ISL.: *J. M. Macoun*, No. 18.510 (all Can).

O. PODOCARPA Gray.—ALASKA RANGE: Broad Pass, high alpine slope, No. 67; Mountains between Healy and Moody Creeks, 4000 feet, No. 265-A. HEAD OF CHITINA R.: *H. M. Laing*, No. 130.

Oxytropis podocarpa, in the west, appears to be a species of high mountains of the Cordilleran system, in central Alaska and Yukon

reaching north to the Arctic Circle, but which has not yet been found on the arctic coast. In anthesis it is sometimes hard to distinguish from *O. pygmaea*. The flowers as a rule are smaller and the plant is more densely pulvinate. In fruit the huge, strongly inflated pods 2–3 cm. long, strongly stipitate within the calyx, cannot be mistaken for anything else.

O. PYGMAEA (Pall.) Fern. in RHODORA, **30**: 153 (1928). *O. nigrescens* of most Am. auth. not Pall.—ALASKA RANGE: mountains between Healy and Moody Creeks, semi-barren mountain peak, 4000 feet, No. 265. SEWARD PEN.: Nome, Sawtooth Mts., *Thornton*, No. 324 (NY, T). Rare or occasional in alpine or arctic parts of Yukon-Alaska, north to the arctic coast and east to Mackenzie R.

O. RETRORSA Fern. in RHODORA, **30**: 140 (1928).—MATANUSKA VALLEY: *J. P. Anderson*, No. 1789 (NY).

New to the flora of Alaska.

HEDYSARUM ALPINUM L.—SEWARD PEN.: south coast, Bluff, No. 1261; north coast, Buckland R., No. 1592. Common on the Bering Sea coasts and the north coast of Alaska, east to the Mackenzie.

H. ALPINUM L. var. *AMERICANUM* Michx. *H. boreale* Nutt.—ALASKA RANGE: Broad Pass, No. 68; Richardson Highw., Castner Glacier, No. 497. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 138 and 139. KOKRINES MTS.: river flats, No. 677. Common in sandy, alluvial soils.

The tuber-like processes of the strong rhizomes are edible and form an important food item of the aborigines of Alaska.

The variety in the western arctic, west of Mackenzie, imperceptibly merges into the species from which it differs chiefly by its more robust growth, its long raceme and drooping flowers.

H. MACKENZII Richards.—ALASKA RANGE: Nenana Valley, Lignite, No. 307. HEAD OF CHITINA R.: *H. M. Laing*, Nos. 140, 231 and 141 (the last is var. *ALBIFLORUM*). Occasional throughout the mountains of Yukon-Alaska.

The only previous record from Alaska (Rothrock, l. c. 445), from the upper Yukon R., is open to question because it is called a "Sweetish root, eaten by Indians," which clearly shows that reference was made to the edible root of *H. alpinum* var. *americanum*.

LATHYRUS JAPONICUS Willd. See Fernald in RHODORA, **34**: 177 (1932). *L. maritimus* Big.—NORTON SD.: Qigertariaq, No. 1086 (var. *ALEUTICUS*). Common on sandy beaches of Norton Sd.

L. PALUSTRIS L. var. *PILOSUS* (Cham.) Ledeb.—YUKON R.: Birches, No. 608; Kokrines, No. 626. Common in willow thickets along the Yukon on alluvial soil.

GERANIUM ERIANTHUM DC.—ALASKA RANGE: Richardson Highw., between Paxson and Summit, No. 563. HEAD OF CHITINA R.: *H. M. Laing*, No. 142. Moist, alpine meadows of the south slope of Alaska Range.

New to the flora of the interior.

LINUM LEWISII Pursh.—HEAD OF CHITINA R.: *H. M. Laing*, No. 143. Previously (under *L. perenne*) recorded from Ft. Yukon (*Rothr.*).

CALLITRICHE HERMAPHRODITICA L. *C. autumnalis* L. For discussion see Fernald in RHODORA, 25: 211 (1923).—SEWARD PEN.: north coast, Buckland R., No. 1598. Common in tundra lakes of the Bering Sea region.

New to the flora of Alaska.

C. VERNA L. emend. Lönnroth, Obs. Crit. 17 (1854). *C. palustris* L. of Am. auth.—FAIRBANKS: Goldstream Cr. and Pedro Dome, No. 142. ALASKA RANGE: Nenana Valley, Lignite, No. 308. YUKON DELTA: Kotlik, No. 874 (f. CAESPITOSA). NORTON SD.: Pastolik, No. 1010 (f. CAESPITOSA). SEWARD PEN.: Port Clarence, No. 1441; north coast, Buckland R., Nos. 1595–1597. Apparently common in shallow ponds throughout the region.

Known previously from the Aleutians and the south coast.

EMPETRUM NIGRUM L.—HEAD OF CHITINA R.: *H. M. Laing*, No. 144. SEWARD PEN.: Nome, *Thornton*, No. 483 (T). DIOMEDE ISL.: No. 1714. Common throughout the region but in the interior sometimes absent in the lowland.

IMPATIENS BIFLORA Walt.—TANANA R.: Hot Springs, No. 655.

New to the flora of Alaska.

(To be continued)

ON THE STATUS OF *ELEOCHARIS ROBBINSII* IN NEW YORK

ROBERT T. CLAUSEN

House (1924) reported *Eleocharis Robbinsii* Oakes in New York from Dutchess County and Long Island, also as rare in the northern and central parts of the state, whence he listed it only from Essex and Oswego Counties. Although Svenson (1929 & 1939) stated the range as extending westward through central New York to Michigan and northward to the Timagami Forest Reserve, Ontario, he cited only one collection from southern New York, but on his map indicated two collections from the central part, one from the northern section,



Porsild, A E. 1939. "CONTRIBUTIONS TO THE FLORA OF ALASKA (Continued)."
Rhodora 41, 199–254.

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