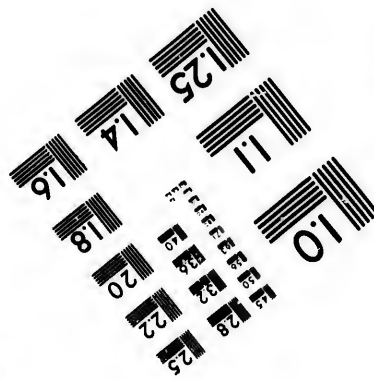
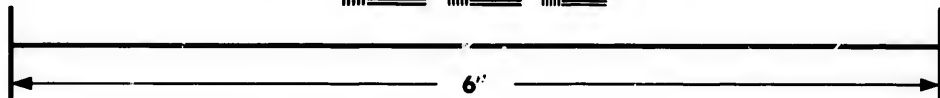
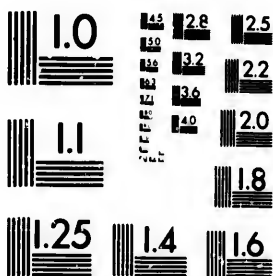


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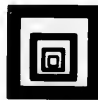


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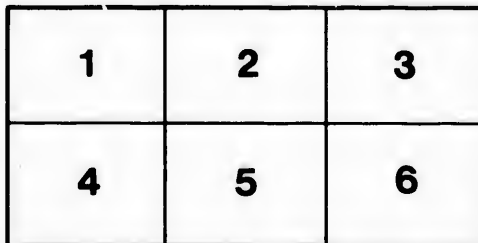
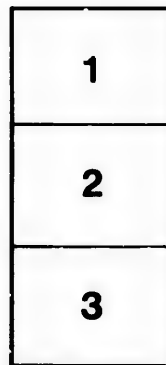
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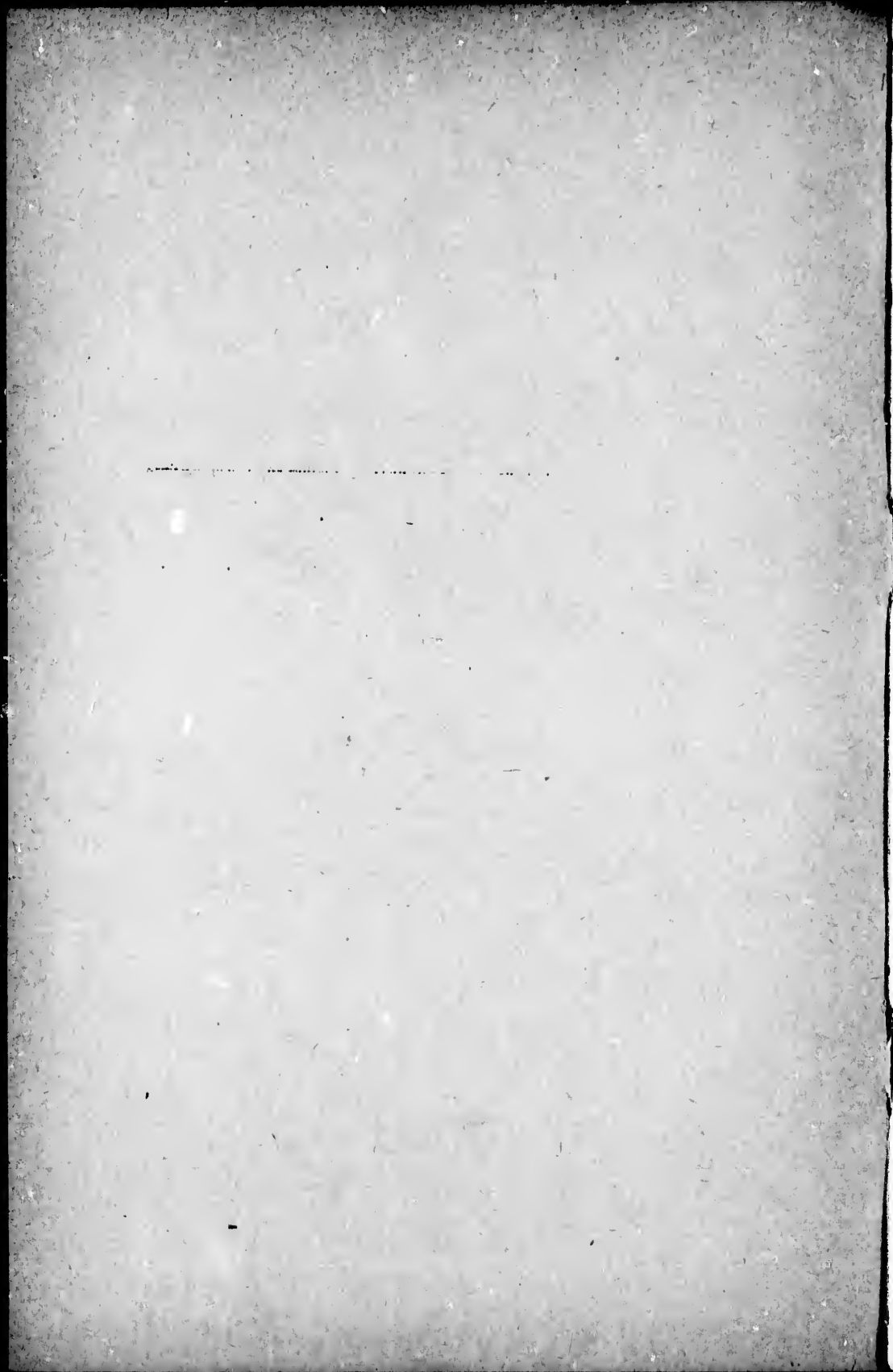
**CONTRIBUTIONS TO CANADIAN BOTANY.**

**XV.**

BY

**JAMES M. MACOUN.**

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## CONTRIBUTIONS TO CANADIAN BOTANY. <sup>1</sup>

By JAMES M. MACOUN, Assistant Naturalist, Geological Survey of Canada.  
XV.

### ANEMONE HUDSONIANA, Rich.

Frenchman's Bay, near Southampton, Ont. Aug. 28th, 1901. (*John Macoun.*) Southern limit in Ontario.

### AQUILEGIA COCCINEA, Small.

Niagara, Ont.; C ache Lake, Algonquin Park, Ont.; Otterburne, Man.; Brandon, Man. (*John Macoun.*) Wingham, Ont. (*J. A. Morton.*) Grindstone Point, Lake Winnipeg. (*J. M. Macoun.*) Our only specimens of *A. Canadensis* are from Ottawa, Belleville and Red Rock, Ont. *A. coccinea* is easily separable from *A. Canadensis* either in flower or fruit. In flower by its stout spur which is more than twice the length of that of *A. Canadensis* and abruptly narrowed near the apex. The follicles of *A. coccinea* are straight and much longer than the spreading follicles of *A. Canadensis*.

### AQUILEGIA VULGARIS, L.

Roadside, Wyoming near Petrolia, Ont. (*John Macoun.*)

### LESQUERELLA NODOSA, Green, Pittonia, VOL. IV, p. 309.

On sand, Castellated Rocks, Milk River, Assa., July 13th, 1895. Herb. No. 10,313.<sup>2</sup> (*John Macoun.*)

### LESQUERELLA VERSICOLOR, Greene, Pittonia, VOL. IV, p. 310.

On rocky slopes, Stony Mt., Man., June 4th, 1896. Herb. No. 12,401. (*John Macoun.*)

### LESQUERELLA MACOUNII, Greene, Pittonia, VOL. IV, p. 310.

On prairies at the police barracks, Medicine Hat, Assa., Aug. 9th, 1895. Herb. No. 10,308. (*John Macoun.*)

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<sup>1</sup> Published by permission of the Director of the Geological Survey of Canada.

<sup>2</sup> These numbers are those under which specimens have been distributed from the Herbarium of the Geological Survey of Canada.

LESQUERELLA ROSEA, Greene, Pittonia, VOL. IV, p. 310.

On prairies at Old Wives' Creek, Assa., June 2nd, 1895.  
Herb. No. 10,300. (*John Macoun.*)

BRASSICA JUNCEA, Cass.

Montrose, near Niagara, Ont. (*R. Cameron.*) Burnside  
Road, near Victoria, Vancouver Island. (*A. J. Puceo.*)

VIOLA FLETCHERI, Greene, Pittonia, vol. IV, p. 296.

Acaulescent, small, the simple ascending rootstock rather small for the plant, closely jointed: leaves few, small, from ovate-reniform to subcordate-ovate,  $\frac{3}{4}$  to 1 inch long at time of petaliferous flowering, the undeveloped ones cucullate, all very regularly crenate, glabrous and shining above, mostly sparse-hirsutulous beneath and on the petioles, these in the earliest not longer than the blade, in the later more than twice as long: flowers very few, often 1 only; peduncles hirsute, minutely bracted below the middle: sepals small, lanceolate, veinless, serrate-ciliolate: corolla large, more than  $\frac{3}{4}$  inch broad, rich purple; the upper pair of petals much the largest, obovate, the middle pair narrower in proportion and strongly bearded with long cylindrical hairs, the odd one as long as these and a trifle broader.

Growing with *V. blanda* under trees north of the road running from Rockcliffe to Beechwood. The plants grow singly and are generally one-flowered. Collected in the spring of 1901 and in fruit in September by Dr. J. Fletcher and J. M. Macoun.

VIOLA SUBVISCOSA, Greene, Pittonia, VOL. IV, p. 293.

Rootstocks not much branched, slender, short-jointed and knotted; plant 4 to 5 inches high at time of petaliferous flowering: leaves thin, deep-green, shining and slightly clammy, very sparsely appressed-hairy above, somewhat hirsute beneath along the veins and sparsely ciliate, in outline from cordate-reniform to broadly cordate with deep and often almost closed sinus, subserrately crenate, the more strictly cordate ones about 2 inches in diameter and little longer than broad; peduncles about equalling the leaves, bibracteolate



below the middle, more or less strongly hirsutulous, as are also some of the petioles : sepals oblong, obtuse, strongly and closely ciliate with spreading or somewhat retrorse hairs : corolla violet, large, about  $1\frac{1}{4}$  inches wide, the petals not very dissimilar, rather broadly obovate, the keel as broad as the others and very obtuse.

Described from specimens collected by Dr. Jas. Fletcher, in open spaces among woods at Aylmer, Que. This species has also been collected on Prince Edward Island, by Mr. L. W. Watson and in Vermont. In general appearance *V. subviscosa* resembles *V. septentrionalis* but this latter species "has a heavier foliage, of a light green shade, wholly devoid of clamminess, each leaf with a broad open sinus and each branch of its stout rootstock produces a considerable cluster of leaves and flowers."

VIOLA CARDAMINEFOLIA, Greene, Pittonia, vol. iv, p. 289.

Caulicent, the numerous slender decumbent or more depressed stems 3 to 5 inches long : leaves small, the subcordate-ovate obtuse minutely crepate blade often merely  $\frac{1}{2}$  inch, seldom  $\frac{3}{4}$  inch long, of firm texture, obscurely pulverulent-puberulent, the slender petioles about 1 inch long ; stipules lanceolate, the lowest serrate-ciliate, the upper nearly entire except toward the base : slender peduncles little more than  $\frac{1}{2}$  inch long, bibracteolate much above the middle : sepals subulate-lanceolate, glabrous : corolla small, deep-blue ; spur elongated, oblique.

In rocky woodland near Aylmer, Quebec, Canada, 6 June, 1901, Dr. J. Fletcher. Allied to the common *V. Muhlenbergiana* of the U. S. (now rightly or wrongly called *V. Labradorica*), but easily distinct by its small, thick and somewhat fleshy foliage always of ovate outline and obtuse ; the flowers not half as large, much more deeply coloured, with a different spur.

VIOLA FULCRATA, Greene, Pittonia, vol. iv, p. 285.

Cowichan River, Vancouver Island, 2 June, 1898. Herb. No. 19,912. (*J. R. Anderson.*)

VIOLA PETROPHILA, Greene, Pittonia, vol. IV, p. 286.

Crevices of rocks, Shawnigan Lake, Vancouver Island,  
9 May, 1897. (*J. R. Anderson.*)

VIOLA COMPACTA, Greene, Pittonia, vol. IV, p. 286.

Crevices of rocks, Shawnigan Lake, Vancouver Island.  
Herb. No. 19,910. (*J. R. Anderson.*)

VIOLA ANDERSONII, Greene, Pittonia, vol. IV, p. 287.

Thetis Lake, B. C., 29th April, 1900. (*J. R. Anderson.*)

VIOLA ORECALLIS, Greene, Pittonia, vol. IV, p. 288.

Mill Hill, B. C., 28th April, 1900. (*J. R. Anderson*)

VIOLA ALBERTINA, Greene, Pittonia, vol. IV, p. 289.

Described from specimens collected by W. Spreadborough  
east of McLeod River, northern Alberta, but a common  
species everywhere in the foot-hills of the Rocky Mountains.

CERASTIUM ANGUSTATUM, Greene, Pittonia, vol. IV, p. 300.

Open prairies in the sandhills north of Prince Albert,  
Saskatchewan, July, 1896. Herb. No. 12,459. (*John  
Macoun.*) Only known station.

CERASTIUM CAMPESTRE, Greene, Pittonia, vol. IV, p. 301.

The common species on the Canadian prairies. Our  
specimens are from Stonewall, Man. (*John Macoun.*) Indian  
Head, Assa. (*W. Spreadborough*) Cypress Hills, Assa.  
(*J. M. Macoun.*)

CERASTIUM VESTITUM, Greene, Pittonia, vol. IV, p. 302.

Dry banks at Ste. Anne, west of Edmonton, Alberta,  
June 9th, 1898. Herb. No. 19,285. (*W. Spreadborough.*)  
A well-marked species known only from Mr. Spreadborough's  
specimens.

CERASTIUM CONFERTUM, Greene, Pittonia, vol. IV, p. 302.

Described from specimens collected by Prof. John  
Macoun along the old telegraph trail in Lat. 54°, British  
Columbia, June 24th, 1875, and at Stewart Lake, B.C.,  
June 20th. Not since collected.

## ERASTIUM TOMENTOSUM, L.

There are specimens of this species in the herbarium of the Geological Survey, labelled "Brant Co., Ont." but without the collectors' name. It is here recorded in the hope that some further information relating to it may be secured as this is the first American record known to us.

## MENTZELIA TENERRIMA, Rydberg.

Waneter, B.C. 1901. (*R. H. Jamieson.*) New to Canada.

## STENOTUS LYALLII, (Gray.)

On nearly all the higher mountains on both sides of the Chilliwack Valley, Coast Range, B.C., at about 6,000 ft. alt. Always found with *Solidago multiradiata*, var. *scopulorum*. (*J. M. Macoun.*)

## SOLIDAGO VIRGAUREA, L., var. GILLMANI, (A. Gr.) Porter.

On rocks at the extreme end of the Bruce Peninsula, Tobermory, Ont., Aug. 23rd, 1901. Herb. No. 26,719. (*John Macoun.*) Known previously only from the south shore of Lake Superior. Probably a good species.

## SOLIDAGO JUNCEA, Ait., var. SCABRELLA, A. Gray.

Thickets at Leamington, Ont. 1901. (*John Macoun.*) New to Canada.

## ASTER ANGUSTUS, T. &amp; G.

At the "round house" in the M. C. Ry. yard at Montrose near Niagara, Ont. (*R. Cameron.*) Introduced from the prairies.

## ASTER LONGIFOLIUS, Lam., var. VILICAULIS, Gray.

On earth along the St. John River at Woodstock, N.B. Herb. No. 22,505. (*John Macoun.*) Our only Canadian specimens.

## ASTER KENTUCKYENSIS, Britt.

\*Toronto Island, Ont., Sept. 6th, 1901. Herb. No. 26,358. (*John Macoun.*) New to Canada. Determined by Dr. Britton.

ASTER VIMINEUS, Lam., var. SAXATILIS, Fernald, Rhodora, vol. 1, p. 188.

Paugan Falls, Que.; banks of the Nation River at Casselman, Ont. (*John Macoun.*)

ERIGERON BRANDEGEL, Greene.

*Aplopappus Brandegii*, Gray.

On mountains north of Chilliwack Lake, Coast Range, B. C., alt. 6,500 to 7,500 ft., 1901. (*J. M. Macoun.*) Not recorded west of Selkirk Mts.<sup>1</sup>

GNAPHALIUM ULIGINOSUM, L.

Abundant along ditches, Chilliwack, B. C., 1901. (*J. M. Macoun.*) Our only specimens from British Columbia.

XANTHIUM PENNSYLVANICUM, Wallr.

Common at Humber Bay in front of High Park, Toronto, Ont., 1901. Herb. No. 26,807. (*John Macoun.*)

XANTHIUM COMMUNE, Britt.

From Quebec to Manitoba. Our specimens are from Casselman, Ottawa and Napanee, Ont., and Brandon and Killarney, Man.

XANTHIUM MACOUNII, Britt.

Goose Island, Lake Winnipeg, Man., 1884. The type. (*J. M. Macoun.*) Only known station.

XANTHIUM GLANDULIFERUM, Greene.

Police Point, Medicine Hat, Assa. Herb. No. 10,911; Walsh, Assa. Herb. No. 10,910, the type; east of Hand Hills, Alta. (*John Macoun.*)

*X. echinatum* and *X. Canadense* are not known to occur in Canada, but as they grow in the Northern States they will probably be found in Southern Ontario.

SILPHIUM PERFOLIATUM, L.

Not rare at Chatham, Ont. (*John Macoun.*)

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<sup>1</sup> The geographical limits given in these papers refer to Canada only.

## SILPHIUM TEREBINTHINACEUM, L.

Walpole Island, St. Clair River, Ont. (C. K. Dodge.) In thickets at Sandwich and Windsor, Ont. (John Macoun.)

## HELIANTHUS PETIOLARIS, Nutt.

Along the C. P. Ry. at C che Lake, Ont. 1900. (John Macoun.) Introduced from the west.

## HELIANTHUS ANNUUS, L.

Head of Queen street, near High Park, Toronto, Ont. 1901. (John Macoun.)

## CHRYSANTHEMUM SEGETUM, L.

Near the tannery at Tilsonburg, Ont. 1901. (Macoun.) A garden escape. Not recorded from Ontario.

## CHRYSANTHEMUM CORONARIUM, L.

A garden escape at Tilsonburg, Norfolk Co., Ont. (John Macoun.)

## ARTEMISIA CAUDATA, Michx.

Abundant in sandy fields at Sarnia, Lambton Co., Ont. Collected in recent years by C. K. Dodge and by Prof. Macoun in 1901. Herb. No. 26,339. The plants from Manitoba referred here in Macoun's Catalogue of Canadian Plants, vol. 1, p. 256, are *A. Canadensis*.

## ARTEMISIA ABROTANUM, L.

Roadsides at Allenford between Southampton and Owen Sound, Ont. 1901. (Macoun.) Not before recorded in these papers.

## SENECIO PLATTENSIS, Nutt.

Woods at Sandwich, Ont. Herb. No. 26,673, and at Camlachie, seven miles from Sarnia, Ont. Herb. No. 26,674, 1901. (John Macoun.) New to Canada.

## CARDUS HILLII, (Canby.) Porter.

On shingle, Little Eagle Harbour, Lake Huron. Aug. 23rd, 1901. Herb. No. 26,454. (John Macoun.) Specimens referred to *Cnicus pumilus*, Macoun, Cat. Can. Plants, vol. 1, p. 555 are this species.

SAUSSUREA MONTICOLA, Rich., App. Frank. Journ., ed. 2, 29.

Lumped with *S. alpina* by Gray and others, but it presents so little resemblance to that species that the most casual observer would at once know it to be distinct. Easily separated from *S. alpina* by its "narrower, more rigid entire leaves and very hairy involucre." Collected by Dr. Richardson in grassy plains on the Copper Mountains, lat. 67°, and along the arctic coast between the Mackenzie and Coppermine rivers. The specimens in the herbarium of the Geological Survey are from Herschell Island, west of the mouth of the Mackenzie, 1893. (*Rev. J. I. Stringer.*) West shore of Great Bear Lake, lat. 65° 30' to lat. 66° 30'. 1900. (*J. M. Bell.*) Lat. 62° 17', long. 103° 07', 1893; on Stony Island, Great Slave Lake, 1900. (*J. W. Tyrrell.*)

HIERACIUM PILOSELLA, L.

St. John and Charlos, Restigouche River, N.B. (*Philip Cox.*) New to New Brunswick.

HIERACIUM LONGIPILUM, Torr.

A single specimen collected in woods 5 miles from Sarnia, Ont. 1901. (*John Macoun.*) A very rare species in western Ontario. Seldom collected.

MENTHA ROTUNDIFOLIA, (L.) Huds.

In a gravelly ravine running into the Thames near London, Ont., 1901. (*J. Dearness.*) New to Canada.

CLINOPODIUM ACINOS, (L.) Kuntze.

Our herbarium specimens of this plant are from sandy and grassy roadsides north of London, Ont. (*J. Dearness*) and near Galt, Ont. (*W. Herriot.*)

RUMEX FENESTRATUS, Greene, Pittonia, VOL. IV, p. 306.

Described from specimens collected by Prof. John Macoun in salt marshes at Comox, Vancouver Island, June 23rd, 1893. Herb. No. 1,570. Also collected in 1887 by Prof. Macoun at Chase River, near Nanaimo, Vancouver Island. Herb. No. 23,723. The common large *Rumex* on the east coast of Vancouver Island.

CALAMOVILFA LONGIFOLIA, (Hook.) Hack.

*Ammophila longifolia*, Macoun, Cat. Can. Plants, VOL. II, p. 208.

Sand-dunes at Point Edward, Lake Huron, Ont. 1901.  
Herb. No. 26,047. (*John Macoun.*)

DANTHONIA AMERICANA, Scrib. U.S. Dept. Agric. Div. Agros.,  
Circular 30, p. 5.

Wellington Mines, Nanaimo, Vancouver Island. June  
13th, 1887. (*John Macoun.*) Among a score or more of  
sheets of *Danthonia* from the west coast of British Columbia,  
our herbarium contains but this one of *D. Americana*.

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## NOTES ON THE WILLOWS OF THE CHILLIWACK VALLEY, B.C.

By J. M. MACOUN.

The number of species of *Salix* in the Chilliwack Valley is remarkably small for that region, only four species having been seen in 1901 in the valley itself and five on the mountains on either side of it. In the valley *S. Sitchensis* is common everywhere, and was the only willow growing along the river between Chilliwack Lake and the point at which the river enters the Fraser Valley with the exception of one clump of *S. pseudomyrsinites* Anders., which grew on a gravel bar in the river. This species was also found by a rivulet at an altitude of 6,000 feet. The other valley species were *S. caudata* (Nutt.), collected at Chilliwack village, and *S. Lyallii*, Heller, at Sumas Lake and by a stream flowing into Chilliwack Lake.

The only common species on the mountains was *S. commutata*, Bebb., always by rivulets at about 5,000 feet altitude, where snow has lain late in the spring. *S. conjuncta*, Bebb., was found on one mountain in a similiar habitat. *S. nivalis*, Hook., which might be expected to be common, was seen only on Tami Hy Mountain at an altitude of 5,500 feet. *S. subcordata* covered a large boulder at 5,600 feet and *S. crassijulis*, Trautv, was abundant on a rocky slope on Tami Hy Mt. but seen nowhere else.

Specimens of all the above were examined by Dr. P. A. Rydberg who has verified my determinations and named the species about which I was uncertain.

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#### TARAXACUM IN CANADA.

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About a year ago Dr. Edw. L. Greene described several new species of *Taraxacum* from Canada.\* Several sheets of specimens have been added to the Geological Survey collection since our material was examined by Dr. Greene, but these are all referable to one or other of the species enumerated below. In his introductory note Dr. Greene says: "Indigenous species will probably be found sufficiently numerous though perhaps only upon western mountain territory." It is probably true that the number of indigenous species in eastern and northeastern Canada is small, perhaps, indeed, there is only one species which ranges from the mountains of eastern Quebec through Labrador and Ungava to Hudson Bay, but that there is at least one indigenous species in eastern Canada no one who has travelled through the unsettled

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\**Pittonia*, Vol. IV, pp. 227-233.



parts of the country can doubt. Not only is *Taraxacum* not rare on the banks of lakes and streams, but the writer has often found it in bogs and swamps several hundred miles from settlement of any kind.

TARAXACUM CHAMISSONIS, Greene, Pittonia, vol. iv, p. 228.

Very common on the shores and islands of Behring Sea and south along the Alaskan coast. Will probably be found in British Columbia.

TARAXACUM RUPESTRE, Greene, Pittonia, vol. iv, p. 229.

Crevices of rocks, alt. 6,000 ft., Mt. Queest, Shuswap Lake, B. C. Herb. No. 15,111; Avalanche Mt., Selkirk Mountains, B. C., alt. 8,000 ft. (*J. M. Macoun.*) Kicking Horse Lake, Rocky Mountains. (*John Macoun.*)

TARAXACUM OVINUM, Greene, Pittonia, vol. iv., p. 229.

On Sheep Mountain, Waterton Lake, lat. 49° 05', Rocky Mountains. Herb. No. 11,711. (*John Macoun.*)

TARAXACUM LACERUM, Greene, Pittonia, vol iv, p. 230.

Canyon of the Upper Liard River, Yukon, lat. 60° 26'. June, 1887. Herb. No. 15,119. (*John Macoun.*)

TARAXACUM DUMETORUM, Greene, Pittonia, vol iv, p. 236.

A common species from Assiniboia westward to British Columbia.

TARAXACUM ERYTHROSPERMUM, Andrz.

The red-seeded dandelion is probably common throughout eastern Canada, but has been seldom separated from *Taraxacum Taraxacum*. Our specimens are from Ottawa, Niagara Falls and Hamilton, Ont.

J. M. M.

## SOME NEW NORTHWESTERN COMPOSITÆ.

By EDWD. L. GREENE.

*ASTER MICROLONCHUS*. Stems about two feet high, very erect, divested of all lower leaves at flowering time, parted from below the middle into numerous leafy and flowering branches forming a somewhat contracted and subpyramidal panicle; the reddened bark of stem and branches glabrous or obscurely pubescent: leaves of the panicle narrowly lance-linear, two inches long more or less, entire, sessile by a broad more or less perceptibly auricled base, thin, delicately scaberulous above, scabrous on the margin, glabrous beneath, marked by a delicate midnerve only, spreading or slightly deflexed: heads few and subracemose on the branches, or solitary at the ends of them, nearly an inch broad measuring the rays, the involucre short-campanulate, its bracts in about three series, narrowly spatulate-lanceolate, scaberulous, at least marginally, and spreading or recurved at tip: rays many and showy, apparently pale violet.

The types of this strikingly handsome new Aster are Mr. Macoun's numbers 26,354 and 26,385 from the Chilliwack Valley, B.C., collected 18 Aug., 1901. Its immediate allies are *A. longifolius*, Lam., *A. hesperius*, Gray, and *A. ensatus*, Greene. From all of these it differs not only in aspect, but in its foliage which, though sensibly roughened above, is yet of a texture so delicate that all the lower and properly cauline ones fade and fall before the time of flowering. It is perhaps more elegant and beautiful than any of its near relations, and rather smaller in stature, though growing in generous soil, and a climate abundantly moist and not severe.

*GNAPHALIUM MACOUNII*. Apparently biennial, the stems rigidly erect, about two feet high, rather loosely leafy and clothed with a somewhat hirsute and viscid glandular-pubescence: leaves narrowly oblanceolate, acute, 3 inches long, the upper decurrent, all white-woolly beneath, light green and merely glandular-pubescent above: branches of the subpyramidal close panicle and the main stem for some distance below it densely white-woolly: involucre of middle size, their pearly scarious bracts all ovate, very acute: flower and fruit not seen.

Collected in the Chilliwack Valley, B.C., 29 July, by Mr. Jas. M. Macoun, No. 26,847; also earlier at Revelstoke, No. 11,334, and again from the Warm Springs, Kootenay Lake, both in British Columbia, in the year 1890. No. 34,053 from Salmon Arm, J. R. Anderson, 1899, is also the same. The species is related to *G. decurrens*, yet very distinct in habit and inflorescence, the dense white-woolly pubescence of the upper part of stems and branches of the panicle being very peculiar.

**GNAPHALIUM PROXIMUM.** Annual, erect, rather slender, a foot high, rather amply leafy, even up to the sessile leafy-bracted clusters of heads: leaves thin, equally hoary on both faces, about  $1\frac{1}{2}$  inches long, from ovate-lanceolate to oblong-lanceolate, broadest at the sessile and subcordate-clasping base, somewhat cuspidately acute: small plants simple and with but a terminal cyme; larger ones with many short but strict branches, each with its cyme: bracts of the rather smallish involucre greenish-white, the outer broadly triangular lanceolate and acute, the inner very obtuse: pappus rather scanty, dull-white.

In moist ground in the vicinity of the Mammoth Hot Springs, Yellowstone Park, Messrs. A. and E. Nelson, 1899, distributed under No. 6,036 for *G. Sprengelii*, from which the species differs widely in habit, form of foliage, etc.

**ARNICA LEVIGATA.** Near *A. latifolia* and as large, the herbage of a deeper green and of much more thin and delicate texture: radical leaves from round-ovate and cordate to lance-ovate and subcordate, 2 to 3 inches long, on slender petioles as long, the 2 or 3 cauline pairs broad and sessile, glabrous on both faces and coarsely, incisely, often doubly serrate-toothed, the larger 3 inches long and more than 2 in breadth: peduncles about 3, slender, puberulent under their narrowly turbinate involucre, the bracts of these uniserial, lanceolate, acuminate, scarcely pubescent except as to the villous-ciliolate margins; rays light-yellow, long and narrow; disk-corollas narrow-funnel-form, the very short and hirtellous tube passing gradually into the limb, which much exceeds it in length: pappus white; achenes glabrous.

By springs in woods of the Chilliwack Valley, B.C., 5 Aug., 1901, J. M. Macoun, No. 26,926. However much like *A. latifolia* in general habit and leaf-outline this may be, it must needs be distinguished specifically by its total lack of pubescence, thin texture, narrow involucre, funnellform corollas, etc. In true *A. latifolia* the bracts are glandular-hairy throughout, and not at all ciliate; and its disk-corollas are much larger and not funnellform, the throat and limb swelling out abruptly from the short tube. Mr. Macoun writes that this species was collected in 1901 on Mt. Cheam by Mr. J. R. Anderson and Dr. Jas. Fletcher.

ARNICA APRICA. Also akin to *A. latifolia* and like it commonly more or less pubescent, but the hairs less rigid, and obviously jointed; the whole plant much smaller in all its parts, and the heads more numerous: radical leaves long-petioled and broadly or narrowly cordate-ovate, the cauline oval, sessile, all serrate or dentate, the teeth callous-tipped: bracts of turbinate involucre few, thin, oblanceolate, acute or acuminate, often purple-tipped, nearly glabrous: rays few, rather deep-yellow, not deeply toothed, the teeth short and broad: disk-corollas with slender tube about as long as the subcylindric but abrupt limb: pappus firm, white; achenes long and slender, glabrous except a few obscure bristly very short hairs and as few minute glands about the summit.

This is represented by Mr. James Macoun's numbers 26,284 and 26,285 from the Chilliwack Valley. It is said to be a plant not of the woods, but of open ground along streamlets. It is readily distinguishable from *A. latifolia* not only by its smaller size and more numerous flowers, but by the character of its pubescence, and especially by its short merely tridentate rays; these last, in the real *A. latifolia*, being elongated, and very deeply cut at summit into narrow almost ligulate teeth or segments.

ARNICA MACOUNII, Greene, Pitt. iv., 160. This species, hitherto known to me only from Vancouver Island, was copiously collected by Mr. James Macoun in the Chilliwack Valley, last season, the specimens bearing the numbers 26,927, 26,928 and 26,929 of the Geol. Surv. Herb.

*ARNICA AURANTIACA*, Greene, *Torreyia* i, 42, founded on a plant of Oregon collected only by Mr. Cusick until now, must be credited to British Columbia, Mr. Macoun's No. 26,934 from the Chilliwack region matching perfectly the originals of the species.

*ARNICA CONFINIS*. Less than a foot high, monocephalous, or else with also a pair of monocephalous peduncles from the axils of the uppermost pair of leaves, these surpassing the terminal one; herbage of a light green, viscid-puberulent as to the foliage, the stem with a sparse hairiness: lowest leaves obovate to oblanceolate, an inch long or more and petiolate, the cauline in about three pairs, ovate to lanceolate, 1 to 2 inches long, callous-denticulate, or serrate-dentate, or even subentire, acutish; heads of middle size, the involucrel bracts biserial, acuminate, sparsely hirsute: rays deep-yellow, not large; disk-corollas with hirsute tube and naked limb about equal; achenes with a few hirsute hairs; pappus tawny, subplumose.

Chilliwack Valley, B.C., Mr. Macoun, No. 26,933. In characters of pubescence, flower and fruit this approaches *A. ovata*, Greene, but in foliage and habit it differs widely.

*ARNICA ASPERA*. Stems clustered, often 2 feet high, equably leafy to the corymbose summit, loosely hirsute, more strongly and quite retrorsely so toward the base: leaves about 2 inches long, ovate-lanceolate, sessile by a broad base, the upper longer, the lower shorter than the internodes, rough-hairy on both faces, saliently callous dentate: peduncles several, slender; involucre small for the plant, campanulate, their bracts uniserial, hispidulous with pustulate hairs; rays very obtuse and only minutely tridentate; disk-corollas with very short tube and rather longer limb about equally and very sparsely setose-hairy: achenes setose-hairy; pappus tawny, subplumose.

The type of this species is a plant found by myself on Mt. Rainier, 19 Aug., 1889, and then supposed to be *A. amplexicaulis*, which I have now for some time known to be a very different plant. *A. aspera* has also been collected by Mr. Piper at Snoqualmie Falls, Washington, and again in the Olympic Mountains. Mr. M. W. Gorman obtained it in 1897 among his plants of the Washington Forest Reserve.

ARNICA CANA is a name needed to replace that of *A. incana*, Greene, Pitt., iv, 169; there being an *Arnica incana* of Persoon of much earlier date.

ARNICA CROCINA, Greene, Torrey, i. 42, first published in Pittonia, iv, 159, by the untenable name of *A. crocea*, is now in hand from two additional stations. It is Mr. James Macoun's No. 26,931 from dry slopes north of Chilliwack Lake, 26th July, 1901; also No. 34,074 of the Canad. Geol. Surv., collected by J. R. Anderson, 1901, from Mt. Cheam, north of Chilliwack River, B.C.

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