



Hunt Institute for Botanical Documentation
5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
Pittsburgh, PA 15213-3890
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: www.huntbotanical.org

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The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Araceae Duck.

Lysichiton Schott.

~~A genus of only one species.~~

~~Acaulescent swamp herbs with perfect flowers; perianth four-lobed, stamens a four-lobed perianth; four stamens and a two-celled ovary. Only one species.~~

Lysichiton kamschatkense Schott.

Dracontium kamschatkense L. Sp. Pl. 2: 968, 1788.

Lysichiton kamschatkense Schott, Bot. Wochenbl. 7: 62, 1857.

A smooth, succulent, perennial herb with the habit of the eastern American "Skunk Cabbage" (*Spathyema foetida* (L.) Raf.); rootstock stout, creeping; leaves becoming very large; spathe light yellow. Common in swamps and springy places especially in the forests and ranging from Prince William Sound to southern Alaska and to Mendocino County, California. It occurs also in Kamtschatka, Sachalin and Japan, and was originally described from Siberia.

Foggy Bay, near Cape Fox, Caville and Kearney (No. 2568).

Sitka, Ferd. Bischoff, 1865-66.

Wrangel, W. H. Evans, 1897 (No. 40).

Ys Bay, on Behm Canal, M. W. Gorman, 1895 (No. 7).

New Muktakatta, Annette Island, Coville and Kearney,
(No. 861).

Alaska without special locality, Kellogg.

Aster L.

Perennial or sometimes annual herbs with usually branching stems and alternate leaves; heads corymbose or paniculate or sometimes solitary, involucre hemispheric^{al} to campanulate, sometimes oblong, bracts imbricated in several or two series, the exterior ones usually shorter, receptacle flat or convex, not chaffy, ray-flowers pistillate, ^{the rays not very narrow} disc-flowers perfect, style pro-
truding scabrous commonly in one series; achenes mostly flattened. ~~About~~ A genus of 200 or more species in North, Central and South America, in Europe, Asia and a few in South Africa. Most abundant in North and Central America.

Key to the Species.

Bracts of the involucre glabrous on the back.
A. foliaceus.

Bracts of the involucre pubescent on the back.
A. sibiricus.

Leaves, or at least some of them, serrate,
commonly acute.
A. sibiricus.

Leaves all entire, the basal ones com-
monly obtuse.
A. alpinus.

Aster foliaceus Lindl.

Aster foliaceus Lindl.; DC. Prodr. 5: 228, 1836.

Stems 30 to 70 cm. high, strict and heads solitary or branched and the heads smooth, usually smooth below, pubescent above; leaves, from linear-lanceolate to rather broadly so, on the lower somewhat spatulate, entire or ~~entirely serrate~~ ^{or sometimes sparingly serrate}; bracts outer bracts of the involucre usually slightly foliaceous, equaling or exceeding the inner, ciliate on the margin; rays violet ^{or purple}.

(Alaska) ~~the~~ the type locality, to the southern boundary, southward to British Columbia and perhaps to the mountains of eastern California.

Alutian chain. - Alaska, Kellogg, 1867 (No. 238).

Kodiak Island. - Georgeson, 1878, Harrington, 1871-72, Kellogg, 1867 ¹⁸⁷⁴ (Nos. 368).

Gulf of Alaska. - Middleton Island, "The Albatross", Aug. 26, 1888.

Lakutat Bay. - Khantak Island, Lunston, 1892 (No. 78).

Ranthiastrium Alaska. - Junceau, Grace E. Colby,
July 24, 1891, Canille & Kearney (No. 2492), Sitka,
Tilling, 1867 (No. 194). Yes Bay, Sawell, 1875 (No.
1632). West of Back Bay, Garman, 1895 (No. 149).

Aster sibiricus L.

Aster sibiricus L. Sp. Pl. 2: 872, 1753.

Aster richardsonii Sprng. Syst. 3: 528.

Aster richardsonii giganteus Hook. Fl. Bor. Am.
2: 7, 1834.

Aster giganteus Rydb. in Britton ~~and~~ Rydb. Bull.
N. Y. Bot. Gard. 2: 184, 1901.

Aster arcticus Cassin & Gardner, Bot. Gaz. 33: 158, 1902.

Stems 45-30 cm. high, commonly branched,
pubescent at least above; leaves spatulate-
oblanccolate to broadly lanceolate, serrate,
or sometimes entire usually conspicuously cinereous-pubescent
beneath, sparingly ^{scabrous} pubescent or glabrate above;
bracts of the involucre lanceolate or linear-
lanceolate, the tips mostly loose; rays
violet. From Cape Espenberg to the Pribilof
Islands and Alaska Peninsula and in
the interior to the upper Yukon. Reported to
extend to the mountains to Wyoming. Also
in arctic Europe and in Siberia, where
it was originally described.

Alaskan material of this species varies considerably in size but otherwise is quite constant. The same variation occurs in ^{variety} Siberian material and the variety of Hooker, I therefore reduced to the species. A. arcticus Eastw. from the description is probably also this species. A. sibericus is not mentioned by Miss Eastwood in her ^{summer list of Cape Nome plants}.

Arctic Alaska. — Cape Aspenderg, J. S. White
July 28, 1894. Valley of Kobuk River, W. E. Windenbush,
July 18, 1901. Chandler River, Schrader, June 26, 1899.

Seward Peninsula. — Port Clarence, F. A. Welsch,
1901 (Nos. 1665-1857, 1887, 2029). Annil Mt.
near Nome City, J. B. Flett, 1900 (No. 1664a). 10 Miles
west of Nome City, J. B. Flett, 1900 (No. 1664).

Prinipel of Islands. — St Paul Island, Lane & Printiss,
1895 (No. 70). J. M. Macoun, Aug. 3, 1891, C. H. Merriam,
Aug. 8, 1891.

Bristol Bay. — Nushagak Lower Aleknagik Lake,
Johnson, July 16, 1882.

Lake Iliamna region. — Lake Iliamna,
Larman, 1902 (No. 137).

Alaska Peninsula. — Stupovak Bay, Palache,
July 8 to 19, 1899.

Alutian chain. — Popof Island, Kirkaldy,
July 8 to 19, 1899.

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Koyukuk River to the Yukon. — Old Man
Creek, W.C. Mindenhall, July 6, 1901.

Lower Yukon. — Between Nulato and
Nawikakat, I.C. Russell, July 23-27, 1889.

Yukon River to Cook Inlet. — Lower Ram-
parts of the Yukon, I.C. Russell, July 28, 1889.
East of Kuskokwim River, Brooks & Prindle, 1902.
Kuskokwim River, J. S. Herron, July 31, 1899. South
side of Simpson Pass, Brooks & Prindle, July 12,
1902.

Upper Yukon. — Porcupine River, J. H. Lamm,
1891. Near Fort Yukon, I.C. Russell, Aug. 8-12,
1889. Fifty Mile River, A. L. Bolton, Aug. 3, 1899.
Ft. Selkirk, Looman, 1899 (No. 1172). Five Finger
Rapids, J. B. Sarsletan, 1899 (No. 94).

Aster alpinus L.

Aster alpinus L. Sp. Pl. 2: 872/1753.

Stems from a thickish caudex, simple, 10 to 20 cm. high; leaves cinereous-pubescent on both surfaces, the basal ones spatulate or oblanceolate, cauline linear, head solitary, about 1 cm. high. Upper Yukon and south in the alpine regions of the Rocky Mountains to lat. 49°. Originally described from Austria, "Vallesia", Switzerland and from the Pyrenees Mountains. It occurs also in ~~northern Asia~~ eastern Russia and through Siberia to Kamchatka.

Upper Yukon. — Steamboat slough,
Looman, 1899 (No. 1088).

Erigeron L.

Genus of ^{plants} ~~herbaceous~~ or sometimes slightly suffrutescent, branching or strict very closely related through some of its species to Aster and distinguished chiefly by the more naked-pedunculate heads with involucre ^{commonly} usually of fewer series of equal bracts, the latter narrow ^{usually} ~~not~~ foliaceous or with herbaceous tips, ^{and} by the narrow and very numerous rays, the more rounded ^{or} and obtuse style appendages and ~~to~~ in some species by an antepappus series of shorter bristles. About 130 species in North and South America and ~~principally~~ in Europe and Asia of the Old world, with 1 species reported from Australia.

Key to the Species.

Basal leaves once- or twice-ternate.

E. multifidus.

Basal leaves entire or merely serrate, very rarely 3-lobed at the summit.

Cauline leaves ovate-lanceolate.

E. peregrinus

Cauline leaves commonly linear or linear-lanceolate, rarely oblong.

Involucre conspicuously woolly pubescent

Rays commonly ^{shorter than} ~~less than twice the length~~
of the involueral bracts.

involuere hirsute-pubescent or
nearly glabrous.

E. acris.

involuere strongly woolly-pubescent.

Plant
caespitose or matted; basal leaves
narrowly oblanceolate.

E. purpuratus.

Plant commonly
erect, ~~neither matted~~ ^{usually} not caespitose,
basal leaves ~~commonly~~ ^{usually} spatulate.

E. uniflorus.

Rays commonly ^{as long or longer than} ~~at least twice as long as~~
the involueral bracts.

Upper cauline leaves ovate-lanceolate; ^{comparative} involueral bracts ^{of} broad.

E. peregrinus.

Upper cauline leaves ^{and} narrowly-lanceolate, acuminate, or linear;
involueral bracts narrow.

involuere hirsute-pubescent.

Herbage usually conspicuously
hirsute; rays very numerous,
50 or more. E. turneri.

Herbage canescent or ^{somewhat} ~~rarely~~
hispidulous, ^{but not conspicuously so} ~~or hirsute~~; rays
40 to 50.

E. caespitosus.

Stem slender, nearly so
slender stemmed, glabrous, ~~involucres commonly~~
pubescent.
E. hydropifolius.
Stem stoutish, commonly conspicuously pubescent.

Involucre woolly-pubescent,
Upper cauline leaves lanceo-
late, acuminate.

E. grandiflorus

Upper cauline leaves linear
or oblong-lanceolate.

E. hyperboreus.

Erigeron multifidus Rydb.

Erigeron multifidus Rydb. Mem. N. Y. Bot. Gard. 1:
402. 1900.

Erigeron garmani Greene Pitt. 4: 156. 1900.

¹Issued Feb. 15.

²Issued Mar. 2. ^{puberulent}
~~usually minutely glandular and rather sparingly hispid,~~
~~Caudex usually much branched.~~

81 ^{Stems usually} several, ^{puberulent} hispid, sparingly
leafy, 6 to 18 cm. high; basal leaves with
slender, hispid petioles, the ^{oblong or spatulate} ~~linear~~ ^{of the lower sometimes blue}
cauline leaves linear, entire; involucre
about 6 mm. high, the bract rays nearly
or quite twice as long as the involucre
bracts. Dry ground in the upper Yukon
and south to California and Colorado.
Described from Montana, Idaho and
Yellowstone Park. Mr. E. Garman's plant from
Hunt Institute for Botanical Documentation

Fort Selkirk, Yukon Territory, the type of *C. garmani* differs in no respect from the plant of the Rocky Mountains.

Upper Yukon.— Coal Creek Hill, Lunenburg, 1893 (No. 88). Ft. Selkirk, Garman, 1899 (No. 1066). Lebarge Island, Tareleton, 1899 (No. 4).

Cerigeron acris L.

Cerigeron acris L. Sp. Pl. 2: 863, 1753.

Herb ^{simple or} pubescent, or sometimes nearly glabrate, 10 to 50 cm. high, ^{simple or} ~~exuberantly~~ branched; leaves glabrous or pubescent, oblong-linear, lanceolate or the lower ones spatulate-oblong, petioled, the upper sessile; heads few or several, 10 to 12 mm. broad, in volucral bracts, hirsute, rays inconspicuous, equalling or slightly exceeding the pappus, pistillate flowers numerous. ~~Labrador to~~ ^{Upper} ~~Upper~~ ^{Yukon} ~~Yukon~~ ^{and} ~~and~~ ^{Copper River region,} ^{British} ^{Columbia,} ^{south} in the mountains to Colorado and east to Labrador. Originally described from Europe and ranges through Siberia to Kamchatka.

Upper Yukon. — C. S. Bates, 1881, Abasco Ft., Selkirk, Laramie, 1899 (No. 103). Ranch Valley, Garman, 1899 (No. 1083).

Copper River region. — W. L. Peto, 1902 (No. 81).

Erigeron acris dracbachensis (C. Mueller) Blytt.

Erigeron dracbachensis Mueller

Erigeron acris dracbachensis Blytt, Norg. Fl. 562, 1874.

Differs from the species in being nearly or quite glabrous, ^{and} in its glabrous ~~involucres~~ but usually minutely glandular or viscidulous involucre. Nearly the range of the species, ~~except that it is not reported from~~

Koyukuk River. — Mouth of Alatna River, Schrader, Aug. 23, 1899.

Upper Yukon. — Near Ft. Yukon, Russell, July 25 to Aug. 2, 1899. Red Mountain, Garman, 1899 (No. 1101).

Erigeron purpuratus Greene.

Erigeron purpuratus Greene, Pitt. 4: 153, 1900.

Caespitose, ^{commonly} caudex branched, flowering
stems scape-like; ^{suberect, narrowly} leaves oblanceolate,
entire or rarely 3-lobed or toothed at the
summit; scapes 1.5 to 7 cm. high, villous
at least at the summit; heads solitary,
about 12 mm. broad in dried specimens;
rays purple, ^{narrow} pappus purplish or some-
times white. Koyukuk River to the upper
Yukon, the type locality, and Yakutat Bay.

Koyukuk River region. — John River, Schradler,
July 10, 1901.

Yakutat Bay. — Russell F. Ford, Coville
& Kearney (No. 968).

Erigeron uniflorus L.

Erigeron uniflorus L. Sp. Pl., 2: 864. 1753.

Stems solitary or sometimes tufted, 2 to 20 cm. high; ^{leaves thin, usually rather sparingly pubescent, the} basal ^{leaves} spatulate or spatulate-oblanccolate, the cauline ~~commonly~~ linear or narrowly lanceolate; flowering stems monocephalous, the heads ^{about 4 to 12 mm. broad} with the involueral bracts dark, almost black at least in dried specimens, rays ^{very} numerous. Seward Peninsula to the mountains in the vicinity of Juneau, through arctic America ^{to Greenland} and south to Labrador, type localities, mountains of Lapland and Switzerland, in arctic and alpine regions of Europe, and through Siberia to Kamchatka.

Seward Peninsula, — Part Clarence, J. S. White, Sept. 9, 1894, F. A. Walpole, 1901 (Nos. 1764, 1902, 1978, 2058). 5 Miles north of Nome City, J. B. Flett, 1900 (No. 1663).

Gakutat Bay, — Hauke Island, Coville & Kearney (No. 1094).

Southeastern Alaska — Muir Glacier, Kincaid, July 5 to 19, 1899. ^{near} Juneau, F. A. Walpole, 1900 (No. 1239), Grace C. Cooley, Aug. 6, 1891.

astr *Erigeron peregrinus* (Pursh) Greene.
Erigeron peregrinus Pursh, Fl. 2: 556, 1814.
Erigeron peregrinus Greene, Pitt. 3: 166, 1897.

Usually erect from a thickish, creeping rootstock, 10 to 40 cm. high, pubescent with soft, fine hairs, ^{sometimes} almost tomentose or sometimes nearly glabrate; leaves pubescent at least along the margins and mid-vein, entire or ^{sometimes inconspicuously} ^{so} ~~inconspicuously~~ serrate or dentate, the ~~lower~~ basal and lower cauline oblanceolate, acute or the lowest obtuse; heads usually solitary, sometimes 3 or even 4, 15 to 20 mm. broad in dried specimens, the involueral bracts tomentose or nearly glabrate, glandular puberulent but not at all viscidulous. Aleutian Islands to the Copper River region and southeastern Alaska. ~~Report~~ Originally described from the northwest coast and Unalaska. Reported to extend to the arctic coast and to occur in northeastern Asia.

~~The~~ *E. peregrinus* has frequently been confused with *E. saluziginosus* (Richardson) Gray, and probably includes all of the latter reported from Alaska.

Island of Islands. — ~~==~~ Bryant, 1875.

Kiska Island, Dall, 1873.

Alutian Chain. — Atka Island, L. M. Turner,

1879 (No. 1253), J. M. Macoun, Aug. 26, 1891.

Unalaska, Canille & Kearney (No. 1793), C. H. Merriam,

Aug. 12, 1891, Kellogg, 1867 (Nos. ¹⁷³280), True & Prentiss,

1895 (No. 126), Euermann, 1892 (No. 68). Amaknak

Island, Euermann, 1892 (No. 116). Akun Island,

Tammsund, Aug. 31, 1893. Unga Island, F. A. Golder,

1899 (Nos. 23, 84). Nagai Island, Harrington,

1871-72. Papef Island, Saunders July 7 to 18, 1899,

Kinkaid, July 8 to 19, 1899.

Kodiak Island. — F. A. Walpole, 1900 (No.

1189), L. J. Cole, July 1, 1899, Karluk River, T. H.

Bean 1889.

Alaska Peninsula. — Bailey Harbor, Tammsund

Sept. 10, 1873. Kukak Bay, Canille & Kearney (No. 1632).

Lake Iliamna region. — Ginkel-yash trail,

Gorman, 1902 (No. 93 in part). Mountain ridge

east of Iliamna Point, Gorman, 1902 (No. 288).

Copper River region. — Divide between Slate

Creek and Chisna, W. L. Peto, 1902 (No. 166).

Prince William Sound. - Virgin Bay, Caville
& Kearney (No. 1246).

Yakutat Bay. - Khantak Island, Linnston
1892 (No. 46). without special locality, Caville
& Kearney (No. 1155).

South eastern Alaska. - White Pass Sum-
mit, A. L. Bolton, 1898. Douglas Island, Goare
C. Cooley, July 25, 1891. Mt. Popoff, Sitka, J.
McLean, July 1881. Mt. Tirstavia, Sitka, Cunn-
mann, 1892 (No. 238). Back Bay, Gorman
1895 (No. 53). Marshes back of Short Bay, Howell,
1890 (No. 1633). Helm Bay, J. B. Flitt, 1901
(No. 1982).

Erigeron lysosipifolius Michx.

Erigeron lysosipifolius Michx. Fl. 2: 123, 1883.

10 to 35 cm. high,
Stems ^{sparingly} single or sometimes tufted, simple
or, branched, the branches terminated by ^{rather numerous} solitary
head; leaves, entire, linear to linear-oblong
as the lower ones somewhat spatulate;
bracts of the involucre sparingly pubescent,
rays 4 to 6 mm. long. Newfoundland to
Vermont, Lake Superior and Slave Lake.
Originally described from Hudson Bay and Lake Mistassino.

This species is included on the basis
of a fragmentary specimen collected by
Lozman on White River, a locality far
west of any yet recorded but in about
the same latitude as Slave Lake.

Upper Yukon, — White River, Lozman,
1889 (No. 1129)

Erigeron turneri Greene

Erigeron turneri Greene Pitt. 2: 227, 1892.

Stems erect, 25 to 40 cm. high, ~~branched~~
~~stems~~ solitary or same times 2 or more from
the same base, branched ~~above~~ ^{and lower cauline}; herbage
~~usually~~ ^{usually} ~~erect~~ basal, leaves 5 to 10 cm.
long, oblanceolate acute or obtusish,
mostly entire, sometimes remotely serrate,
upper cauline lanceolate or oblong lan-
ceolate, the uppermost acuminate; heads
usually 3 or more, rays about 10 mm.
long. In the interior from arctic Alaska
to the upper Yukon. Type locality, Porcu-
pine River.

Arctic Alaska. — Chandler River, Schrader,
June 26, 1899

Upper Yukon. — Porcupine River, J. H.
Turner, 1891, Fort Yukon, Schrader, June 21, 1899,
near Fort Yukon, Russell, Aug. 8 to 12, 1889, Tah-
kandit River, Collier, 1902 (No. 86), Steamboat
slough near Ft. Selkirk, Gorman, 1899 (No. 1087).
Five Finger Rapids, Farleton, 1899 (No. 75).

Erigeron caespitosus Nutt.

Erigeron caespitosus Nutt. Trans. Am. Phil. Soc. II.
7: 307, 1840.

Stems from a stoutish woody caudex,
10 to 18 cm. high; ^{leaves entire, the} basal and ^{upper} lower
cauline ^{ones} leaves spatulate to ^{narrowly} oblanceolate,
obtuse or acutish, upper cauline linear,
^{or oblong} acute; heads 1 to 3, about 10 mm. broad,
~~rays 5 to 8 mm. long~~ bracts linear lanceo-
late, rays 5 to 8 or even sometimes
even 12 mm. long. In the upper Yukon
and the headwaters of the Copper and Tanana
Rivers, south to California, New Mex-
ico and Nebraska. Originally described
from the "summits of dry hills in the Rocky Moun-
tain range, on the Colorado of the West."

Upper Yukon.— Near Fort Yukon, Russell,
Aug. 8 to 12, 1887. Near Little Salmon River,
Williams, Aug. 22, 1899. Red Mountain, Lorman,
1899 (No. 1112).

Headwaters of the Copper & Tanana Rivers.—
Nabesna River, Schrader & Hartman, 1902 (No. 65).

Erigeron hyperboreus Greene.

Erigeron hyperboreus Greene, Pitt. ²227, 1892,

Rather densely hispidulano-pubescent,
^{Stems decumbent}
^{slender petioled} 7 to 20 cm. high; basal
 leaves, oblanceolate, entire, obtuse or some-
 times acutish, cauline sessile; heads usually
 solitary, the involucral bracts about 7 mm.
 long, rays about the same length. ~~On the~~
~~Porcupine River~~ ~~Described~~ Originally dis-
 cribed from specimens collected by
 Mr. J. H. Sauer on the Porcupine River and
 has not since been reported.

Porcupine River. — Mr. J. H. Sauer, 1891.

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Erigeron muirii Gray.
Erigeron Muirii Gray, Proc. Am. Acad. 17: 210,
1882,

Erigeron yukonensis Rydb.

Erigeron yukonensis Rydb. in Britton & Rydb. Bull.
N. Y. Bot. Gard. 2: 185, 1901.

Solidago L.

~~Erect, perenn~~

Perennial herbs with mostly erect, strict stems, and numerous rather two-flowered heads; leaves alternate, ~~entire~~ serrate or entire, the cauline commonly sessile, basal tapering to a margined petiole; heads ~~in terminal or axillary panicles~~, thyrsoid, cymose-corymbose or racemiform clusters, flowers usually yellow, ^{large flowers perfect} ~~with tubular and~~ radiate ^{flowers stipitate}, or the radiate rarely wanting; involueral bracts imbricated, receptacle alveolate; pappus of elongated bristles. About 100 species, most abundant in North America, a few in ~~Europe~~ Mexico, South America, Europe and northern Asia.

Key to the Species.

Cauline leaves ^{all} narrowly oblanceolate;
bracts of the involuere ~~obtusish~~ ^{acrophila}.

S. ~~acuminata~~ ^{acrophila}.
Upper cauline leaves at least, lanceolate or oblong; involueral bracts mostly acute.

Heads 7 to 8 mm. high, in a compact
corymbiform cluster, or sometimes 1 or
2 small ^{axillary} clusters below the terminal
corymb; rays comparatively large,
S. multiradiata.

Heads 4 to 7 mm. high, in a simple or
compound thyrsum; rays small.

Leaves commonly broadly
lanceolate or oblong, minutely
pubescent, ~~or~~ sometimes sparingly
so; thyrsum narrow or
compact. S. lepidota.

Leaves lanceolate, very nearly
glabrous; thyrsum spreading.
S. elongata.

Solidago oreophila Rydb.

Solidago oreophila Rydb. Mun. N. Y. Bot. Club ^{Gard.}
11. 387. 1900.

Stems 20 to 40 cm. high, erect or slightly
decumbent at the base, purplish pubescent.
Leaves ^{glabrous} ~~glabrous~~ ^{except the margins} mostly entire or nearly so,
the upper leaves mostly entire or nearly so,
and lower cauline
basal ones serrate above the middle; heads
usually interrupted
in a narrow thyrsum, usually interrupted below
achenes pubescent. Upper Yukon and the
headwaters of the Copper and Tanana rivers,
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south to Montana and Colorado.

The species is based on S. stricta Hook.
F. & B. Am. 214. 1834 in part, not Ait. Hookers
specimens probably came of this species probably
came from the "Woody country between lat. 54° and
64°," and Carlton House on the Saskatchewan."

Headwaters of the Copper and Tanana Rivers,
Nahsona River, Schrader and Hartman, 1902 (No. 58).

Upper Yukon. — Near Ft. Yukon, I. C. Russell,
Aug. 8 to 12, 1889. Fifty-Mile River, A. L. Balton,
Aug. 3, 1899. Dawson, R. S. Williams, July 29, 1899,
50 Miles above Stewart River, J. B. Tarleton, 1899
(No. 1408). Ft. Selkirk, Tarleton, 1899 (No. 140a).
Red Mountain, Garman, 1899 (No. 1111).

Solidago multiradiata Ait.

Solidago multiradiata Ait., Herb. Kunz. 3: 218, 1788.

Solidago compacta Turcz. Bull. Soc. Nat. Mosc.
13¹/₂, 73, 1840.

Stems 10 or sometimes only 5-6-80 cm. high, pubescent or sometimes glabrous below; leaves usually glabrous except the ciliate margins and sometimes along the nerves, ^{the uppermost cauline,} mostly entire, above lower cauline and basal, oblanceolate or apiculate, ~~in adult~~ serrate above the middle, or entire; peduncles usually whitish with ^{fine, usually} the dense pubescence; rays 4 to 5 mm. long, achenes pubescent. Throughout Alaska, east to Hudson Bay and Labrador, ^{the type locality,} south to Colorado. *S. compacta* was described from Unalaska.

Arctic Alaska. — Anaktobah River, Schrader, Aug. 5, 1901. Walker Lake, W.C. Mendenhall, Aug. 12, 1901. Alakna River, W.C. Mendenhall, July 23, 1901.

Alward Peninsula. — Port Clarence, F. A. Walpole, 1901 (Nos. 1616, 1706, 1853, 1948). 16 miles west of Nome City, J. B. Lett, 1900 (No. 1660).

Alutian Chain. — Adak Island, C. D. Townsend, Aug. 31, 1893. Unalaska, Kirkaid, Sept. 18, 1897, Tuck & Prentiss, 1895 (No. 130), C. D. Merriam, Aug. 12, 1891, Camille & Kearney (No. 2723). Amaknak Island, B. W. Evermann, 1892 (Nos. 114, 121, 122, 172). Unga Island, Harrington, 1891-92. Pofof Island, Kirkaid, July 8 to 19, 1899, Saunders, July 7 to 18, 1899.

Kodiak Island. — L. J. Cole, July 25, 1899.

Alaska Peninsula. — Bailey Harbor, Townsend, Sept. 10, 1893. Belkopski, Kirkaid, July 22, 1897. Kukak Bay, Kirkaid, 1897, Camille & Kearney (No. 9615).

Lake Iliamna region. — Iliamna River, Looman, 1902 (No. 128), South of Iliamna Point, Looman, 1902 (Nos. 281 in part, 289).

Yukon River to Cook Inlet. — Yukon River between Andreafski and Anvik, Russell, July 16-18, 1889. Simpson Pass, Brack & Prindle, July 11, 1902.

Headwaters of the Copper and Tanana Rivers. — W. L. Paton, 1902 (No. 61). Jackzema River, Schrader & Hartman, 1902 (No. 48). Nabesna River, Schrader & Hartman, 1902 (Nos. 64).

Upper Yukon. — Red Mountain, Looman, 1899 (No. 1108).

Southeastern Alaska. — Glacier Bay, Caville & Kearney (No. 710), Juneau, Caville & Kearney (No. 2483), Wm. M. Canby, 1897 (No. 129), Grace E. Canby, July 24, 1891.

Solidago lepida DC.

Solidago lepida DC. Prodr. 5: 339, 1836.

Solidago confertiflora DC. Prodr. 5: 339, 1836.

Stems usually very strict, 30 to 60 cm. high, minutely pubescent; leaves usually conspicuously serrate above the middle, a few of the uppermost entire or nearly so, the lower cauline and basal ones oblanceolate, ~~not~~ acute; rays 1.5 to 2 mm. long, achenes pubescent. Kodiak Island to Sitka and British Columbia, ^{and perhaps Oregon} "In Amer. septentr. ora bor.-occid. ad Mulgravea seu Nootka."

S. confertiflora was described from the same type locality and does not appear to be sufficiently distinct.

Kodiak Island. — Kellogg, 1867 (No. 232), L. H. Bean, 1889, L. J. Cole, July 20, 1899, Caville & Kearney (No. 2367).

Cook Inlet. — Kenai, H. P. Nielsen, 1901 (No. 40).

Southeastern Alaska. — Near Juneau, Grace E. Canby, July 24, 1891, Head of Snow Lake, Sitka.

Solidago elongata Nutt.

Solidago elongata Nutt., Trans. Am. Phil. Soc., II.
 7: 327, 1840.

Stems strict as in the preceding but
 commonly taller; leaves narrower, usually
 less conspicuously serrate; heads small, 3 to
 4 mm. high, achenes minutely pubescent. In
 the upper Yukon, south to British Columbia
 and California, east to Slave Lake and Montana.
 Originally described from Wappatoo Island and the plains of
 the Oregon.
Upper Yukon — Near Fort Yukon, Russell,
 Aug. 8-12, 1889. 50 Miles above Stewart River,
 Fairbairn, 1899 (No. 140, c.).

Stenotus Nutt.

Subfruticose or perennials with narrow
 evergreen leaves and scapeless or leafy
 stems; heads middle-sized, bracts of the
 involucre ovate, lanceolate or linear, imbricated
 in few series, nearly equal; receptacle
 alveolate; disc-flowers perfect, fertile,
~~ray~~ ray flowers present, fertile; achenes
 villous, pappus of capillary bristles. About
 20 species in the western North America.

Stenotus borealis Rydb.

Stenotus borealis Rydb in Britton & Rydb.

Bull. N. Y. Bot. Gard. 2: 184, 1901.

Caespitose, the sterile branches 1 to 6
 cm. long, thickly covered with the narrow,
 linear ^{erect} leaves; scapes mostly 2 to 5 cm.
 high, naked or with 1 or 2 linear
 bracts, glandular; involucre about 8 mm.
 high, glandular; rays 5 to 8 mm. long,
 upper yellow, type locality, "Foot of Lake
 LeBarge"

Upper Yukon. — Foot of Lake LeBarge,
 J. B. Tarleton, 1899 (No. 51), Ranch Creek, ^{Yukon},
 1899 (No. 1002).

Anaphalis DC.
or *lanata*

Fl. corolla - woolly, herbs, chiefly perennial, with entire leaves, and dioecious or subdioecious ^{nodes} ~~discoid heads~~; bracts of the involucre imbricated, scarious; receptacle without ^{of the female flowers} pappus present, capillary, the bristles falling ^{mostly} ~~separately~~ about 30 species, in tropical and temperate Asia with the following in northwestern North America.

Anaphalis margaritacea (L.) Benth. & Hook.

Graptophyllum margaritaceum L. Sp. Pl. 2: 850, 1753.

Antennaria margaritacea R. Br. Trans. Linn. Soc. 12: 123, 1818.

Anaphalis margaritacea Benth. & Hook. Gen. Pl. 2: 303, 1873, 76.

Stems very leafy, 10-60 cm. high; leaves lanceolate or linear lanceolate, acute, or the lower spatulate and ^{usually} ~~thuse~~, woolly beneath, becoming glabrate and green above, revolute; bracts of the involucre white or the bases of the at least the outer ones dark-colored. In the Aleutian Islands, thence to southeastern Alaska, across the continent to Newfoundland, south to North Carolina, Kansas and California. Originally described from North America and Kamchatka.

Alutian chain. — Unalaska, Knikaid, Sept.
18, 1899, A. Kellogg, 1867 (No. 277), C. H. Muniam,
Aug. 12, 1891. Atka Island, L. M. Turner, 1879 (No.
1264). Popsf Island, Saunders, July 15-18, 1899.
Unga, F. A. Golder, 1899 (No. 35).

Kodiak Island. — Kodiak, Couille & Kearney,
(No. 2296).

Yakutat Bay. — Disenchantment Bay, Fun-
ston, 1892 (No. 106). Hidden Glacier, Russell Ford,
Couille & Kearney (No. 976).

Southeastern Alaska. — Point Gustavus,
Glacier Bay, Couille & Kearney (No. 350).
Juneau, Couille & Kearney (No. 2506). Mt.
Verstania, Sitka, Evermann, 1892 (No. 217).
Yes Bay, Looman, 1895 (No. 155).

Antennaria Gaertn.
 with cauline and basal, ~~dicocious or polygamo-dicocious~~
 Perennial herbs, ^{leaves} ~~but or no caulin.~~ with
 woolly herbage and discoid, ~~dicocious or~~
~~polygamo-dicocious~~ heads; involucre ~~consists~~
 of imbricated, scarious, white or colored
 bracts

Antennaria Gaertn.
 dicocious or polygamo-dicocious
 Woolly, Perennial, herbs with cauline and some-
 what tufted basal leaves; heads discoid, ^{the} in-
 volucre of imbricated, scarious, white or
 colored bracts; receptacle without chaff;
 styles of the staminate flowers usually ~~undivided~~
~~undivided~~, with undivided style and
 scanty ~~pappus~~ pappus, female flowers
 with copious pappus, the bristles slightly
 united at the base. About 36 species
 in the north temperate zone of both
 hemispheres and in southern South Amer-
 ica.

Key to the Species.

Bracts of the involucre white or rose-colored
 at the tip.

Leaves permanently tomentose on
 both surfaces.

A. parviflora ^{folia}

Leaves glabrate above.

A. insularis.

Bracts of the involucre brownish at the tip.

~~Involucral bracts of the female heads all lanceolate and acute or acuminate.~~

Outer series of involucral bracts of the female ^{heads} ~~flowers~~ oblong-obovate and obtuse, the inner sometimes lanceolate and acute.

A. borealis.

Involucral bracts of the female heads all lanceolate and acute or acuminate.

Leaves permanently white-woolly on both surfaces.

A. exilis

Leaves at length glabrate above, sometimes sparingly so.

A. snowcephala.

Antennaria parvifolia Nutt.

Antennaria parvifolia Nutt. Trans. Am. Phil. Soc. 7: 206.

Stems 10 to 20 cm. high, leaves of the
 stolons ^{or ablaneeolate} ~~obovate~~-spatulate, base of the stem
 narrowly ^{ablaneeolate} ~~obovate~~ to linear; in axillary
 bracts of the male plants broad, ^{the scarious portion} cream-
 colored or white, those in the female
 plant ^{commonly, and in the rare white} ~~narrower~~, the outer ^{the scarious portion pinkish, rare} ~~obovate~~ ^{the scarious portion pinkish, rare} ~~obovate~~
 lanceolate and acute, Upper Yukon to
 subarctic British America, south to Califor-
 nia, Utah and Colorado. Type locality

Upper Yukon. - Fifty Mile River, A.L.
 Ranch Creek
 Bolton, June 28, 1899. ~~Fort Selkirk~~ Gorman,
 1899 (No. 1162). Five Finger Rapids, J. B. Sarsleton,
 1899 (No. 93).

Antennaria insularis Greene,
Antennaria insularis Greene, Pitt. 3: 276, 1898,

Stems 1 to 10 cm. high, stotans short, basal leaves and those of the stotans obovate to spatulate-obovate, those of the stem linear, acute; ~~se~~ bracts of the involucre in both male and female heads spatulate, obtuse, on the inner ones in the female heads sometimes acutish, the scarious portion white or rarely slightly tinged with pink. Alutian Islands, Originally described from Kiska Island and Adak Island.

Alutian chain, — Attu Island, W.V. Co. Jacobs, 1894. Kiska Island, M. Baker, July 21, 1873. Adak Island, C.H. Larsen, July 1, 1873. Atka Island, L. M. Turner, 1880 (No. 1214).

Antennaria pallida E. Nelson, Proc. U. S. Nat. Mus., 23: 700, 1901.

Antennaria pallida E. Nelson,
Antennaria borealis Greene.

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Antennaria borealis Greene Pitt. 4: 85, 1899.

Stems 3 to 12 cm. high; ^{leafy to the inflorescence} leaves on the stolons oblanceolate or spatulate-oblanceolate, acute or acutish, the ^{upper} cauline ^{leaves} linear; heads usually distinctly pedicelled, downward

tardily glabrate on the upper surface or sometimes apparently permanently tomentose on both surfaces.

Peninsula to White Pass, Type locality, Disenchantment Bay.

Seward Peninsula. — 16 Miles west of Nome City, J. B. Flitt, 1900 (No. 1652)

Alaska Peninsula. — Kukak Bay, Coville & Kearney (No. 1555 in part).

Yakutat Bay. — Disenchantment Bay, Landon, 1892 (No. 101). Haden Island, Coville & Kearney (No. 1109a). Egg Island, Coville & Kearney (No. 1043).

Southeastern Alaska. — Muir Glacier, Kinkaid, July 8 to 19, 1899, White Pass Summit, A. L. Bolton, 1898.

Antennaria exilis Greene

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Antennaria exilis Greene, Pitt. 3: 228, 1898.

See above for description, no specimens in Nat.
Herb.

Antennaria monocephala DC.

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Antennaria monocephala DC. Prodr. 6: 269, 1837.

Stems exceedingly variable in height; leaves on the stolons from narrowly oblanceolate to spatulate-oblanceolate, acute or rounded at the apex and usually mucronate, sparingly glabrate on the upper surface or sometimes conspicuously so; heads commonly 1, sometimes 2 or even 3 in the largest specimens, fromeward Peninsula and the islands of Bering sea to the Aleutians and Prince William Sound on the main land. Type locality, Alaska.

The *A. monocephala* is the most common species in Alaska and exhibits the greatest variation. Very rank specimens from Port Clarence and from the Shumagin Islands have long, rather narrow leaves and 2 or even 3 heads but typical ~~forms~~ of the species are obtained from the same localities are identical in the characters of their involucres and pappus with typical ~~material~~ forms of the species from the same localities which occur throughout the above range.

Luward Peninsula. — Post Clarence, Comille & Kearney (No. 1945), F. A. Walpole, 1901 (Nos. 1496, 1550, 1500, 1596, 2019). 5 Miles north of Nome City, J. B. Flett, 1900 (No. 1655).

Kayakuk River to the Yukon. — Dall River Trail, W. C. Mendenhall, July 11, 1901.

Islands of Bering Sea. — St. Mathew Island, Comille & Kearney (No. 2150). Hall Island, Comille & Kearney (No. 2025).

Trail of Islands. — St Paul Island, Kirkaid, Aug. 15, 1897.

Alutian Chain. — Unalaska, Comille & Kearney (No. 2218), J. B. Flett, 1900 (No. 1789). Amaknak Island, Evermann, 1892 (No. 110). Pofaf Island, Kirkaid, July 8 to 19, 1899, Saunders July 7 to 8, 1899.

Kodiak Island. — Sturgeon River, Comille & Kearney (No. 2267a).

Alaska Peninsula. — Kukak Bay, Comille & Kearney (No. 1555).

Prince William Sound. — Area, Comille & Kearney (No. 1178).

Achillea L.

Herbs, mostly ^{commonly} perennials with dissected or finely pinnatifid leaves; inflorescence corymbose, the heads with both ~~the~~ ray and disc flowers, bracts of the involucre imbricated, the outer shorter, ray flowers white or pink, fertile, disc flowers fertile, the receptacle chaffy, achenes oblong or obovate, without a pappus. About 75 species most abundant in the temperate regions of the Old World, a few ~~of~~ in North America.

Achillea borealis Bang.

Achillea borealis Bang. Mun. Acad. Petrosb.
 VII. Math. & Nat. 2: 129, 1831.

Stems 15 to 60 cm. high; leaves ^{commonly} lanate, rarely ~~glabrate~~ bipinnate, the basal ones 5 to 20 or some times even 50 cm. long; involucre campanulate, the margins of the bracts ~~and the tips of the receptacle scales~~ ^{bracts} usually conspicuously fuscous, chaffy, of the receptacle also commonly fuscous at the apex. Throughout ^{Fraser Sheward Peninsula and the Aleutians to the southern boundary of Alaska, and eastward to Labrador} and south in the higher mountains to central Mexico. ^{type locality, Sitka, Alaska.} ~~type locality, Sitka, Alaska.~~

Seward Peninsula, - Port Clarence, T.H. Bean, Sept. 9, 1887. 6 Miles west of Nome City, J. B. Flett, 1940 (No. 1606).

Islands of Bering Sea. - Muniwak Island, J. M. Macoun, Aug. 8, 1891.

Pribilof Islands. - St Paul Island, Louis & Printiss, 1895 (No. ²⁹¹⁰⁷74), C. H. Townsend, Aug. 1893, Wm. Palmer, 1890 (No. 701).

Norton Sound. - Yukon Delta, J. C. Russell, July 14, 1889.

Bristol Bay. - Nushagak, C. L. McKay, 1887.

Alaska Peninsula. - Herodotus Bay, C. H. Townsend, Alaska, July, 1890. Bailey Harbor, C. H. Townsend, Sept 10, 1898. Nelson Lagoon, F. A. Golder, 1900 (No. 69). Kukak Bay, Coville & Kearney (No. 1657).

Alutian Chain. - Adun Island, C. H. Townsend, Aug. 31, 1893. Unalaska, C. H. Merriam, Aug. 12, 1891, Aniaknak Island, Evermann, 1892 (No. 115). Papey Island, Kirkaid, July 5 to 18, 1899. Unga, F. A. Golder, 1900 (No. ⁵³93).

Kodiak Island. - Sturgeon River, Coville & Kearney (No. 2287). Karluk, T. H. Bean, 1887.

Cook Inlet. - Kaslof, Evans, 1878 (No. 65).
Kenai, H. P. Milsen, 1901 (No. 26).

Gakutat Bay - Haenke Island Disen-
chantment Bay, Couille & Kearney (No. 1095).
Ocean Cape, Lurston, 1872 (No. 69).

Southeastern Alaska. - Sitka, J. J. McLean,
July, 1881, Couille & Kearney (No. 846).

Ramparts, Yukon River to Cook Inlet. - Lower
Ramparts of the Yukon, I. C. Russell, July 28, 1887.
South side of Simpson Pass, Brooks & Pinnell,
July 12, 1902.

Headwaters of the Copper & Tanana Rivers. -
North side of Nahesna River, Schrader & Hartman,
1902 (No. 80), Iaskagena River, Schrader & Hart-
man, 1902 (No. 50).

Upper Yukon. - Near Fort Yukon, I. C.
Russell, Aug. 5/12, 1887. Fort Yukon, Schrader,
June 21, 1899. Eagle, Collier, 1902 (No. 63).
Fifty Mile River, A. L. Bolton, July 29, 1899. Fort
Selkirk, Gorman, 1899 (No. 1068). Above Fort
Selkirk, J. B. Tarleton, 1899 (No. 98).

Anthemis L.

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Annual or perennial herbs with
^{pinnately} dissected or ~~pinnatifid~~ leaves; heads
radiate, ~~the~~ involucre hemispheric, bracts
imbricated, ^{receptacle convex or oblong} scarious ^{margin} ~~margin~~ ^{white or yellow} disc flowers
~~perfect~~ ^{their style branches truncate} ~~infertile~~ ray flowers, ~~distillate~~, fertile
or neutral; achenes angled or striate, pappus
a short crown or wanting. About 60
species, natives of the Old World.

Anthemis cotula L.

Anthemis cotula L. Sp. Pl. 2: 894, 1753.

Annual, with a fetid odor, much
branched; heads numerous, the rays ^{flowers white} neutral
or sometimes aborting; achenes 10-ribbed,
pappus none. ^{Introduced at Dawson and} ~~A~~ common roadside weed
all over the continent except the north,
originally described from Europe.

Herbs with alternate leaves dissected into narrowly-linear or filiform segments and peduncled heads; receptacle in mature imbricated, the outer bracts shorter; receptacle conic or ovoid, without chaff; disc-flowers yellow, perfect, fertile, ray-flowers when present, ^{white} pistillate and fertile; style branches of the disc-flowers truncate; achenes ribbed, pappus wanting or merely a short crown. About 20 species mostly in Europe and Asia, a few in North America and South Africa.

Key to the Species

Rays present; involucrel bracts with fulvous margins.

M. grandiflora
M. inodora.

Rays wanting; involucrel bracts with white, scarious margins.

M. matricarioides.

Matricaria inodora L.
Matricaria inodora L. L. succ. id. 2. 28. 1806.

Matricaria grandiflora (Hook.) Britton,
Chrysanthemum grandiflorum Hook. App. Parry,
2nd. Voy. 398. 1823.

Matricaria grandiflora Britton, Mun. Larr. Bot.
Club 5: 340. 1894.

Glabrous or very nearly so
 Stems solitary or several from the
 same base, 10 to 25 cm. high; ^{simple or branched above} leaves
 pinnately dissected; heads 1 to 2 cm. broad,
 rays 5 to 12 or sometimes even 20 mm.
 long; pappus, a very short crown. Near
 the coast from ~~Hudson Inlet~~ ^{Arctic Alaska}, to the Shumagin Islands, east
 and on the coast of Hudson Bay, ~~and~~ Reported
 also from Lake Huron. Type localities, Repulse
 Bay and Foul Bay.

Arctic Alaska. — Hudson Inlet L.M. Stoney July 5
1885; W.C. Mendenhall, Sept. 3, 1901.

Seward Peninsula. — Port Clarence, L.A. Wal-
pole, 1901 (No. 1827).

Norton Sound — St. Michaels, Dall, 1867
H.M. Bannister, 1868-66.

Norton Sound to Bristol Bay. — Munivak Island,
Aug. 8, 1891.

Alutian Chain. — Unalaska, L.A. Golder, 1899
(No. 491)

Matricaria matricarioidesArtemisia matricarioides Less. Linnaea 6:
210, 1831Matricaria discoides Dr. Prodr. 6: 50, 1837Matricaria matricarioides Porter, Minn. Terr. Bot.
Club 5: 341, 1894.

Annual, glabrous, stems leafy, commonly much branched, 10 to 30 cm. high; leaves dissected as in the preceding, heads on the segments slightly broader; heads 7 to 10 mm. broad; achenes without a pappus. ~~From the Yukon~~ The Aleutian Islands and from the Yukon to Cook Inlet, and southeastern Alaska and California, east to Montana. Also becoming naturalized from Montana to Mexico somewhat in the central and Atlantic States. Type localities, Unalaska and Kamchatka. M. discoides was described from California, Orcutt Bay. — Mushagak, C. L. McKay, July 27, 1881.

Aleutian Chain. — Unalaska, C. H. Merriam, Aug. 12, 1891.Kodiak Island. — Kodiak, Cowles & Kearney (No. 2304).Lake Iliamna region. — Iliamna Bay, Larman, 1902 (No. 266).

Yukon River to Cook Inlet. — Near Shushitna
River, E. F. Glenn, June 17, 1879.

Cook Inlet. — Kenai, H. P. Nielsen, 1901
(No. 57).

Southeastern Alaska. — Sitka, Kellogg,
1867 (No. 165).

Chrysanthemum L.

Annual or Perennial herbs branching or strict, mostly erect, with alternate dissected, dentate or sometimes entire leaves and large commonly long-peduncled heads; ~~flowers both~~ involucre with its bracts imbricated in several series; receptacle naked; ~~flowers both~~ tubular and radiate, the rays flowers pistillate, fertile, disc-flowers perfect, fertile, ^{their} style-branches ~~of the disc~~ truncate; pappus wanting or ~~a~~ merely a scaly cup. A genus of about 100 species widely distributed in the northern hemisphere, mostly abundant in the Old World.

Key to the Species.

Rays ^{shorter} ~~little~~ ^{than the diameter of} ~~inferior~~ the disc.

C. bipinnatum.

Rays elongated, ^{commonly} ~~longer~~ as long or longer than the diameter of the disc.

Leaves entire.

C. integrifolium

Leaves ^{incised or} ~~lobed~~ ^{in crenate} ~~or pinnatifid~~.

C. arcticum

Chrysanthemum bipinnatum L.

Chrysanthemum bipinnatum L. Sp. Pl. 2: 890.
1753,

Reported from Alaska by Eschscholtz, Turner,
Spurr and by Fernald.

Chrys an the mum integrifolium Richards.
Chrys an the mum integrifolium Richards, App. F. Scubl.
 Journ. 749, 1823.

Filices

Perennial, villous ~~at least~~ when young,
 or sometimes rather sparingly so, stems
 5 to 15 cm. high, scapose with a tuft
 of ^{linear} leaves at the base; involucre with
 oblong bracts, fuscous on the margin,
 lacinate at the apex; rays white, anal
 or oblong, 7 to 9 mm. long; achenes
 without a pappus. Seward Peninsula
 to the Arctic sea-coast and in arctic
 Asia. Type locality the "Copper Mountains"
 in British America.

Seward Peninsula. — Port Clarence,
 F. A. Walpole, 1901 (Nos. 1562, 1766), 5 miles
 north of Nome City, J. B. Flitt, 1900 (No. 1659).

Chrysanthemum arcticum L.

Chrysanthemum arcticum L. Sp. Pl. 2: 588, 1753.

Perennial from a branched caudex, stems 10 to 30 cm. high, glabrous or nearly so, basal and lower cauline leaves ~~obovate~~ ^{the entire} or spatulate, ^{entire} ~~and entire~~, at the base, the latter ~~leaf~~ slender petioled base tapering to a long slender petiole, the upper leaves entire or sparingly toothed; involueral bracts fuscous on the margin but less conspicuously so than the preceding, rays linear-oblong, ¹⁰ ~~5 to 10~~ ¹⁵ mm. long. Along the entire Alaskan coast, the arctic coast to Hudson Bay and the shores of Asia from Kamchatka and Japan to Lapland in Europe. Originally described from Kamchatka and North America.

Arctic Alaska. — Cape Sabine, J. T. White, Aug. 12, 1894.

Islands of Bering Sea. — St. Lawrence Island, J. T. White, Aug. 27, 1894.

Seward Peninsula. — Fort Clarence, F. A. Walpole, 1901 (Nos. 1600, 1846). 16 miles west of Nome City, J. B. Little 1900 (No. 1658).

Mouth of Agiapuk River, Collier, Aug. 28, 1900.

Norton Sound. — Lt. St. Michaels, H. M. Barnister, 1865-66.

Pribilof Islands. — St. Paul Island, C. D. Merriam, Aug. 8, 1891, C. D. Townsend, Aug. 1893, Lane & Painters, 1895 (No. 87), St. George Island, C. A. Townsend, Aug. 1893, D. W. Ensmann, 1892 (No. 95).

Bristol Bay. — Mushagak, C. L. McKay, 1881.

Alutian Chain. — Attu Island, Jacobs, July, 1894, Otagai Island, Harrington, 1871-72, Unga Island, F. A. Golder, 1899 (Nos 24⁷⁰).

Lake Iliamna region. — Iliamna Point, Gorman, 1902 (No. 272), Iliamna Bay, Gorman, 1902 (No. 12).

Alaska Peninsula. — Stepanak Bay, Palache, July 8 to 19, 1899, Kukak Bay, Caville & Kearney (No. 1682).

Cook Inlet. — Kinai, H. P. Madsen, 1901 (No. 41).

Prince William Sound. — Otar Area, Caville & Kearney (No. 1315).

Southeastern Alaska. — Chilcat, Grace E. Cooley, Aug. 9, 1891. Dyea, Wm. M. Canby, 1897 (No. 154).

Tanacetum L.

Chiefly perennial, strong-scented herbs with pinnately dissected leaves and numerous corymbose ~~heads~~ or sometimes solitary heads; involueral bracts imbricated in several series; receptacle flat or convex, disc-flowers perfect, fertile, marginal flowers pistillate, fertile, their corollas sometimes produced into short rays; ~~achenes without a pappus or crown~~ or wanting. About 35 species in the northern hemisphere.

Tanacetum kuranense Nutt.

Tanacetum kuranense Nutt. Gen. 2: 141. 1818.

Tanacetum pauciflorum ~~Banks~~ in Richards. App. Frankl. Journ. 747. 1823.

Artemisia kotschyensis Bess. Nov. Mem. Soc.

Nat. Mosc. 3: 80. 1894.

Villous pubescent when young, less so in age, 30 to 60 cm. high or sometimes even higher; leaves bipinnate and the lobes dentate or sometimes entire; heads 10 to 15 mm. broad in dried specimens, involueral bracts pubescent, fuscous margined, marginal flowers occasionally

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expanded into a short ^{yellow} ray; pappus
a short crown. Yukon valley to Hudson
Bay, Maine, Lake ^{Superior} ~~Huron~~ and Oregon.
Type locality, "the sandy shores of Lake
Huron, near Michilimackinac." T. pauciflorum
was described from material collected on the "bank of
the Saginaw River."
Yukon Valley. - Between Nulato and
Norvikakat, Russell, July 23-27, 1889. Lower
Ramparts of the Yukon, Russell, July 28, 1889.
Rampart, Isaac Jones, 1901 (No. 64). Near
Mt. Yukon, Russell, Aug. 8-12, 1889. River bank
opposite Dawson, Williams July 30, 1879.
Ft. Selkirk, Tarleton, 1899 (No. 131). Red
Mountains, Garman, 1899 (No. 1102).

Two specimens from Arctic Alaska,
one from the Valley of Koluk River, W.C. Menden-
hall, Aug. 28, 1901, the other without special
locality, F. C. Schrader, Aug. 12, 1901, have
the involucres much more strongly
pubescent and have much larger
rays, ~~but~~ ^{as} they are however, identical
with T. huronense so far as foliage characters
are concerned and ~~with~~ ^{and} more material
may show intergradations to ^{the} typical forms
of that species.

Artemisia L.

Annual, biennial or perennial ^{aromatic} ~~herbaceous~~ herbs or shrubs with alternate leaves and small discoid, spicate, glomerate, racemose or paniculate heads of greenish, yellow or purple flowers; ^{bracts of the} involucre imbricated, the outer ones ~~successively~~ ^{gradually} shorter; receptacle ~~not~~ without chaff, central flowers perfect and fertile, and the style 2-cleft, or sterile and style nearly or quite entire, marginal flowers commonly pistillate, or flowers all perfect and fertile; achenes without pappus. About 200 species in the northern hemisphere and southern South America.

Key to the Species.

Central flowers perfect but sterile, the style entire or nearly so.

Heads 5 to 6 mm. broad, bracts of the involucre ~~green~~ purplish.

A. borealis.

Heads about 3 ^{to 4} mm. broad, bracts of the involucre green.

A. canadensis.

Central flowers perfect and fertile, the style 2-cleft.

Heads in a dense terminal cluster ^{sometimes} ~~or rarely~~
 1 or 2 in the axils ~~in the axils~~ of the upper
 bracts below the terminal cluster and the
 foliage densely villous with long hairs.
 Flowers dark purple, on the back of the corolla
 sometimes yellow at the base.
A. globularia.

Flowers yellow.

Plant white with villous pubescence.

A. semavinensis.

Plant grayish with mostly appressed
 or close pubescence.

A. glomerata.

(or when somewhat)

Heads spicate racemose or paniculate, ^{sometimes}
~~times~~ crowded at the summit of the stem ~~the~~
 foliage not ~~not~~ densely villous with long hairs.
 Flowers purple.

A. richardsoniana.

Flowers yellow ^{sometimes} or ~~only~~ the teeth of the corollas
 purplish.

Plants with leaves ^{silvery} ~~whitish~~, either can-
 escent or tomentose, at least beneath.

Leaves green and glabrate above,
 tomentose beneath.

A. tilisii.

Leaves ^{or tomentose} ~~canescent~~ on both sur-
 faces.

Leaf-segments ^{linear, less than 1 mm.} ~~petiolar~~
^{about 3 mm. long.}

A. frigida.

commonly more than 1 mm.
broad

Leaf segments linear or
oblong-linear; heads 4 to 5
mm. long.

A. palmatipida.

with leaves

Plants green or sometimes grayish

~~pubescent~~, ~~erect~~ ~~erect~~ ~~erect~~ ~~erect~~
silvery canescent ~~erect~~ ~~erect~~ ~~erect~~ ~~erect~~

Tube of the corolla hairy.

A. arctica.

Tube of the corolla glabrous,
the limb sometimes sparingly
hairy.

Bracts of the involucre
commonly densely hairy,
plant usually low.

A. caespitosa.

Bracts of the involucre
sparingly hairy or glabrous,
plant usually tall.

A. laciniata.

Artemisia borealis Pall.Artemisia borealis Pall. Russ 3: 755. 5. 4h. f. 1. 1772-73.

Caude^{ex} stout, simple or branched; ~~leaves~~
~~mostly tufted~~, the stems 8 to 25 cm. high, and
 scape-like; leaves mostly basal and tufted,
 the basal and lower cauline ~~to~~ cleft into
 narrow linear lobes, silky villous, the
 upper ones sparingly cleft or entire and
 narrowly-linear; heads racemose or
 sometimes spicate; involucre purplish;
 corollas yellow usually ~~pur~~ with purple tips,
 sparingly pilose above ~~and~~ Seward Peninsula
~~reported to occur at the Rocky Mts. & Colorado; occurs~~
~~and arctic America and the arctic~~ having been
 in Siberia where it was originally described.
 from arctic Siberia.

Seward Peninsula. — Port Clarence,
 Conville & Kearney (No. 1911), F. A. Walpole, 1901
 (No. 1494).

Artemisia canadensis Michx.

Artemisia canadensis Michx. Fl. 2: 128, 1803.

~~Stems~~ ^{30 to 40 cm. ^{high} or sometimes 60 cm.}
^{strict; leaves} ~~high~~ glabrous or more commonly ~~close silky-~~
 canescent with close silky-pubescent, ~~leaves divided into narrow~~ sometimes
 sparingly so, the segments narrowly-linear or
 almost filiform ~~but plane~~; heads paniculate
 or in small forms racemose; corollas
 glabrous. Upper Yukon to Hudson Bay, ^{the type locality,}
 Vermont, Minnesota, Nebraska, Arizona
 and British Columbia, Washington.

Upper Yukon. — Fifty Mile River, A.L.
 Bolton, July 29, 1899.

Artemisia globularia

Artemisia globularia Cham; Bess. Nov. Mem. Soc.
Nat. Mosc. 3: 64, 1834.

Low, ^{caulescent} stems, mostly tufted at the base, usually with broad petioles, the blade palmately parted and the lobes again 2 to 3 cleft into linear or oblong ~~to~~ segments; heads in a flowering stem 5 to 10 cm. high the ~~base~~ ^{upper} part of flowering stem almost woolly or tomentose; heads in a dense capitate cluster; corollas glabrous, very rarely so. ^{and involucres densely pubescent} Pribilof Islands and Seward Peninsula, and the adjacent shores of Siberia. Type locality, St Lawrence Bay, Siberia.

Seward Peninsula. — ~~Mar~~ Port Clarence, L.A. Walpole, 1901 (No. 1882).

Pribilof Islands. — St. Paul Island, C. N. Merriam, Aug. 8, 1891, True & Painter, 1895 (No. 65). St. George Island, Cuermann, 1892 (No. 100), J. M. Maclean, July 31, 1891.

Artemisia semavinensis Bess.

Artemisia semavinensis Bess. Nouv. Mém. Soc.
Nat. Mosc. 3: 65. 1834.

Artemisia androsacea Seem. Bot. Herald 34, t. 6, 1852.
about 10 mm. long

Densely matted, leaves tufted, cuneate or oblong-cuneate, simply 3 to 5-cleft into linear, oblong or lanceolate segments, the long hairs almost obscuring the ~~outline~~ upper cauline leaves mostly entire, linear or oblong-linear; heads in a terminal glomerule or a few in the axils of the upper bracts; corollas glabrous, or rarely a few hairs on the limb. Seward Peninsula and on the Asiatic side of Bering Sea. Type locality, "Ad fretum Semavin."
~~Type locality~~ *A. androsacea* was described from Kotzebue Sound.

Seward Peninsula.—Port Clarence, F.A. Walpole, 1901 (Nos. 1493, 1770, 1858, 2061), 5 miles north of Nome City, J. B. Flett, 1900 (No. 1654).

Artemisia glomerata Ledeb.

Artemisia glomerata Ledeb. *Mém. Acad. Petersb. Histoire* 5: 564, 1815.

Caespitose as in the preceding, leaves camescent, ~~the segments linear, flowering stems 2 to 8 cm. high.~~ palmately parted into linear, entire lobes, or sometimes the lobes cuneate and again cleft; flowering stems 2 to 8 cm. high; corollas & labrums, Islands of Bering Sea and adjacent Siberia, ^{foliage} type locality St. Lawrence Bay.

In habit and all vegetative characters scarcely to be distinguished from the preceding but the heads apparently have shorter peduncles than is common in *A. globularia*, and the corollas are yellow throughout - at least stage showing a tendency to become purplish.

Islands

Islands of Bering Sea. - St. Matthew Island, Coville & Kearney (No. 2131), J. M. Macoun, Aug. 10, 1891. Hall Island, Coville & Kearney (No. 2068a).

Artemisia richardsoniana Bess.

64

Artemisia richardsoniana Bess. in Hook. Fl. Bor.
Am. 1: 323. 1834. Bull. Soc. Nat. Mosc. 9: 64. 1836.

Stems 10 to 30 cm. high; leaves canescent or sometimes almost villous, the basal ones palmately 3 to 5 cleft, the lower cauline mostly 3 cleft ^{into} ~~and the segments~~ linear segments, the upper cauline entire and linear ^{4 to 5 mm. high long,} or oblong; heads spicate-racemose, the bracts with dark purple margins and woolly pubescent in the center, corollas glabrous or sparingly pilose. Reported from the Pribilof Islands, ~~and ranges from the northern~~ ^{It occurs in} Rocky Mountains ~~to~~ ^{and from} Bear Lake ~~and~~ ^{to} the Arctic Sea. ~~the fact named by later using the range given in the~~ ^{original description.} Perhaps also 10 Alaskan specimens have been seen.

65

Artemisia tilesii Ledeb.

Artemisia tilesii Ledeb. Mem. Acad. Petreob.
Histoire 5: 568, 1815.

Artemisia vulgaris tilesii Ledeb. Fl. Ross. 2: 586,
1845-46.

Stems 20 to 80 cm. high, leafy to the inflorescence; leaves variously laminate or coarsely toothed or very rarely entire, the segments commonly lanceolate, ~~all~~ and ~~attenuate~~ acuminate; heads numerous, paniculate or in reduced forms racemose, the upper part of the stem and peduncles cottony tomentose or glabrate, ^{heads 3.5-5 mm. long,} involucre campanulate, the bracts with fuscous margins or sometimes nearly glabrate. Almost green, tomentose or glabrate; corollas glabrous, yellow with purple teeth or more commonly pale yellow throughout. A common species throughout Alaska, and in Arctic Russia and Siberia. Originally described from Kamchatka.

Although variable in the number of ~~heads~~ ^{some of the} number and size of the heads and somewhat also in the character of the involucre there are so many gradations between the extreme forms that ~~the~~ any ~~such~~ elaborate segregation of subspecies is unwarranted.

A. vulgaris californica Bess. reported from Alaska by Gray! ^{the most repre-} ~~has strong involucre and~~ ~~sent~~ ~~sepa~~
1 Gray, Syst. Fl. Vol. 4: 373, 1884.

Arctic Alaska. - Near Katlam Inlet W.L.

Buff. without date. Kotuk River W.C. Munson Hall, Aug. 13, 1901, Sept. 5, 1901.

Edward Peninsula. - Cape Eschschberg, J. T. White, July 28, 1894, Port Clarence F. A. Welsch, 1901 (Nov. 1898, 2025). 16 Miles west of Nome City, J. B. Lett, 1900 (No. 1657). 5 Miles north of Nome City, J. B. Lett, 1900 (No. 1650).

Islands of Bering Sea. - St. Matthew Island, Caville & Kearney (No. 2115). St. Lawrence Island, J. M. Macoun, Aug. 15, 1891.

Pribilof Islands. - St. Paul Island, C. H. Merriam, Aug. 8, 1891. Caville & Kearney (No. 1825). St. George Island, C. H. Merriam, Aug. 10, 1891.

Norton Sound. - Ft. St. Michaels, H. M. Bannister, 1865-66, W. H. Dall, 1867.

Pristol Bay. - Ushkeguk, John Johnson, Aug. 15, 1882, Mc. Kay, Aug. 8, 1887.

Alutian Chain. - Unalaska, Kellogg, 1867 (No. 284) Evermann, 1892 (No. 46), Caville & Kearney (No. 1700). Unga Island, F. A. Golder, 1899 (No. 56). Pofut Island, Saunders, July 7, 1899.

Kodiak Island. - Caville & Kearney (No. 1482).

Alaska Peninsula. - Kukak Bay, Caville & Kearney (No. 1672).

Lower Yukon. - Between Chitlat and Chawickat, L. C. Russell, July 23-27, 1887.

Yukon River to Cook Inlet. — 5 Miles below Ft. Hamilton, Collier, 1912 (No. 152). Lower Ramparts of the Yukon, Russell, July 28, 1889, Rampart, Isaac James, 1901 (No. 69). Valley in Alaska Mts. E. F. Glenn, July 26, 1899.

Copper River region. — Sanford River, W. L. Potts, 1902 (No. 102).

Upper Yukon. — Porcupine River, J. H. Turner, 1891, Eagle, Georgeson, 1900 (No. 29). Klondike River, Gorman, 1899 (No. 1159). 50 Miles above Stewart River, J. B. Tarleton, 1899 (No. 159).

Artemisia frigida Willd.

Artemisia frigida Willd. Fl. Rh. 3³, 1838. 1853.

~~Stems 20 to 40~~

~~Woody at base, 20 to 40~~

Stems 20 to 40 cm. high, woody at the base, usually with numerous ^{short} leafy, sterile branches and few to several, elongated, less leafy flowering shoots; leaves ~~at once or twice~~ ternately or pinnately cleft, into divisions less than 1 mm. wide and usually with a pair of stipuleiform ^{linear or oblong} divisions at the base of the petiole; heads racemose or racemose-paniculate, 2 to 4 mm. long, ^(the involucre of the involucre) canescent or tomentose. In dry or rocky situations from the Tanana and Porcupine Rivers throughout the upper Yukon and southward to Nebraska, Texas and New Mexico. Widely distributed in Siberia, type locality Dauria.

Between Yukon River and Cook Inlet. — Cantwell valley, Brooks & Poirer, 1902. ~~1902~~

Upper Yukon. — Near Fort Yukon, Russell, Aug. 8-12, 1859. Forty Mile Creek, Funston, 1893 (No. 160). Dammann, Tarleton, 1899 (No. 1876). Near Little Salmon River, Williams, Aug. 22, 1899. Ft. Selkirk, Garman, 1899 (No. 964).

Artemisia palmatifida sp. nov.

20 cm. or more high

Stems, sub-hermaphrodite, branched, the upper part with covered with thin, fine tomentum; leaves once or twice ternately or quaternately parted, the segments linear or linear-oblong, usually 1.5 to 2 mm. broad; heads ^{4 to 5 mm. high} in a narrow panicle, ~~peduncles~~ ^{or nearly so} sessile, or sometimes solitary on peduncles 10 to 50 mm. long, involucres campanulate, the bracts oblong, tomentose, their margins very little or not at all fuscous; corollas yellow, glabrous or inconspicuously hairy. On the lower Yukon and Koyukuk ~~Rivers~~ rivers.

Type specimen in the United States National Herbarium collected Aug. 21, 1902 ~~near~~ in the Koyukuk valley, Alaska, by A. J. Collier (No. 142).

A. palmatifida has no clear relative in North America but bears some resemblance to the Siberian *A. turcomanica*. It is ^{apparently} a larger plant than that ^{however} and has a smoother stem and much larger heads.

Koyukuk River to the Yukon. — Koyukuk River valley, A. J. Collier, 1902 (No. 142). Yukon, between Nulato and Newikakut, J. C. Russell, July 23-27, 1889.

Artemisia arctica Less.

Artemisia arctica Less. *Linnaea* 6: 218, 1891,

~~*Artemisia*~~
Artemisia chamissoniana Bess. in Hook. & L. Bar.
Ann. 1: 324, 1834,

Artemisia longipedunculata Rudolphi; Bess. Nov.
Mém. Soc. Nat. Mosc. 3: 77, 1834,

~~*Artemisia kotzebueensis* Bess. Nov. Mém. Soc. Nat.
Mosc. 3: 80, 1834, ?~~

Artemisia norvegica pacifica Gray, Syn. Fl. 12:
371, 1884

Glabrate or sometimes densely and conspicuously hairy,
Stems 10 to 40 or rarely even 70 cm. high;
to leaves the basal and lower cauline
leaves petioled, pinnate, the pinnae variously
toothed or
laciniate, the segments acute; heads
commonly 8 to 10 mm. broad, racemose
or paniculate. The lower ones usually on
long peduncles, the upper sessile or short
pedunculate, bracts of the involucre brownish
throughout, ^{the margins} more conspicuously so, or the center
green and glabrous or pubescent; corollas
yellow throughout or more commonly
yellow with purplish teeth. Widely distributed
in Alaska from ^{Seward Peninsula} Port Clarence to the Aleutian
Islands, Juneau and the upper Yukon, also
in ~~Asia~~ northeastern Siberia. Type localities,
Unalaska, St Lawrence Bay, Cape Espenberg,
St Lawrence Island and Kamchatka.

This plant was well described by Lising apparently from material from several localities and there appears to be no reason why his name should not be retained. *A. chamissoniana* was described from the following localities, Northwest coast of America, Kigibue Sound, Woods in the Rocky Mts. Lat. 52°, and the Arctic sea-shore, *A. longipedunculata* was described from Siberia and *A. norvegica pacifica* from ^{the} Arctic coast to the Aleutian Islands and adjacent east Asia.

Seward Peninsula.—Port Clarence, Coville & Kearney (No. 1915), F. A. Walpole, 1901 (Nos. 1744, 1904, 2026). 5 Miles north of Nome City, J. B. Felt, 1900 (No. 1649).

Islands of Bering Sea.—St. Matthew Island, Coville & Kearney (No. 2096).

Pribilof Islands.—St. Paul Island, L. J. Cole, July 9, 1899, Kinkaid, Aug. 10, 1899, C. H. Merriam, July 30, 1891. St. George Island, C. H. Merriam, Aug. 10, 1891.

Bristol Bay.—Ushagak, C. L. McKay, Aug. 3, 1891.

Aleutian Chain.—Alaska, Coville & Kearney (No. 1714), C. H. Merriam, Aug. 12, 1891, Harrington, 1891, 72. Kuskokwim (No. 285). Amuktok Island.

Evermann, 1892 (No. 109), ^{Island} Unge, F. A. Golder, 1899
(No. 39), Pofaf Island, Kirkaid, July 16, 1899.

Kodiak Island. — Canille & Kearney (No. 2269),
L. J. Cole, July 19, 1899.

Alaska Peninsula. — Kukak Bay, Canille
& Kearney (No. 1613).

Tanana River to Cash Point. — E. F. Glenn,
July 12, 1899. Simpson Pass, Brooks & Prindle, July 11, 1902.

Yakutat Bay. — Egg Island, Canille & Kearney
(No. 1015). Hamke Island, Canille & Kearney (No. 1093).
Disenchantment Bay, Furston, 1892 (No. 93).

Southeastern Alaska. — Near Juneau, Grace
E. Cooley, ~~1899~~ Aug. 6, 1891. Juneau, Canille &
Kearney (No. 2480). Yes Bay, Larran, 1895 (No.
163).

Artemisia caespitosa Pers.

Artemisia caespitosa Pers. in Hook. Fl. Bor. Am.

11, 324, 1834.

~~Grayish caniscent~~ or sometimes nearly glabrate
~~caniscent~~
 Scandix, branched, stems 5 to 15 cm. high;
 leaves mostly tufted on the branches of the caudex,
 the basal and lower ^{cauline} ones palmately cleft
 and the lobes usually linear or ^{cuneate and} again
 cleft into linear or oblong-linear segments,
 upper cauline 3-cleft or linear and entire;
 heads racemose, usually somewhat crowded
 at the ends of the flowering stems, about
 7 mm. broad in dried specimens, bracts of
 the involucre conspicuously hairy or
 somewhat ~~tomentose~~ ^{woolly} pubescent, their
 margins fuscous; corollas yellow. Collected
 at Port Clarence. Originally described from
 the Arctic sea-shore.

Seward Peninsula, — Port Clarence,
 F. A. Walpole, 1901 (Nos. 1783, 1985).

Artemisia laciniata Willd.

Artemisia laciniata Willd. Sp. Pl. 8^o: 1848. 1808

Stems strict, 20 to 35 cm. tall; leaves ~~twice~~ ^{acute} bipinnate, the acroments ^{acute} entire or sparingly toothed, hairy on both surfaces, but not grayish; heads 5 to 7 mm. broad in dried specimens, in a narrow panicle, the involueral bracts fuscous on the margin, green or grayish in the center, ~~sparingly~~ hairy, but or sometimes sparingly so; corollas dull yellow. Collected above Ft. Selkirk. Originally described from Siberia where it apparently ranges from Altai to the eastern Siberia.

Upper Yukon. — Above Ft. Selkirk, J. B. Sarsleton, 1899 (No. 111).

Petasites Gaertn.

Perennial herbs from horizontal rootstocks with large, tomentose or glabrate basal leaves and bracted scapes bearing racemose or corymbose heads of perfect, dissecious or subdissecious flowers; involucre campanulate or cylindric, its bracts in one series; receptacle without chaff; flowers white or purplish, both tubular and radiate or the radiate wanting; pappus of numerous soft capillary bristles. About 12 species in the northern hemisphere.

Best Key 49 — Key to the Species.

Leaves roundish or hastate - uniform in outline, ^{the margin} irregularly toothed or lobed.

P. frigida.

Leaves sagittate or deltoid-ovate in outline, the margin repand-dentate.

P. sagittata.

P. gravis.

Petasites frigida (L.) Fries.

Tussilago frigida L. Sp. Pl. 2: 860. 1753.

Petasites frigida Fries, Summa Veg. Scand.
182. 1846.

Stems 10 to 50 cm. high, tomentose;
leaves 3 to 10 or ~~so~~ sometimes even 20
cm. long, densely tomentose beneath or
somewhat glabrate in ~~so~~ age, commonly
glabrate above, the margins irregularly
sinuate or shallowly-lobed and the
lobes toothed or entire; heads ^{about} 10
mm. high, flowers white or ~~slightly~~ ^{slightly} purplish. Throughout Alaska from
Point Barrow to the Aleutians, Cook Inlet
and the upper Yukon, southeast to Lake
Winnipeg. Originally described from
Lapland, Switzerland and Siberia, the
reference to Switzerland however ~~probably~~ ^{is an error}
probably refers to another species as *P.*
frigida is now reported only from the
north of Europe.

Arctic Alaska. - Point Barrow, Murdock, 1883,
Cape Blossom, Mc Lennan, 1884. Near Hoham
Inlet, W.L. Huff, 1885. Valley of Kobuk River,
L.H. Stacey, June 30, 1885.

Islands of Bering Sea. - Hall Island, Coville
& Kearney (No. 2035). St. Lawrence Island, Coville
& Kearney (No. 1998)

Seeward Peninsula. - Port Clarence, L.A.
Walpole, 1901 (Nos. 1429, 1445, 1461, 1632), Coville
& Kearney (No. 1913), Grantly Harbor, ^{Kildan} Jackson,
Sept. 1894. 5 Miles south of Nome City, J.B. Lillie,
1900 (No. 1653).

Norton Sound. - St. Michaels, J.C. Russell,
July 10, 1889

Norton Sound to Bristol Bay. - Nunivak Island,
J.M. Macann, Aug. 5, 1891.

Pribilof Islands. - St. Paul Island, Paul &
Printiss, 1895 (No. 37), Wm. Palmer, 1870 (No. 627),
C.H. Merriam, Aug. 7, 1891.

Alutian Chain. - Unalaska, Harrington,
1871-72, Kellogg, 1867 (No. 159). Pofaf Island,
Kirkaid, July 8 & 19, 1899.

Kodiak Island. - English Bay Mountains,
L.A. Walpole, 1900 (No. 1219).

Lake Iliamna region. — East of Iliamna
Point, Gorman, ~~1902~~ (No. Sept. 12, 1902).

Kuyukuk River to the Yukon. — Old Man Creek,
W.C. Mendenhall, July 5, 1901.

Yukon River to Cook Inlet. — E. F. Glenn,
1899.

Headwaters of the Copper and Tanana rivers. —
Bat'gul melas Village, Schrader & Hartman, 1902 (No. 8).
Drop Creek, Schrader & Hartman, 1902 (No. 13).
Mt. Drum Trail, W.L. Peto, 1902 (No. 14).

Porcupine River. — Rampart House, Furston,
1894 (No. 172).

Upper Yukon. — Forty Mile Creek, Furston,
1893 (No. 54).

Petasites frigida nivalis (Greene) Wight
Petasites nivalis Greene, Pitt. 2: 18, 1889.
Leaves usually lobed to the middle, or sometimes even more
deeply. This form differs from the species only in
the leaves being more deeply divided and
seems scarcely worthy of specific rank, particularly
as since the leaves of *P. frigida* itself are
so variable. Alaska, Pinnawala & Washington,
Idaho, and in Yukon Territory. Type locality,
Crater Lake on Mt. Ranier.

79

Alaska Peninsula. - Kukak Bay, Caville
& Kearney (No. 1669).

Prince William Sound. - Area, Caville &
Kearney (No. 1173), Kinkaid, June 28, 1899, Port
Wells, Caville & Kearney (No. 1261).

Yakutat Bay. - Disenchantment Bay, Fensholt,
1892 (No. 105), Egg Island, Caville & Kearney
(No. 1042).

Southeastern Alaska. - Berg Bay, Kinkaid,
June 10, 1899, Point Gustavus, Caville & Kearney
(No. 730). Haomiah Village, Caville & Kearney
(No. 650). Near Juneau, Grace E. Cooley,
Aug. 6, 1891.

Pitasites sagittata (Pursh) Gray,
Lussilago sagittata Pursh, Fl. 2: 531, 1814.
Pitasites sagittata Gray in Bruner & Wats. Bot.
 Cal. 1: 407, 1846.

Leaves persistently tomentose beneath,
 sparingly floccose or nearly glabrate above,
 their margins not lobed or cleft; inflorescence
 as in the preceding. Upper Yukon to Hudson
 Bay, the type locality, Minnesota, Colorado and
 British Columbia.

Upper Yukon. - Ranch Creek, Garman,
 1899 (No. 965).

Petasites gracilis Britton.

81

Petasites gracilis Britton in Britton & Rydb. Bull.
N. Y. Bot. Gard. 2: 186, 1901.

~~*Petasites gracilis* Britton, sp. nov.~~

"Scape slender, about 4 dm. high, sparingly lanate. Leaves thin, broadly ovate, subcordate, loosely lanate beneath, 5-6 cm. broad, with about twelve large acute cuspidate teeth or short lobes, the sinuses rounded; petiole slender, twice as long as the blade; scales of the scape and bracts of the inflorescence lanceolate, acuminate: inflorescence racemose, about 1 dm. long: peduncles very slender, glandular-pubescent, 2-5 cm. long: involucre glandular-pubescent, its linear-oblong obtuse bracts about half the length of the bright white pappus, the few outer bracts much shorter. "

"Walker Gulch, Williams, July 16, 1899. "

~~Britton & Rydb. Journ. N. Y.
Bot. Gard. 2: 186, 1901.~~

Perennial herbs with simple stems or sometimes sparingly branched above, and usually opposite leaves; heads large, long pedunculate. ^{ed.} flowers both tubular and of the involucre in ~~1 or 2 series~~ ^{in 1 or 2 series} ~~flowers both tubular and radiate~~ ^{flowers both tubular and radiate} or the latter rarely wanting, anthers yellow or blackish, style slightly thickened above, achenes linear, hispid or glabrous, pappus of a single series of capillary setae or barbellate bristles. About 30 species in the north temperate and Arctic zones.

Key to the Species.

2 to 6 pairs
Cauline leaves ~~usually several~~, the upper ones, excepting sometimes the uppermost pair, not much reduced.

Basal leaves mostly cordate ^{at base} cauline broad, ovate or sometimes broadly oblong to oval.

A. latifolia.
Basal leaves not cordate at base, cauline lanceolate to narrowly oblong or oval, very rarely ovate.

A. chinensis.
Cauline leaves ^{usually} 1 to 8 pairs, the upper ones conspicuously reduced.

Cauline leaves narrowly lanceolate or linear-lanceolate, attenuate.

A. alpina.

Cauline leaves oblong, ~~ovate~~ lanceolate or ovate, acute or obtuse, not attenuate or the uppermost pair sometimes slightly so.

Rays 8 to 12; stem branches 1 to 2 pairs or crowded at the base leafy to the middle or the pairs of the leaves crowded at the base and the stem scapiform.

A. Lessingii.

Rays 12 to 16; stem, ^{usually} leafy to the middle or beyond, rarely with the leaves crowded at the base and scapiform.

A. obtusifolia.

Arnica latifolia Bong.

Arnica latifolia Bong. *Mém. Acad. Petersb.* VI,
Math. & Nat. 2: 147, 1831.

Stems 15 to 60 cm. high, pubescent or sometimes nearly glabrate below; the broad ~~usually abruptly emarginate at the apex~~ leaves ^{repend-undulate} ~~or~~ irregularly toothed, pubescent above with short mostly appressed hairs, pubescent below at least along the veins; Achenes mostly glabrous. Kodiak Island and the Copper River region to southeastern Alaska and reported to extend to Oregon and in the Rocky Mountains to Colorado. Type locality, Sitka.

Kodiak Island. — L. J. Cole, July 1, 1899.

Karluk, Kinkaid, July 19, 1897.

Prince William Sound. — Camille & Kearney (No. 1308).

Copper River Region. — Divide between Slate Creek and Chisna, W. L. Peto, 1902 (No. 165).

Yakutat Bay. — Dalton's Landing, Funston, 1892 (No. 122).

Southeastern Alaska. — Near Juneau, Grace E. Cooley, Aug. 6, 1891, Sitka, Biscoff, 1865-66, Camille & Kearney (No. 906).

Arnica chamissonis Less.

Arnica chamissonis Less. Linnaea 6: 238, 1831.

Stems 15-60 cm. high as in the preceding ^{grayish} pubescent, ^{or sometimes nearly glabrate} leaves dentate or sometimes ^{or sometimes nearly glabrate} ~~entire~~ ^{or sometimes nearly glabrate} usually tapering at the base or the upper abruptly contracted and somewhat clasping; ^{maps 1 to 4} all ^{maps 1 to 4} ~~achenes~~ ^{achenes} hirsute, Aleutian Islands to Sitka, the Sierra Nevada of California and the mountains of Utah and Colorado, Type locality, Unalaska.

Aleutian chain.—Unalaska, C. H. Merriam, Aug. 12, 1871, Harrington, 1871-72, True & Painter, 1895 (No. 120). Pofarof Island, Kinkaid, July 8519, 1899, Unga, F. A. Golder, 1900 (No. 80).

Kodiak Island.—Kellogg, 1867 (No. 231), Kinkaid, July 20, 1899, Coville & Kearney (No. 2886).

Alaska Peninsula.—Kukak Bay, Coville & Kearney (No. 1659), Kinkaid, July 8519, 1899.

Southeastern Alaska.—Sitka, Tilling, 1867 ~~without date~~. (No. 369).

Arnica alpina (L.) Clin.

Arnica montana alpina L. Sp. Pl. 2: 884, 1753.

Arnica alpina Clin Mon. Arn. Upsala 1799.

Arnica angustifolia Vahl, Fl. Dan. 26, 3, 5, 1824.
1814.

Arnica attenuata Greene, Pitt. 4: 170, 1920.

Stems 20 to 40 cm. high, pubescent or villous above; leaves entire or remotely and inconspicuously denticulate; heads 1 to 3, ^{rarely from 5} the involueral bracts lanceolate to linear-lanceolate and attenuate; achenes hispid, rarely glabrate. In the interior from Arctic Alaska to the upper Yukon, across the continent to Greenland and Labrador. ~~Originally~~ Also in northern Europe where it was originally described, and reported from the extreme northeast of Siberia.

A. angustifolia described from

A. attenuata described from Lewis River, Yukon Territory. The type specimen differs in no way from typical *A. alpina*.

Arctic Alaska. - Noatak valley, F. H. Storer,
July 10-20, 1885.

Koyukuk River to the Yukon. - Dall River, W. C.
Mendenhall, June 27, 1901.

Upper Yukon. - Fort Yukon, Schrader,
June 21, 1899. Eagle, A. J. Collins, 1902 (Nos. 29⁴⁴).
Coal Creek Hill, Funston, 1893 (No. 90). Libarge
Island, J. B. Tarleton, 1899 (No. 46). Lewis River,
Gorman, 1899 (No. 1025).

Headwaters of the Copper & Tanana Rivers. -
~~Schena~~ Jackgema River, Schrader & Hartman,
~~July~~ 1902 (No. 51).

Arnica lessingii (Tarr. & Gray) Greene.
^{*angustifolia*}
Arnica ~~*alpina*~~ *lessingii* Tarr. & Gray, Fl. 2: 449,
 1843.

Arnica lessingii Greene, Pitt. 4: 167, 1900.

Stems 8 to 35 cm. high, villous to nearly glabrate below; leaves scabrous-pubescent or nearly glabrous except the margins, ~~from~~ ^{from} nearly entire to remotely denticulate; ~~the~~ heads solitary, the involucrel bracts ^{rarely oblong, equal or very nearly so} lanceolate₁₁; flowers with the anthers either yellow or blackish; achenes usually hirsute. Apparently the most common ~~species~~ *Arnica* in Alaska ~~and~~ ranging from the Arctic slope to Juneau, and in the northeast Siberia. Type locality, Kotzebue Sound.

It is somewhat noteworthy in having both yellow and blackish anthers but the specimens differ in no other particular and ~~to plants~~ both forms occur throughout the range of the species.

South eastern Alaska. - Alutic River Bar Basin, near Junction, Grace E.
Cady, Aug. 6, 1891.

A. leucogyni

Arctic Alaska. - Cape Sabine, J. T. White,
Aug. 12, 1894. Arctic slope, Schrader, July 21, 1901.
Arctic slope River, Schrader, Aug. 5, 1901. John River, Schrader,
July 12, 1901. Edward Pinninsula. - Park Clarence, F. A.
Walpole, 1901 (Nos. 1618, 1695, 1833). White
Mountain, A. J. Collins, July 5, 1900. 16 Miles west
of Nome City, J. B. Flett, 1900 (No. 1646).

Islands of Bering Sea. - Muriwak Island,
Jas M. Macoun, Aug. 7, 1891. St. Mathew Island,
Canillet Kearney (No. 2145).

Alutian Chain. - Unalaska, J. M. Ma-
coun, Aug. 22, 1891. Akun Island, C. H. Town-
send, Aug. 31, 1893. Pops of Island, Kirkland,
July 8 to 19, 1899, Saunders, July 7 to 18, 1899. Unga
Island, F. A. Galder, 1899 (Nos. 59, 77), Dall, 1865-66.

Kodiak Island. - F. A. Walpole, ~~1890~~ 1900
(No. 1187).

Alaska Pinninsula. - Stipsavak Bay, Palache,
July 8 to 19, 1899.

Koyukuk River to the Yukon. - Old Man
Creek, W. C. Mendenhall, July 8, 1901.

Yukon River to Cook Inlet. - Simpson
Pass, Brooks & Prindle, July 11, 1902. Kuchitno River,
J. S. Kieran, July 18, 1899.

Copper River region. - moraine of Chitashene glacier,
W. C. Potts, 1902 (No. 1646).

Arnica obtusifolia Less. Linnaea 6: 236. 1831,
Arnica unalaschensis Less. Linnaea 6: 238. 1831.

Usually grayish pubescent, stems 8 to 30 cm. high; leaves denticulate or rarely entire, the lower ones obovate-spatulate and obtuse or oblong, the upper oblong ovate and acutish; heads solitary or ~~sometimes~~ very rarely a second, involueral bracts linear-lanceolate, acute, rarely almost oblong, the outer series commonly slightly longer than the inner; achenes hirsute, or rarely glabrous. The Pribilof and Aleutian Islands. Type locality, Unalaska.

A. unalaschensis also described from Unalaska does not appear to be distinct. The differences in the involueral bracts mentioned by the author does not appear to be constant and a careful examination of the following series of specimens discloses no differences ~~that~~ on which to base two separate species. The ~~st~~ first name is therefore retained for the species.

Phil. of Islands. - St. Paul Island, J. M.
Macoun, Aug. 4, 1897.

Alutian Chain. - Unalaska, Kellogg, 1867
(No. 369), Harrington, 1871-72, Kirkald, Sept. 18,
1897, Couille & Kearney (No. 2225), J. M. Ma-
coun, Aug. 22, 1897, Lane & Prunty, 1895 (No. 144),
Evermann, 1892 (No. 123). Akun Island, C. H.
Lawson, Aug. 31, 1893. Shumagin Islands,
Harrington, 1871-72.

Senecio L.

Annual or perennial ~~herbs~~ (except some tropical species) with alternate leaves and solitary, corymbose or paniculate, yellow flowered heads; involucre ~~of~~ cylindric or campanulate, its principal bracts in 1-series, a shorter outer series at the base, or ~~the~~ ^{the} second series wanting; ~~both~~ both tubular and radiate receptacle ~~that~~ mostly naked, both tubular and radiate flowers present or in some species the latter wanting; achenes glabrous or pubescent all ^{usually papillose or ~~the~~ papillae without hairs} ~~eminent after swelling and~~ ^{emitting a pair of spiral threads} ~~line of the largest~~ ^{perhaps of cotyledonary bristles} known genera, perhaps a 1000 or more species. Widely distributed throughout the world.

Key to the Species.

Heads several or numerous, ~~corymbose~~, usually in an open corymb, sometimes densely corymbose in *S. polystrius*, commonly 6 to 12 mm. broad in dried specimens.

Rays wanting or very short (sometimes 5 to 7 mm. long in *S. dyscaidens*)

Stems usually branched, mostly leafy to the inflorescence; the lower leaves spatulate or oblong in outline.

S. vulgaris.
Stems usually strict, mostly naked or nearly so above; lower leaves oval or ovate in outline.

Rays present, mostly conspicuous.

Involucral bracts blackish at the tip.

S. lugens.

Involucral bracts greenish throughout.

Cauline leaves auriculate and clasping at base.

S. palustris

Cauline leaves petiolate or when sessile, narrowed at the base, not clasping.

S. triangularis.

Heads solitary or when ~~for~~ more than one usually in a very dense terminal cluster, commonly 10 to 25 or even 30 mm. broad in dried specimens.

^{signally} leafy to the inflorescence, ~~the upper leaves not much reduced.~~

S. pseudo-arnica.

^{equally} Rarely leafy to the inflorescence

Cauline leaves, or at least some of them usually lyrate-pinnatifid, rarely entire or merely dentate; involucres glabrous or soon glabrate.

S. usedifolius.

Cauline leaves all entire or merely repand dentate; involucres permanently pubescent.

Achimes pubescent.

S.

Achimes glaberrans

Leaves mostly conspicuously dentate;
involucres pubescent with brownish
hairs.

S.

Leaves ^{mostly} entire, ^{the lower} sometimes dentate;
involucres pubescent with purplish
or yellowish hairs.

Involucres pubescent with
purplish hairs.

S. frigidus.

Involucres pubescent with
yellowish hairs.

S. Kashmiri.

Senecio vulgaris L.

Senecio vulgaris L. Sp. Pl. 2: 867, 1753.

Annual, 1.5 to 3 cm. high; lower leaves mostly petioled, the upper sessile, clasping irregularly sinuate-dentate, the upper sessile or clasping at the base, pinnate-lobed incisely pinnatifid, the segments commonly sharply toothed; involucre about 7 mm. high, the bracts usually with minute black tips, the outer series about one fourth as long as the inner; ^{rays wanting} achenes canescent. Collected on the Shumagin Islands and at Kodiak. Naturalized from Europe where it was originally described and now not uncommon on the Pacific coast and from Hudson Bay and Newfoundland to South Dakota and Virginia.

Alutian chain. — Popof Island, Kirkaid, July 8 to 19, 1899.

Kodiak Island. — Kodiak, Canille & Kearney (No. 2391).

Senecio discoidens (Hook.) Britton.

Senecio aureus discoidens Hook, Fl. Bor. Am. 1333, 1834.

Senecio discoidens Britton in Britton & Brown, Ill. Fl. 3: 279, f. 2042, 1898.

Mainly glabrous or nearly so except in the axils of the leaves and the inflorescence, very rarely the leaves woolly-pubescent, 20 to 40 cm. high, basal and lower cauline leaves serrate, middle and upper cauline, pinnatifid or lyrate, oblong or lanceolate in outline, the upper sessile; peduncles sparingly pubescent; involucre bracts without blackish tips, glabrous or sometimes sparingly woolly; rays wanting or when present 6 mm. or less long; achenes glabrous. Between the Yukon and Cook Inlet and in the upper Yukon, south-east to Michigan. Originally described from the Mackenzie River.

Yukon River to Cook Inlet. — On gravel flood plain of the Kuskukwim, Brooks & Prindle, July 12, 1902.

Upper Yukon. — Ft. Yukon, Bates, 1881, Forty Mile Creek, Lunston, 1893 (No. 126). Ft. Selkirk, Larleton, 1899 (No. 134). Red Mountain, Garman, 1899 (No. 1114). Vicinity of Summit and Middle Lakes, A. L. Bolton, 1898.

Succisa lugens Richards.*Succisa lugens* Richards, App. Transl. Journ. 347, 1823.*Succisa imbricatus* Greene, Pitt. 41: 117, 1900.*Succisa lugens blaisdellii* Eastwood, Bot. Gaz. 33:

298, 1902.

Usually strict, 7 to 45 cm. high, flaccid-woolly when but ~~commonly~~ early glabrate and bright green on the the woolly pubescence some times persistent, basal leaves linear ^{denticulate} or repand dentate, the basal ^{and lower cauline} ones oblong or spatulate-oblong, sessile, narrowed to a petiole or sometimes sessile, upper cauline few, lanceolate, ~~in all but the lower sessile~~ ^{campanulate}; involucre, about 6 mm. high, lanceolate, rays 7 to 10 mm. long; achenes glabrous. Arctic Alaska to the Alaska Peninsula and the upper Yukon, eastward to Point Lake, British America. Originally described from "the Barren Grounds from Point Lake to the Arctic Sea."

~~Although supposed to extend southward in the Rocky Mountains it is probable that the plant of the~~

I have seen no specimens of true *S. lugens* from the Rocky Mountains. *S. imbricatus* Greene, ^{described from Keller's Indian Station} does not appear to be ~~different~~ either in the description or ~~specimens cited by the author~~ ^{the author} *S. lugens*.

~~Mitchell~~ And S. lugens blaisdellii Eastw. is also reduced to synonymy since from the description it does not appear to be distinct. No distinguishing characters are given by the author excepting its smaller size and that is too inconstant in the present species to warrant the ~~est~~ segregation of a subspecies on size alone. Specimens in the National Herbarium from Cape Nome, the type locality of Misa Eastw. subsp., do not differ from the type.

Arctic Alaska.— Valley of Kubuk River, W.C. Mundrall, Aug. 12, 1901.

Barrow Peninsula.— Port Clarence, Reindeer Station, J. T. White, Sept. 9, 1894. Vicinity of Port Clarence, L. A. Walpole, 1901 (Nos. 1757, 1844, 2027). 5 Miles north of Nome City, J. B. Flett, 1900 (Nos. 160⁶⁵).

Alaska Peninsula.— Kubuk Bay, Carmichael & Kearney (No. 1662), Kirkland, 1897.

Upper Yukon.— Toail, Eagle to Taldus Creek, 1902 (No. 68). Fifty Mile River, A. L. Patton, July 29, 1899. Abasco Lt. Selkirk, Terleton, 1899 (No. 1102). Ranch Creek, Gorman, 1899 (No. 1058).

Senecio palustris (L.) Hook.

Cineraria palustris L. Sp. Pl. ed. 2. 2: 1243. 1763.

Senecio palustris Hook. Fl. Bor. Am. 1: 334. 1834.

Cowbane

~~Statik~~, annual or biennial 10 to 50 cm - high, or sometimes even higher, pubescent or villous with jointed hairs; leaves oblong to broadly lanceolate, sometimes broadly lanceolate lacinate-pinnatifid or sinuate-dentate; heads very numerous, crowded, in volucrel bracts linear or lanceolate, the shorter series wanting, rays about 4 mm. long; achenes glabrous, pappus 15 mm. long in fruit. Port Clarence to Cook Inlet and the upper Yukon, southward to Minnesota and ~~the~~ northern Wisconsin. Originally described from Europe where it is widely distributed, and ^{also} in Siberia.

Barrow Peninsula. - Port Clarence, T.H. Bean, Sept. 6, 1880, F.A. Welpole, 1901 (No. 1528).

North Sound. - St. Michaels, W.H. Dall, Aug. 30, 1867, L.M. Turner, Aug. 15, 1879.

Yukon River to Cook Inlet. - Brooks & Prindle, Sept. 4, 1902, Polakides, Collier, 1902 (No. 127).

Copper River region. - Kotikina River, W.L. Peto, 1902 (No. 85).

Upper Yukon. - Near Ft. Yukon, Russell, July

Senecio triangularis Hook.

Senecio triangularis Hook. Fl. Bor. Am. 1: 332, 5, 115.

1834.

Stems stoutish, 40 to 100 cm. tall, very sparingly pubescent; leaves commonly glabrous, sometimes pubescent along the nerves or even over the whole ~~under~~^{lower} surface, the lower triangular and truncate at the base, the upper lanceolate and cuneate at the base, their margins thickly dentate; ^{in volucres} bracts about 8 to 10 mm. high, the bracts linear-lanceolate, obtusish and pubescent at the apex, rays about 10 mm. long; achenes glabrous. Kodiak to southeastern Alaska and the Saskatchewan, south to the higher mountains of Colorado and California. Originally described from "moist Prairies among the Rocky Mountains".

Kodiak Island. — Kirkaid, July 20, 1899, Coville & Kearney (No. 2383), Karluk, T. H. Bean, 1889.

Alaska Peninsula. — Pitmeke Bay, Coville & Kearney (No. 1647).

Yakutat Bay. — Head of Russell Fjord, Coville & Kearney (No. 953).

Southeastern Alaska. — Near Iliamna, Coville & Kearney, July 24, 1904 (No. 1932).

Senecio pseudo-arctica Less.
Arnica maritima L. Sp. Pl. 2: 884, 1753.
Senecio pseudo-arctica Less. *Linnaea* 6: 240.

1831,

leafy

Stems ^{leafy} stout, 15 to 60 cm. high, glabrous or woolly pubescent above; ~~leaves~~ ~~obovate~~ ~~spatulate~~ or oblong-obovate or the lower obovate-spatulate, dentate, sessile by a clasping base or the lower narrowed into broad petioles, densely tomentose on the lower surface, sometimes glabrate in age, commonly glabrate above; heads 15-4, on stout, bracteolate peduncles, involucre 15 to 20 mm. high, rays about 15 mm. long; achenes glabrous. On sea-beaches or near the sea from ^{Kotzebue Sound} Port Clarence to the Aleutian Islands and Cook Inlet. Along the Arctic ~~coast~~ and Atlantic coasts to ~~New Brunswick~~ the lower St Lawrence and Maine and in northern Asia. *Arnica maritima* L. Originally described from Kamchatka and North America.

Arctic Alaska. — Near Cape Blossom, W.C. Mendenhall, Sept. 7, 1901.

Seward Peninsula. — Port Clarence, L.A. Walpole, 1901 (No. 1741). 17 Miles west of Nome City, J.B. Little, 1900 (No. 1647).

North Sound. — St. Michaels, E.W. Nelson, 1877.

Barstol Bay. — Nushagak, E.L. Mc Kay, July 27, 1881.

Pribilof Islands. — St Paul Island, C. S. Merriam, Aug. 8, 1891.

Alutian Chain. — Unalaska, Harrington, 1871-72. Papez Island, Kirkaid July 26-18, 1877.

Kodiak Island. — ^{Killogg, 1884 (No. 210).} Surgeon River, Camille & Kearney (No. 2257).

Alaska Peninsula. — Kukak Bay, Camille & Kearney (No. 1684).

Lake Iliamna region. — Cottonwood Bay, Lorman, 1902 (No. 275). Iliamna Point, Lorman, 1902 (No. 265).

Cook Inlet. — Halibut Cove, Camille & Kearney (No. 2457). Homer, Camille & Kearney (No. 1405). Kenai, H.P. Nielsen, 1901 (No. 69).

Runcio nudifolius Liss.*Runcio nudifolius* Liss. *Linnaea* 6: 243, 1831.

Perennial,

Glabrous or glabrate, rarely somewhat
 floccose, ~~at~~ stems 1 to several ^{slender}, ^{as ending or}
 erect 6 to 20 cm. high; ^{earlier} ^{basal} leaves
 roundish or oblong in outline, crenate
 or shallowly lobed, ^{rarely entire} later leaves usually
 lyrate-pinnatifid; heads solitary, involucre
 5 to 8 mm. high, rays 8 to 12 mm. long,
 yellow or ^{with a} slightly orange tinge; achenes
 glabrous. Seward Pinnacula to the Aleutian
 Islands and the upper Yukon. Reported also
 from Great Bear Lake. In British America and
~~occurs in~~ ⁱⁿ ~~from~~ ^{to} Siberia ~~and~~ Arctic Russia in
 Europe. Type locality, St. Lawrence Bay, Siberia.
Islands of Bering Sea. - Hall Island, Camille &
 Kearney (No. 2026).

Seward Pinnacula. - Port Clarence, F. A. Walpole,
 1901 (Nos 1763, 1852, 1892). 5 Miles north of
 Nome City, J. B. Flitt, 1900 (No. 1662). 16 Miles west
 of Nome City, J. B. Flitt, 1900 (No. 1648).

Norton Sound to Bristol Bay. - Cape Vancouver,
 J. M. Macoun, Aug. 9, 1891.

Lake Iliamna region. - Near head of Lake
 Clark, Looman, 1902 (No. 216). West side of
 Lake Clark, Looman, 1902 (No. 186).

Alaska Peninsula. — Bailey Harbor, C. H. Tamm-
sund, Sept. 12, 1893. Sitka Bay, Palache,
July 8-19, 1899.

Alutian Chain. — Unga Island, L. A. Golder,
1899 (Nos. 26, 42, 79), Kirkaid July 2, 1897,
W. H. Dall, 1865-66. Pofaof Island, Kirkaid,
July 8, 1899, C. H. Tammund, June 26, 1893,
Harrington, 1871-72, Saunders July 7-18, 1899.

Kodiak Island. — Kodiak, Coville & Kearney
(No. 2315). Mountain back of Kodiak, L. A. Walpole,
1900 (No. 1188). Sturgeon River, Coville & Kear-
ney (No. 2266), L. J. Cole, July 19, 1899.

Upper Yukon. — Porcupine River, J. H.
Turner, 1891. Coal Creek Hill, Lanston, 1873
(No. 72).

Florescence or tomentose or somewhat glabrate in age; stems solitary, ^{simple or erect} ~~erect~~, about 20 cm. high; basal and lower cauline leaves, ^{petiolate} oblong or obovate, ^{mostly, usually} ~~their~~ margins ~~inconspicuously repand~~ 1.5 to 3 cm. long, mostly 1 to 2.5 cm. broad, their margins ~~inconspicuously repand~~, ~~the~~ upper cauline leaves oblong-linear or linear, acute or acutish, usually entire; heads solitary or sometimes 2, the involucre about 8 mm. high, ^{usually, at its base} ~~bracts~~ linear, acute, rays 8 to 12 mm. long; achenes pubescent. Seward Peninsula to the Porcupine River.

Type species in the United States National Herbarium, collected July 20, 1900 in dry stony places 16 miles west of Nome City, Alaska, by J. B. Flitt (No. 1645).

Succio

related to *S. atropurpurea* ~~def~~ is ~~most~~ more closely Alaskan species but differs in its larger basal leaves, its more glabrous involucre and in its pubescent achenes.

Seward Peninsula. — 16 Miles west of Nome City, J. B. Flitt, 1900 (No. 1645).
Porcupine River. — J. H. Larnier, 1891.

Senecio sp. *Nyellm.*
Aneraria frigida tomentosa ~~type~~ ^{some what} ~~type~~ ?

Perennial, usually, tufted stems commonly several and somewhat tufted ~~to~~ ⁴ 15 cm. high, ~~slightly floccose or sometimes~~ their bases usually thickened by the sheaths of old leaf-petioles; herbage slightly floccose or sometimes entirely glabrate except the usually densely tomentose upper part of stem and base of involucre; all but the uppermost leaves dentate, the basal ones petioled, oblong in outline, obtuse or acutish, cauline leaves lanceolate, the lower broadly ~~lanceolate~~ lanceolate, acute; ~~the~~ heads solitary, 10 to 20 mm. broad in dried specimens, the involucre densely tomentose with brownish hairs, about 10 mm. high, the bracts linear lanceolate, rays ~~about~~ 9 to 12 mm. long; achenes 7 lobrous. Seward Peninsula to the headwaters of the Copper and Tanana rivers and on Kayne Island, Siberia.

Type specimen in the United States National Herbarium collected ^{Aug. 22, 1901,} on York Plateau near Ip-nuk in the vicinity of Port Clarence, Alaska, by Fred. Walpole (No. 1907).

The species is most closely related to S. atropurpurea ~~and a specimen from~~ but differs in its more tufted habit, its more dentate leaves and in the brownish tomentum of its involucre. A specimen in the United States National Herbarium from Kayne Island, Siberia is labeled S. frigides dentatus Gray but I do not find that it has been published. The name dentatus is not available, having been used by Jacquin for an African plant.

Seward Peninsula. - Vicinity of Port Clarence, F.A. Walpole, 1901 (Nos. 1907, ^{811 in part 5}).

Headwaters of the Copper and Tanana rivers. - Gordon Creek, Schrader & Hartman, 1902 (No. 55).

Succisa atropurpurea (Ledeb.)

Cineraria atropurpurea Ledeb. *Mém. Acad. Petersb.*
Hist. nat. 5: 574, 1815.

Cineraria frigida Richards. *App. Frankl. Journ.*
 748, 1823.

Succisa frigida Less. *Linnaea* 6: 239, 1831.

Perennial from a slender rootstock,
 6 to 15 cm. high, floccose when young,
^{mostly} ~~angulate or nearly so~~ in age, stems
 simple; lower leaves oblong or obovate,
 commonly ^{sessile and} clasping at the base, ~~upper~~ rarely
 narrowed to a petiole, upper oval or oblong-
 lanceolate; heads solitary, in a dense campanu-
 late, about 8 mm. high, rays 8 to 12 mm.
 long; ~~the~~ ^{achenes} glabrous. Point Barrow to
 Cape Inlet, ~~and the Copper River region~~
~~and the islands of~~ ^{the} Bering Sea. Through arctic regions to Labrador
 and through Siberia the type locality, to
 arctic Russia, ~~etc.~~

Succisa frigida ^(Richards.) ~~Less.~~ was described by
 Lessing ~~and Cineraria~~ ~~Lessing~~ from
 specimens collected ~~on~~ on Chamisso and St.
 Lawrence Islands. He ~~sic~~ cites as synonymous
Cineraria frigida Richards., described from
 "the Barren Grounds from Point Lake to the Arctic
 Sea", and *Cineraria atropurpurea* Ledeb. There

S. straphosura

is however, apparently no reason why the ¹⁰⁹ older name should not be retained.

Arctic Alaska. — Point Barrow, Murdock, 1883, Cape Sabine, J. T. White, Aug. 12, 1894, ~~Point Hope~~ above Cape Lisburne, McHenryan, 1894.

Seward Peninsula. — ~~Port Clarence~~ ~~Station~~, J. T. White, July 3, 1894, F. A. Walpole, 1901 (Nos. 1506, 1811 in part), ~~Port Clarence~~ Caville & Kearney (No. 1916).

Islands of Bering Sea. — Hall Island, Caville & Kearney (No. 2048). St. Matthew Island, Caville & Kearney (No. 2100).

Yukon River to Cook Inlet. — West side of the Pass, Brooks & Prindle, July 15, 1902.

Copper River region. — W. L. Peto, 1902 (No. 37).

Senecio hookeri Torr. & Gray.*Senecio hookeri* Torr. & Gray, Fl. 2: 438. 1843.

Perennial

Flaccid tomentose when young, somewhat glabrate in age, stems 7 to 20 cm. high, solitary or tufted, lower leaves oblong or sometimes ^{ovate} ~~oblong~~ in ^{ant} line, ^{pinnatifid} ~~oblong~~ ^{oblong} ~~oblong~~ mostly obtuse, ^{commonly} ^{repand} entire or ~~rather~~ ^{sessile} in conspicuously ^{repand} dentate, cauline leaves ^{sessile} linear or linear-lanceolate, acute or obtusish; heads in a dense corymbose cluster or sometimes sessile, in volucre 8 to 10 mm. high in dried specimens, the bracts linear, acuminate, rays 7 to 10 mm. long; achenes glabrous. Seward Peninsula and the islands of Bering Sea, and the "woody country from lat. 54° to the shores of Arctic Sea", Rocky Mountains (lat. 52°). Originally described from the two last named localities.

Seward Peninsula. — Port Clarence, Caville & Kearney (Nos. 1967, 1969), F.A. Walpole, 1901 (No. 1808).

Islands of Bering Sea. — St. Lawrence Island, Caville & Kearney (No. 1982), L.J. Cole July 13, 1899.

Perennial herbs with entire, ^{dentate}, ^{sinuate} or ^{laciniate} leaves and middle-sized heads of purple or violet flowers; involu-
 cral bracts imbricated in several series,
 appressed; receptacle hairy or rarely
 naked; achenes with pappus of plumose
 bristles, ~~sometimes~~ connate at base
 and usually an outer series, less
 plumose and falling separately.

About 125 species in the north
 temperate and arctic zones, 1 species
 reported from ~~in~~ Australia.

Key to the Species.

Outer involueral bracts nearly or quite
 equaling the inner. *S. alpina*.

Outer involueral bracts conspicuously
 shorter than the inner.

S. tilesii

Saussurea alpina (L.) DC.

~~*Erratula*~~ *alpina* L. sp. Pl. 2: 816 1753.

Saussurea alpina DC. Ann. Mus. Par. 16:
198, 1810.

Saussurea tilesii Ledeb.

Serratula tilesii

Saussurea tilesii Ledeb. Ic. Fl. Alt. 1115, 560, 1829.

Carduus L.

114

^{Stout}
Erect, branched or simple, prickly herbs
with sinuate, lobed or pinnatifid leaves
and ~~usually~~ ^{rarely} mostly large discoid heads of
purple, yellow or white flowers; involucre
ovoid or globose, the bracts imbricated in
several series; receptacle bristly; achenes
compressed or angled, pappus plumose
or serrulate. About 250 species mostly
of the northern hemisphere.

Carduus kamtschaticus (Ledeb.) Wight.
Cirsium kamtschaticum Ledeb.; DC. Prodr. 6: 644,
1837.
Cnicus kamtschaticus Maxim. Bull. Acad.
Petersb. 19: 495, 1874.

~~Leafy to~~ ^{apparently}
Stem ^{apparently} simple, leafy to the summit; leaves
~~green and~~ glabrate, ~~less~~ oblong, oval
or sometimes obovate in outline, incised-
pinnatifid, or sometimes merely dentate,
sessile, the lower decurrent on the stem,
prickly; heads 15 to 25 mm. high, the
bracts linear attenuate, pubescent when
young, pappus bristles plumose. Outer
Aleutian Islands to Kamchatka, the type
locality, and Japan.

Alutian chain. — Attu Island, J. M.
Macann, Aug. 29, 1891, L. M. Farner, Aug. 18, 1888.