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II. The Rarer Plants of the Province of Ontario

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II. *The Rarer Plants of the Province of Ontario.* By Prof. JOHN MACOUN, M.A., and Prof. JOHN GIBSON, B.A., F.G.S., Albert College, Belleville.

Geographical Notes.—The territory within which the following plants were collected embraces that portion of Canada bounded on the south by Lakes Erie and Ontario, the Niagara River, and that part of the St Lawrence proper, west of the embouchure of the Ottawa. On the east and north-east the Ottawa forms the dividing line separating Ontario from the Province of Quebec. The northern limit is defined by a line joining Lake Temiscamang on the Ottawa, and Fort William on Thunder Bay, Lake Superior; while on the west Lakes St Clair and Huron, the Detroit River and the eastern and north-eastern shores of Lake Superior to Thunder Bay form the boundary lines. Roughly considered, this portion of North America may be geographically defined as a peninsula running southward from the 47° N. lat., to a point on Lake Erie in about N. lat. 42°, and extending eastward and westward between the respective lines of longitude 74° 50' W., and 89° 22' W. The northern portion of this peninsular region, or more definitely, the country between the Upper Ottawa and Lake Superior, is occupied chiefly by the Metamorphic series of rocks known as the Laurentian. These rocks, which may be recognised as the equivalents on this continent of the so-called fundamental gneisses of the isles of western Scotland, and of parts of Ross-shire and Sutherlandshire, lie at the base of all our sedimentary series. They are all metamorphic and altered to a highly crystalline condition, and are composed of feldspathic rocks interstratified with important masses of limestone and quartzite. Great beds of gneiss, moreover, containing chiefly orthoclase or potash-feldspar (silica = 64.8, alumina, 18.4, potash, 16.8 = 100), and other portions containing no quartz, but composed almost entirely of a lime-soda feldspar, varying in composition from andesine to anorthite, and associated with pyroxene or hypersthene, are especially characteristic of this system, and are everywhere observable over the northern districts of Ontario. Here the highest summits do not apparently exceed 1500 or 1700 feet above the sea, though one ridge near the sources of the Muskoka and the Petewahweh

attains the approximate height of 2300 feet. On some of the northern tributaries of Lake Nipissing, and along the French River, may be observed a series of parallel peaks attaining altitudes ranging from 1200 to 1600 feet. As we proceed westward, however, the average summit-level of the country gradually descends, and on the northern and north-eastern coasts of Lake Superior, and in many places along the northern shore of Lake Huron, we find that 1000 feet would approximately represent the general elevation of the region. Most of these heights, however, belong to points more prominent than the country surrounding them, and it may not be presenting too low an estimate of the average altitude of the Laurentide area in Canada to call it from 1200 to 1500 feet. The surface generally is of a mammillated character, its hills and peaks having been worn down by glacial action into rounded knolls or hummocks like the *roches moutonnées* of the Alps. The intervening depressions or valleys are in general not very wide, and many are simply abruptly-faced pits, holding numerous small lakes and ponds united into tortuous chain-like courses by their short discharging channels. These are scattered in prodigious numbers over the whole Laurentide country, and when viewed on a map appear to follow such a haphazard arrangement as to contradict any supposed law of distribution. The more prominent elevations are in general thickly clothed with evergreens, in some parts chiefly pine (*Pinus Strobus*, L., and *P. resinosa*, Ait.), and in others spruce (*Abies alba*, Michx.), whilst in the depressions is represented with striking beauty and regularity what might be termed a concentric arrangement of vegetation, particularly noticeable among the arborescent forms. The lower portion of the valley—that area immediately contiguous to the central lake or pond, which may be presumed to exist in every such depression—may be denominated the sphagnous area, characterised by *Sphagnum cymbifolium*, Dill., various forms of *S. acutifolium*, Ehrh., and *S. laricinum*, Spruce; surrounding which is the Tamarack belt (*Larix americana*, Michx.), still carpeted by the same species of Sphagnum. Approaching the rim of the depression, there occurs with similar regularity another belt, which may be characterised as the cedar (*Thuja occidentalis*, L.), associated most commonly

with *Ilex verticillata*, Ait. *Hamamelis virginica*, Willd. *Phytolacca* *capitata* L'Her. and *Cornus tomentos*, Michx. Encircling the latter zone, and bounding the depression, is found the Black Ash belt (*Fraxinus sambucifolia*, Lam.), embracing, among other forms, *Ulmus americana*, L., *Betula excelsa*, Ait., *Acer rubrum*, L., *A. spicatum*, Lam., *Ribes rubrum*, L., *R. lacustre*, Poir., *R. hirtellum*, Michx., and *R. nigrum*, L. The general physiognomy of the vegetation of this portion of Ontario is characterised by a marked preponderance of boreal species, whose existence here must not be attributed so much to the influence exerted by the geognostic peculiarities of the soil, as to the aggregate condition of the soil, taken in connection with the different factors of temperature and moisture. Lofty and rugged as in many places may be the character of the Laurentian area, still we are not warranted in ascribing to these features any very important influence on the free distribution of the different indigenous forms of the province, nor are the Laurentide ridges of sufficient height and extent to impede in any but the slightest degree the admission of the cold boreal winds from the district of the Hudson Bay and its tributaries. It is therefore to the climatological features of this region, consequent on elevation and a general northern bearing, and not to the chemical constituents of its soils—however much there may be in this relationship—that we must ascribe the existence of a flora of a general northern character. Some few species could be cited which have not hitherto been detected as habitats other than Laurentian or Laurentian-transported debris, but such instances may in almost every case be taken merely to illustrate preferences for this soil and strata. It is sufficient here to mention only the more important of those regarded as truly Laurentian, whose presence in most cases, however, may be explained by their known predilection for northern localities.

Ribes hirtellum, L'Her.
Aralia hispida, Michx.
Spiraea tomentosa, L.
Polygonum cilinode, Michx.
Kalmia angustifolia, L.
Pinus Banksiana, Lamb.
Pinus rigida, Miller.

Potamogeton Va. cyl., Robbins
Potamogeton Spirillus, Tuckerm.
man.
Carex Houghtonii, Torrey
Carex lenticularis, Michx.
Asplenium chlorophyllum, Ait.
Woolia ulmifolia, R. Br. & Ait.

<i>Isotes riparia</i> , <i>Engelm</i>	<i>Hedwigia ciliata</i> , <i>Austin</i> .
<i>Sphagnum squarrosum</i> , <i>Pers.</i>	<i>Bryum crudum</i> , <i>Schreb.</i>
<i>Dicranum fulvum</i> , <i>Hook.</i>	<i>Fontinalis antipyretica</i> var. <i>gigantea</i> , <i>Sulliv.</i>
<i>Dicranum spurium</i> , <i>Hedw.</i>	<i>Climacium dendroides</i> , <i>Web. et Mohr.</i>
<i>Trichostomum glaucescens</i> , <i>Hedw.</i>	
<i>Grimmia Olneyi</i> , <i>Sulliv.</i>	

Before passing on to some generalisations upon the physical features of South Ontario in connection with its phytogeography, it may be interesting to make a few observations on the more salient points relating to the distribution of the Lake Superior flora. The facies of the vegetation is likewise decidedly boreal, the characteristic types being in the generality of cases essentially sub-arctic-adventurous immigrants from the north-western districts of America. A few stragglers range southward, and are found on the northern and north-eastern shores of Lake Huron; the so-called Bruce Peninsula in Ontario, situated between the lake proper and the Georgian Bay, apparently limiting their southern range of migration. Their occurrence on the shores of these lakes, several hundred miles to the south of their most southern limit either eastward or westward, would seem to indicate conclusively the existence here of conditions of soil and climate analogous to those under which these same species flourish in more northern latitudes. A low temperature and a humid atmosphere would here, as in the case of the Laurentide species, appear to be the causes favouring the presence of these little northern adventurers.

Those species peculiarly sub-arctic are found in most cases growing near the water's edge upon dykes of porphyry or diorite, standing in relief above the gneissic and syenitic rocks of the locality. In many cases, however, they are found luxuriating upon the polished and rounded slopes of the numerous picturesque wooded islets of granite which lie as a rule close to the precipitous rocky margin of the lake. Immediately we recede from the coast-line and reach the lofty headlands, which rise one beyond the other in the dim distance, we find that the botanical features of the whole plateau are almost identical with those of Western Ontario. The following list includes the majority of those whose occurrence on the Lakes Huron and Superior is a

somewhat anomalous feature in their distribution, as 1 which are absent throughout the western and south 1 portions of the province:—

<i>Anemone multifida</i> , DC.	<i>Vaccinium uliginosum</i> , L.
<i>Arabis petraea</i> , Lam.	<i>Vaccinium caespitosum</i> , Michx.
<i>Draba incana</i> , L.	<i>Pyrola minor</i> , L.
<i>Viola palustris</i> , L.	<i>Castilleja pallida</i> , Kunth.
<i>Stellaria gracilis</i> , Rich.	<i>Euphrasia officinalis</i> , L.
<i>Sagina nodosa</i> , Fenzl.	<i>Rhinanthus Crista-galli</i> , L.
<i>Potentilla tridentata</i> , Ait.	<i>Mertensia paniculata</i> , Don.
<i>Rubus nutkanus</i> , Moçino.	<i>Phacelia Franklinii</i> , Gray.
<i>Saxifraga tricuspidata</i> , Retz.	<i>Polygonum viviparum</i> , L.
<i>Saxifraga Aizoon</i> , Jacq.	<i>Rumex salicifolius</i> , Weinm.
<i>Aster graminifolius</i> , Pursh.	<i>Comandra livida</i> , Rich.
<i>Erigeron acris</i> , L.	<i>Empetrum nigrum</i> , L.
<i>Solidago Virgaurea</i> , L., var.	<i>Alnus viridis</i> , DC.
<i>alpina</i> , Bigel.	<i>Cypripedium passerinum</i> , Rich.
<i>Solidago thyrsoides</i> , E. Meyer.	<i>Iris lacustris</i> , Nutt.
<i>Tanacetum Huronense</i> , Nutt.	<i>Botrychium Lunaria</i> , Swartz.
<i>Gnaphalium purpureum</i> , L.	<i>Botrychium matricariaefolium</i> , Al.
<i>Arnica mollis</i> , Hook.	<i>Lycopodium Selago</i> , L.
<i>Cirsium Pitcheri</i> , Torr. and Gray.	<i>Rhabdoweissia fugax</i> , Br. and
<i>Cirsium undulatum</i> , Spreng.	<i>Schimp.</i>
<i>Tofieldia palustris</i> , Hudson.	<i>Anodus Donianus</i> , Br. & Schimp.
<i>Allium Schoenoprasum</i> , L.	<i>Dicranum longifolium</i> , Hedeg.
<i>Luzula parviflora</i> var. <i>melano-</i>	<i>Dicranum gracilescens</i> .
<i>carpa</i> , Gray.	<i>Grimmia ovata</i> , Web. and Mohr.
<i>Juncus stygius</i> , L.	<i>Grimmia unicolor</i> , Grev.
<i>Carex alpina</i> , Swartz. (C. Vahl.)	<i>Grimmia Donniana</i> , Smith.
<i>Carex atrata</i> , L.	<i>Pogonatum alpinum</i> , Brid.
<i>Carex borealis</i> .	<i>Catoscopium nigrum</i> , Brid.
<i>Carex capillaris</i> , L.	<i>Tetraplodon mnioides</i> , Br. and
<i>Carex Liddoni</i> , Boott.	<i>Schimp.</i>
<i>Calamagrostis Langsdorffii</i> , Trin.	<i>Tetraplodon angustatus</i> , Br. and
<i>Calamagrostis stricta</i> , Trin.	<i>Schimp.</i>
<i>Calamagrostis lapponica</i> , Trin.	<i>Hypnum molle</i> , Dickson.
<i>Stipa Richardsonii</i> , Link.	<i>Hypnum Richardsonii</i> .
<i>Poa alpina</i> , L.	<i>Hypnum ochraceum</i> , Turner.
<i>Triticum violaceum</i> , Hornemann.	<i>Jungermannia minuta</i> , Crantz.
<i>Avena Smithii</i> , T. C. Porter.	<i>Jungermannia ventricosa</i> , Dick-
<i>Allosorus acrostichoides</i> , Spreng.	<i>son.</i>
<i>Cystopteris montana</i> , Bernh.	<i>Scapania sub-alpina</i> , Nees
<i>Woodsia-hyperborea</i> , R. Brown.	<i>Scapania undulata</i> , L.
<i>Vaccinium Vitis-Idæa</i> , L.	<i>Cetraria islandica</i> , L.

Turning attention now to the physical features of the

In the northern portions of Ontario, we may characterise the whole valley—of which it is really within the valley of the St. Lawrence and the Great lakes—as a vast plain of a general uniformity of level, filled up with the detritus of the glacial drift period. These superficial deposits are clays, gravels, and sands, partly of lacustrine and partly of marine formation. Their greatest volume consists of two divisions of stratified clay, the lower of which had been partially worn away before the deposition of the upper, which therefore rests unconformably upon it, adapting itself to the irregularities of its denuded surface. The uppermost has been denominated the Saugeen, and the lower the Erie clay, the latter attaining a thickness ranging from 100 to 200 feet. The Saugeen division—the one, botanically considered, with which we have most to do—is a thinly bedded brown calcareous clay, generally containing but few boulders or pebbles. This is topped with local deposits of gravel and sand; the most important areas being the so-called *Arden's* gravel beds, and the extensive sand belt denominated the *Argonia*. It is upon these derivative beds of clay, gravel, and sand that we find the home of our typical provincial flora; and here, too, do our visitors from the south find a suitable habitat. Attracted northward by the climatological influences exerted by our chain of great lakes, many characteristically southern species find suitable locations in Western Ontario, and thus testify to the fact that in the northern and western portions of this province we have a commingling of boreal and austral species in a scale more unique than in any other district of British America. Our great lakes, by reason of their great extent, and the consequent amount of evaporation from their surfaces, cannot fail to exert an equalising effect upon the temperature of the atmosphere over the whole peninsula, and more especially of those regions contiguous to the coast lines. The general direction of the winds being from the west and north-west, they reach the western shores of St. Clair, Huron, and Superior, hot in summer and cold in winter, exhibiting the extreme character of the climate of the great continental surface over which they sweep. They arrive in the eastern portions of the province, however, with a temperature equalised by the great mass of waters over which they have passed. As a consequence, this

western peninsula is remarkable for the equable character of its climate, and its adaptability for the successful cultivation of the vine and peach *sub Jove frigido*.

Lakes Superior and Huron stand 600 and 578 feet respectively above tide water, whilst Ontario sinks to the level of about 232 feet, the amount of descent being nearly 368 feet. The intervening peninsula keeps a pretty uniform level of about 1000 feet above the sea, reaching in the upper waters of the Grand River a summit-level of 1430 feet. Eastward from this point towards the Ottawa valley the country keeps gradually sinking until it attains an average horizontality of 250 feet. It is especially within the south-western area of peninsular Ontario that we discover the more prominent features of an austral immigration, and find that the flora generally approaches very closely to that of the western part of New York State. The majority of such types are given in the following list:—

<i>Aquilegia brevistylis</i> , Hook.	<i>Desmodium canescens</i> , DC.
<i>Nasturtium palustre</i> , DC., var.	<i>Lespedeza violacea</i> , Pers.
<i>hispidum</i> , Gray.	<i>Baptisia alba</i> , R. Brown.
<i>Cardamine rotundifolia</i> , Mx.	<i>Baptisia tinctoria</i> , R. Brown.
<i>Lepidium ruderales</i> , L.	<i>Gillenia trifoliata</i> , Moench.
<i>Viola palmata</i> , L.	<i>Geum vernum</i> , Torrey and Gray.
<i>Silene virginica</i> , L.	<i>Rosa setigera</i> , Michx.
<i>Cerastium oblongifolium</i> , Torrey.	<i>Pyrus coronaria</i> , L.
<i>Mollugo verticillata</i> , L.	<i>Oenothera glauca</i> , Michx.
<i>Malva moschata</i> , L.	<i>Lythrum alatum</i> , Pursh.
<i>Hibiscus Moscheutos</i> , L.	<i>Heuchera americana</i> , L.
<i>Rhus copallina</i> , L.	<i>Archemora rigida</i> , DC.
<i>Rhus aromatica</i> , Ait.	<i>Thaspium barbinode</i> , Nutt.
<i>Floerkea proserpinacoides</i> , Willd.	<i>Sium latifolium</i> , L.
<i>Euonymus atropurpureus</i> , Jacq.	<i>Erigenia bulbosa</i> , Nutt.
<i>Euonymus americana</i> , L., var.	<i>Viburnum dentatum</i> , L.
<i>obovata</i> , Gray.	<i>Galium pilosum</i> , Ait.
<i>Acer saccharinum</i> , Wang., var.	<i>Oldenlandia purpurea</i> , Gray, var.
<i>nigrum</i> , Gray.	<i>longifolia</i> , Gray.
<i>Polygala Nuttallii</i> , Torrey & Gray.	<i>Valeriana edulis</i> , Nutt.
<i>Polygala sanguinea</i> , L.	<i>Fedia radiata</i> , Michx.
<i>Polygala verticillata</i> , L.	<i>Vernonia fasciculata</i> , Michx.
<i>Trifolium reflexum</i> , L.	<i>Mikania scandens</i> , L.
<i>Desmodium pauciflorum</i> , DC.	<i>Liatris scariosa</i> , Willd.
<i>Desmodium cuspidatum</i> Tuckerm.	<i>Liatris spicata</i> , Willd.
Gray.	<i>Aster cyanus</i> , Hoffm.
<i>Desmodium Dillenii</i> , Darlingt.	<i>Aster ericoides</i> , L.

<i>Aster dumosus</i> , L.	<i>Mulgedium floridanum</i> , DC.
<i>Aster Novi Belgii</i> , Nutt.	<i>Lobelia puberula</i> , Michx.
<i>Boltonia glaberrima</i> , L'Her.	<i>Rhodoedon maximum</i> , L.
<i>Solidago rigida</i> , L.	<i>Chimaphila maculata</i> , Pursh.
<i>Solidago patula</i> , Muhl.	<i>Plantago cordata</i> , Lam.
<i>Silphium perfoliatum</i> , L.	<i>Lysimachia lanceolata</i> , Walt.
<i>Silphium terbinthinaceum</i> , L.	<i>Mimulus Jamesii</i> , Torrey.
<i>Heliopsis laevis</i> , Pers.	<i>Gerardia tenuifolia</i> , Vahl.
<i>Lepachys pinnata</i> , Torrey and Gray.	<i>Gerardia pedicularia</i> , L.
<i>Coreopsis trichosperma</i> , Michx.	<i>Linaria canadensis</i> , Spreng.
<i>Coreopsis discoides</i> , Torrey and Gray.	<i>Pedicularis lanceolata</i> , Michx.
<i>Artemisia caudata</i> , Michx.	<i>Pycnanthemum lanceolatum</i> , Pursh.
<i>Cirsium altissimum</i> , Spreng.	<i>Monarda didyma</i> , L.
<i>Hieracium Gronovii</i> , L.	<i>Onosmodium carolinianum</i> , DC.
<i>Phlox pilosa</i> , L.	<i>Lithospermum latifolium</i> , Michx.
<i>Cuscuta compacta</i> , Juss.	<i>Hydrophyllum appendiculatum</i> , Michx.

RANUNCULACEÆ.

ANEMONE, L.; DC. Syst. i. p. 188.

Anemone cylindrica, Gray, in Ann. Lyc. New York, iii. p. 221.

Plant silky-pubescent, from 1-2 feet high. Radical leaves, long-petioled, ternately divided, segments cuneate, the lateral ones two-parted, the intermediate one 3-cleft, the apex of each lobe incisely toothed; leaves of the involucre with petioles about an inch long, less deeply gash-lobed and cut-toothed than those of the radical. Peduncles from 1-6 in number, 6-10 inches in length, naked, umbellate, terminated by a cylindrical head of woolly carpels about an inch in length. Sepals 5, silky, greenish-white, obtuse. Specimens are met with whose peduncles are not all naked, but one, two, or even three may have a secondary involucral whorl, situated generally about midway between the head of carpels and the base of the peduncle. This form, therefore, would seem to form a sort of connecting link between the normal type and the *A. virginiana*. It delights in dry sandy soils, pine barrens, and dry rocky thickets, thus differing entirely in habitat from *A. virginiana*, with which it is often confounded.

Distribution.—In Ontario,—near Kingston, by Prof. Geo. Lawson; near Belleville, and on the Rice Lake plains, by John Macoun; on the Detroit River, by J. Gillman, and on the sandy flats of the Rivière aux Sables (south), by John Gibson. In Quebec it has only been observed on the island of Montreal by Principal Dawson. On this continent generally it extends from Massachusetts and Rhode Island westward through Illinois to Greenhorn

Mountains in Colorado, and northward, according to Bangeau, to the valley of the Saskatchewan.

RANUNCULUS, *L.*; *DC.* Syst. i. p. 231.

Ranunculus abortivus, *L.*, var. *micranthus*, *Gray*.

Ranunculus abortivus, *L.*; var. *micranthus*, *Gray*, Manual, ed. 4 and 5; *R. micranthus* of *Nuttall's MS.*

Hairy, low, from 3-9 inches. Root-leaves rhombic ovate, petiolate, sometimes 3-lobed or 3-cleft, but generally only crenate; lower stem-leaves pedate with a pentangular outline; upper stem-leaves in 3 deep, linear segments sessile or sub-sessile. Flowers small, yellow, on slender peduncles. Sepals with a broad membranaceous border as long as the corolla. Fruit in globose heads. This is distinguished from the specific form by the constant pubescence of the stem calyx, and petioles, and in the rhombic ovate form of its primary leaves. "From *R. ovalis* it differs in the flower being less than half as large, and also by the shorter radical leaves, with much fewer serratures."—*Nutt.*

Distribution.—This is characteristically a western form, but appears to have strayed eastward as far as the vicinity of Boston, Mass. (Sprague). In Canada it is apparently confined to the Lake Superior region, as reported by Agassiz and Macoun, the former finding it on the northern shores, the latter at the Sault Ste Marie, on the eastern coast. According to Alphonso Wood, it has been discovered as far south as Georgia, but Dr Chapman in his Flora of the Southern States makes no mention of it from this locality. It grows, however, more or less abundantly through Michigan, Illinois, and Arkansas, and apparently becomes more frequent as we proceed westward.

MYOSURUS, *Dill.*; *Linn.*; *DC.* Syst. i. p. 231.

Myosurus minimus, *L.*

Myosurus minimus, *L.*; *DC.* Prodr. i. p. 25; *Ell. Sk.* i. p. 582; *Myosurus Shortii*, *Raf.*, in Silliman's Journal, i. p. 379; *DC. l.c.*

A diminutive plant, remarkable for its little terete spikelet of fruit, ranging in length from 6 lines to an inch and a half. Leaves 1-3 inches long and 1-2 lines in breadth. Scape a little taller, with a single minute pale yellow flower at the top. Sepals 5, produced downwards at base below their insertions. Petals 5, with slender tubular claws. Stamens 5-20. Achenia very closely spicate on the elongated torus.

Distribution.—This rather remarkable little plant, although common in Europe, appears to be not only of rare occurrence in Canada, but also infrequent throughout this continent. It is

without doubt indigenous to America, as the facts connected with its distribution clearly indicate. Its southern limit appears to be Louisiana, whence it spreads sparingly northward to the Bay of Quinté, in Lake Ontario, in lat. 44° north, and west of this line extends quite up to the Pacific coast. Alluvial grounds and prairie bottoms are its invariable habitats. Its only Canadian locality, so far as observation goes, is the district lying along the Bay of Quinté, in Central Ontario. From Illinois it is reported by Dr Gray, A. Wood, and others; from Kentucky, by Dr Short; from Arkansas, by Nuttall; from Georgia and Louisiana, by Dr Leavenworth; from Jordan River, Salt Lake Valley, Utah, by Sereno Watson; and from South Park, Colorado, by Hall and Harbour. Nuttall also appears to have detected it on the banks of Wahlamette, in Oregon.

BERBERIDACEÆ.

JEFFERSONIA, *Bart.* in Trans. Am. Phil. Soc. iii. p. 334.

Jeffersonia diphylla, Pers.

Jeffersonia diphylla, Pers.; *Pursh*, Fl. i. p. 268; *Bot. Mag.* t. 1513; *J. ornata*, *Bart. l. c.*; *J. Bartoni*, *Michaux*, Fl. 1, p. 237; *Podophyllum diphyllum*, *Lin.*

A low stemless perennial herb, with long-petioled, 2-parted leaves, and naked scapes, bearing a single flower, large, regular, and white. Rhizome horizontal, with a mass of matted fibres. At the top of each petiole there is a pair of half ovate leaflets placed base to base, broader than long, ending in an obtuse point and glaucous beneath. Seeds numerous, furnished with a fleshy lacinate aril on one side. Capsule coriaceous, obovate, and opening half way round horizontally, and has therefore a persistent lid. Stigma peltate, nearly sessile. Stamens 8, with linear anthers. Petals 8, oblong. Sepals 4, petal-like, caducous.

Distribution — Rich woodlands, on limestone rocks or calcareous soils. In Ontario,—near Napanee, Rev. A. Scott; Point Peter near Consecon, Prince Edward County, John Macoin; banks of the River Thames, near London, W. Saunders; in the United States, Tennessee, and northward, Dr Chapman; calcareous soils New York, to the mountains of the Southern States, Torrey and Gray; Wisconsin and southward, Dr A. Gray.

NYMPHÆACEÆ.

NELUMBIUM, *J.* = *Willd.* Sp. ii. p. 1258.

Nelumbium luteum, Willd.

Nelumbium luteum Willd. DC Prodr. i. p. 113. *Turpinia* in Ann Mus. vii. p. 210. t. 11. *N. pentastalum*, Willd.;

N. jodophyllum, Raf. Fl. Ludov.; *Nymphaea Nelumbo*, Walt. Car. p. 155; *Nymphaea pentapetala*, Walt.; *Cyamus flavicomus*, Salisb. Am. Bor. ii. p. 45; *Pursh*, Fl. ii. p. 398; *Cyamus luteus*, Nutt. Gen. ii. p. 5.

Large aquatic herbs with large, emersed, centrally-peltate, fleshy leaves, and 1-flowered peduncles arising from a prostrate rhizome and radicle. Rhizome creeping, in mud in depths of water from 2-6 feet. Flowers pale yellow, several times larger than those of *Nymphaea odorata*, and fragrant. Petals numerous, arranged in many rows, arising outside the disk. Stamens indefinite, in several rows. Ovaries separate, each with a complete style and stigma, becoming in fruit one-seeded nuts half sunk in the hollows of the very large torus, the seeds suspended, orthotropous, and destitute of albumen. The nuts embedded in the torus are about the size of corns, and remarkable for the large leafy embryo. According to Nuttall, the tubers when boiled are as farinaceous as the potato, and are employed as food by the Osage, the Comanche, and other Western Indians.

Distribution.—Only reported from one Canadian territory, namely, from the margin of the Detroit River, by Miss Douglass of Gros Isle, August 1874. United States, Sodus Bay, Lake Ontario, Dr Sartwell; Connecticut, Prof. Hitchcock; New Jersey, rare in the middle States, Dr A. Gray; Florida, near Talahassie, Dr Chapman. As suggested by Dr Gray, this plant may have been accidentally introduced into the Detroit River and Sodus Bay, Lake Ontario, by the aborigines. It grows generally near the marshy shore in shallow water, with leaves, flowers, and fruit elevated above the surface by high rigid petioles and peduncles.

NYMPHÆA, Tourn.; DC. Syst. ii. p. 49.

Nymphaea odorata, Ait., var. *minor*, Sims.; *Nymphaea minor*, DC., l. c.; *Nymphaea odorata* β *minor*, Bot. Mag. t. 1652; *Nymphaea odorata* β *rosea*, Pursh, l. c.

Plant small in all its parts. Leaves cordate-ovate, 3 to 4 inches in diameter, a little longer than broad, smooth on both sides, green above, deep red-purple beneath, with prominent radiating veins, seven of which are basal, and five form the midrib on each side; lobes approximate, frequently overlapping, rounded or often ending in a short point. Flowers diminutive and delicate, from one to two inches in length; sepals brown; petals white, or sometimes the outer tinged with pink externally, very fragrant, with the odour of honey. Ovary spherical filled with light-colored solitary-seeded seeds. Upper part of the peduncles and petioles villous or thick downy, and more or less pubescent below. Stigma and style longer than broad, ovate, lacerated at end, the kernel in the

ious margins. Rhizome slender, three-fourths of an inch in diameter, covered with very fine dense hairy pubescence; branching frequently, of a dingy pink colour.

Distribution.—In Ontario,—in a small lake near Marmora village, County Hastings, July 18, 1867; also at South Lake County, Peterborough, July 29, 1868 (Macoun). In the United States it appears to be confined to the cold bogs of New York State, especially characteristic of those contiguous to Lake Ontario. In the shallow mossy pools it lifts its flowers and leaves above the water by peduncles not more than a foot in length; but in deep water its habit is similar to the typical plant.

NYPHÆA TUBEROSA, John A. Paine, jun.

Nymphæa tuberosa, John A. Paine, in Cat. Plants of Oneida Co., New York State; *Nymphæa alba*, Nutt. Gen.; *Nymphæa reniformis*, DC. Syst. l. c.; *Deless.* ic. ii. t. 5; *Walt. Car.*; *Nelumbium reniforme*, Willd., sp. ii. p. 1260.

Rhizoma deeply imbedded in mud, running horizontally, sending down in clusters long cord-like roots furnished with innumerable fibrous radicles, rarely branching, three to six feet long, one to two inches thick, varying in size but not regularly interrupted, with an uneven surface, somewhat compressed, scattered with short pubescence, bearing tubers from its sides, which are slightly connected by their bases narrowed into necks only one or three lines in diameter, usually short, often half an inch in length. Tubers oval, one to three inches long, half to three-fourths of an inch thick, with a rough tubercular surface, the tubercles elevated at the back of the buds of elementary leaves, arranged in eight perpendicular series with five spiral rows in one direction and three in the other, bearing both roots and tubers when present; the tubers often in clusters from being repeatedly proliferous, sometimes occurring so frequently as to conceal the trunk, becoming separate plants when detached. Stipules in the axils of the petioles and embracing them by long lobes, shorter than broad, crescent-shaped, with thin wavy margins. Petioles and peduncles striate with nerves and crimson veins, often pubescent above in lines with long silky purple hairs. Leaves of two forms: submerged form short-petioled, thin and transparent, the lobes divaricate and forming a right angle at base; floating leaves large, from eight to eighteen inches in diameter, exactly orbicular, sometimes retuse with sides contracted becoming angular, entire or undulate margined, green with a dark centre and ven above, light-green or a little yellow below, with prominent veins of which on each side twelve radiate from the centre and five or seven from the strong channelled midrib sometimes having few brown hairs along the veins and edges of the division; lobes

approximate parallel or meeting in the largest form, ending with an acute point and a sinus. Flowers two to four inches long, expanding four to seven, exhaling a slight vanilla-like fragrance at opening but soon inodorous. Sepals four, green without, light within, as long as the flower. Petals many, the outer tinged with green externally, the inner snow-white, ob-lanceolate in outline, delicately straight veined. Anthers yellow, long with converging cells, the connective elongated into a minute red cusp. Appendages of the stigma sixteen to twenty, short, obtuse, at first ascending and lying against the filaments, soon curving over as many rays of the disk. End of the central axis short, a line or more high, convex. Capsule globose or oblate, when maturing drawn to the bottom by the spiral coiling of the peduncle. Seeds acorn-shaped, red, with the usual raphe. Arillus defective, commonly a shallow cup surrounding the base of the seed, sometimes investing it halfway, or occasionally a mere rudiment, and rarely complete.

A larger plant than the other species, equal in beauty but wanting in fragrance. From *N. odorata* var. *minor*, of course it is as remote as possible in every part. From *N. odorata* itself it differs in its peculiar tubers, great leaves, large flowers of little odour, and imperfect arils. From *N. alba* of Europe, in addition to the tubers, it is separated by a continuous stem instead of one vertical at first, leaves highly veined, slight odour of the flower, and the usually incomplete arillus. So similar, however, is it to the latter, that it seems to have been considered the same by Nuttall in the single locality he records. The root-stalks prolong themselves indefinitely, yet only short portions are vigorous supporting leaves and flowers, the old parts declining as fast as the young ends increase. The tubers, too, attain a certain size, then wait to be broken off or to be separated by decay. Their multiplication in clusters occurs only on remaining tubers; and all, if not by any cause removed, when they have reached maturity, do not grow any larger, remaining inactive until they die with the old root. But when liberated, they float about to some new bank; as soon as striking it, shooting down rootlets and sending out their already developed delicate submerged leaves, soon to be followed by others, for the surface. These tubers, somewhat resembling those of *Helianthus tuberosus* or of *Boussingaultia baselloides*, are always present, sometimes few and single, usually frequent and abundant: as many as thirty have been counted on a section of rootstalk only six inches in length. By the slightest disturbance they loosen and rise to the surface, and can be secured in place only by the greatest care in removal. The leaves would easily be recognised from others by their shape and appearance, as well as by their peculiar venation and remarkable size largest in the bays of Lake Ontario at Sedis Bay rivalling even those of *Nelumbium luteum*, in imitation of which al-

leaves and flowers rise high above the surface on stout stems in shallow water. The flowers may truly be termed magnificent, but their odour is faint and transient. The coiling of the flower-stems in deep water is more striking and complete than in the scapes of *Vallisneria spiralis*, though not so uniform; drawing the ovaries not only under water but to the very ground; a habit that will be verified by obtaining fruit in autumn. The rhizomes of this plant are soft and pliable, composed of a cellular or pithy substance which is very astringent. Cattle devour its immense leaves, venturing far into the water for them; in like manner, the deer of the north woods come down from the hills to the lakes at night to feed on the lily-pads so abundant there.

The Water Lily of Western New York and the great lakes.—It has been found in St Lawrence river, at Alexandria Bay, Jefferson county: in Lake Ontario, filling all marshes beyond the shore for miles north-east of Oswego, where it was observed in 1861; in the bays of Wayne County, most abundant in the channels at the head of Big Sodus Bay; plentiful in Irondequoit Bay, throughout the swamps among the ends of ridges westward formed by streams setting back against bars thrown up by the waves, marshes of Charlotte in the mouth of the Genesee River, common in Round Pond, Long Pond, Cranberry Pond, and Braddock's Bay, Monroe County: in Niagara River below Buffalo, by G. W. Clinton: in the Detroit River, by J. M. Bigelow: in Western New York; farthest east in Oneida Lake, where it is abundant near its head a little west of South Bay, in marshes of *Dianthera americana* and *Scirpus lacustris*; all along the sides of Oswego River: frequent in the outlet of Owasco Lake, and occasionally in the lake itself; common in the marshes of Cayuga river and lake; Clyde River through Wayne County; at Branchport, foot of Crooked Lake, by Sartwell; in Canandaigua Lake, more abundant, however, in its old closed outlet; in Genesee River above Rochester, by Dewey.—*Paine*. Found in all the marshes along the Bay of Quinté, and in the mud flats along Lake Ontario, from Presqu'île eastward, and is suspected by the writers to be the "Nymphæa" of Burlington Bay, as reported by Messrs Logie and Buchan. At Lakelet, Hawick Township, County Huron, Ontario, by John Gibson. Easily distinguished from *N. odorata* by its scentless flowers.

CRUCIFERÆ.

ARABIS, L.; DC. Syst. ii. p. 214.

Arabis petraea, Lam.

Arabis petraea, Lam., Diet. i. p. 221; DC., Prodr. i. p. 145; Hooker, Fl. Bor. Am. i. p. 42; Cham. and Schlecht. in Linnæa, i. p. 15; Flora of N. Am. by Torrey and Gray;

Dr A. Gray's Manual of Bot. of the Northern United States, ed. 5.

Stem nearly erect, sometimes branched, glabrous. Radical leaves few, petioled, incised or pinnatifid; cauline ones few, linear, entire. Petals obovate, unguiculate, rose colour or nearly white. Pods erect, spreading, shorter and less flat than in *A. lyrata*. Root perennial, multicapital, style very short or none. Cotyledons accumbent.

Distribution.—In Ontario, crevices of rocks about five miles north of Michipicoten harbour, Lake Superior, *Macoun*; Cockburn Island, Lake Huron, *Prof. R. Bell*; Canada to Arctic America and north-west coast, *Torrey and Gray*; United States, south shore of Lake Superior, *Dr Pitcher*; Willoughby Mountains, Vermont, *Horace Mann*.

ARABIS RETROFRACTA, *Graham*.

Arabis retrofracta, *Graham*, in *Edin. Journal*, l. c.; *Turritis retrofracta*, *Hooker*, *Fl. Bor. Am.* i. p. 41; *Turritis patula*, *Graham*; *Streptanthus angustifolius*, and *S. virgatus*, *Nutt.*; *Sisymbrium reflexum*, *Kell. Proc. Calif. Acad.* ii. 101, fig. 29.

Erect, more or less canescently pubescent. Leaves lanceolate, radical ones petioled, toothed, or nearly entire; the cauline sagittate, and partly clasping. Flowers spreading or reflexed, light rose-colour, or nearly white. Siliques linear, elongated, straight, or nearly so, more or less reflexed. Seeds in two rows, margined. In the majority of specimens the flowers are light-coloured, and the pubescence stellate, though the lower stems are often hirsute. The leaves vary from all entire to all coarsely dentate, sagittate, amplexicaul, or simply clasping, broad lanceolate, or almost linear.

Distribution.—In Ontario, on the detritus of limestone and granitic rocks, near the Portage du Fort, Ottawa River, *Gibson*. Hudson's Bay to the Rocky Mountains, and North to lat. 68°, *Hooker*. United States,—frequent in Nevada and Utah, especially in the former, 4500–8000 feet altitude, *S. Watson*, in *King's Report*. Common in Colorado and California, *Porter and Coulter*.

DRABA, *L.*; *R. Brown*, in *Hort. Review*, iv. p. 91.

DRABA NEMOROSA, *L.*

Draba nemoralis, *Ehrh.*; *DC. Prodr.* i. p. 171; *Hook. Fl. Bor. Am.* i. p. 55. *Draba lutea*, *Gilib.*; *DC. Prodr.* i. p. 171; *Hook. Fl. Bor. Am.* i. p. 55. *Draba gracilis*, *Graham*, in *Edin. Phil. Journal*, 1828, p. 172.

Stem pubescent, branched. Leaves oval, cauline, somewhat lanceolate, more or less toothed. Racemes much elongated in fruit.

with very long, slender flowers annate, yellowish-white. Petals marginate small. Siliques oblong-elliptical, half the length of the pedicels. Seeds nearly 30. Whole plant slender, 8-10 inches in height.

Distribution.—In Ontario, on rocks and sandy grounds. On sands at the mouth of the Michipicottin River, Lake Superior, July 1869, *Macoun*. This is undoubtedly the "*Draba*" found by L. Agassiz at the same place some twenty-five years ago, and is probably identical with the *Draba muralis* reported from the vicinity of Montreal by *Hooker*, Fl. Bor. Am. i. p. 56.

United States:—Fort Gratiot, Michigan, and north-westward, *Dr Gray*, on the Sierra Madre Range, at an altitude of 11,000-13,000 feet above the sea, *Coulter*; frequent in the Wahsatch Mountains, Utah, 4500-8500 feet altitude, *Sereno Watson* in *King's Report*; grassy, moist places at the junction of the Wahlamette and the Oregon, *Nuttall*, in the Rocky Mountains, from Colorado to the Arctic Circle.

DRABA CAROLINIANA Walt.

Draba caroliniana, Walt. Cat. p. 174, *Ell. Sk.* n. p. 138; DC. Prodr. i., *Draba hispida*, *Michx.*, Fl. n. p. 28; *Pursh*, Fl. n. p. 433, *Andros. latifolia*, *Raf.*, in Am. Month. Mag. n. p. 43.

Annual or biennial, with us the young plants spring up in the fall, and flower early in the spring. Plant quite small; never more than 3 inches high; often scarcely an inch. Stems leafy and hispid at the base, naked and smooth above. Leaves roundish-ovate, entire, clustered on the lower part of the stem, very hairy. Siliques linear, from 4-5 lines long, cylindrical, much longer than the pedicels, obtuse, many-seeded, and quite smooth. Flowers white, petals oblong, twice as long as the sepals. Style almost obsolete.

Like those of the Shepherd's purse (*Caps. hederifolia pastoris*), the seeds of this plant germinate immediately after the heat of summer, and make all their growth before the approach of winter, except the scape-like portion which is thrown up for a few days in the spring.

Distribution.—In Ontario, detritus of limestone rocks in many places along the Bay of Quinte, Hastings County, *Macoun*; at Ansonville, in the northern part of the province, *De Meillon*. United States and Canada, from Connecticut to Rhode Island, and thence along the coast to Georgia, *A. Wood*; Rhode Island, and westward to Wisconsin, *Gray*. A variety is reported from Missouri, Arkansas, New Mexico, Sonora, and the Salt Lake Valley in Utah, by *Sereno Watson*.

LEPIDIUM, *R. Brown*, in *Hort Kew*, iv. p. 85.

LEPIDIUM INTERMEDIUM, *Gray*.

Annual or biennial. Stem about a foot high, round, smooth, and branching. Leaves, all with a tapering base; the upper linear or lanceolate, mostly entire; the lower ones much larger, generally incised, or even pinnatifid. Flowers white; petals conspicuous, seldom wanting, *except in western forms*. Style minute, or none. Stamens 2; pods on pedicels nearly twice as long as the pod, minutely wing-margined at the top, orbicular or oval, with a small notch at the top. Cotyledons incumbent.

Distribution.—In Ontario, indigenous in fields and dry places. North of the counties of Hastings and Northumberland; also at Picton, Prince Edward County, Little Current, Georgian Bay, Lake Huron, *Macoun*. It extends westward, in Canada, from Fort Garry to the Saskatchewan Valley, and north-west to Little Slair Lake and Peace River. In the United States it extends from Northern Michigan and Illinois, northward and westward. Western specimens from the Saskatchewan plains are *apetalous*, and approach very closely to *L. ruderale*; in fact, Dr Hooker seems to consider them identical. The plant described by Torrey and Gray in their *Fl. N. Am.* as the *L. ruderale*, is doubtless the *apetalous* form of this species. It is a question whether *L. ruderale* is really indigenous on this continent. The *apetalous* form has a much wider distribution than the normal plant, ranging from Hudson's Bay and the Arctic Circle to the Pacific, and southward to Illinois, and down the central ranges to New Mexico.

VIOLACEÆ.

VIOLA *L.*; *Gærtn. Fr. t.* 112; *Gingius* in *DC. Prodr.* i. p. 291.

VIOLA RENIFOLIA, *Gray* in *Proc. Am. Acad. of Arts and Sciences*, viii. 288, June 14, 1870.

"Rhizomate floribusque *V. blandæ* vel paullo majore; foliis reniformibus (adultis sæpius poll. 2-latis), utriusque cum petiolis villosopubescentibus; scapo pubescente. It grows in company with *V. blanda*, which it closely resembles as to the flower, but the leaves are more like those of *V. palustris*; yet they are more strictly reniform, and are conspicuously beset with pale, soft, and tender, lax hairs."

Distribution.—In cedar swamps, Northumberland County, May 24, 1860, *Macoun*. This is the only locality in Ontario from which it has been reported; yet it may not turn out to be rare when its points of difference from *V. blanda* become more generally recognised.

VIOLA PALUSTRIS, L.

Viola palustris, L.; DC. Prodr. i. p. 294.

Whole plant smooth. Leaves reniform-cordate. Flowers small, pale-blue, on peduncles longer than the leaves, and bibracteate near the middle. Rhizome creeping, scaly. Sepals ovate, obtuse, with very short spur. Capsule oblong, triangular. Seeds ovate, dark-green. The flowers resemble those of *V. cucullata*, but are considerably smaller.

Distribution.—This is one of the boreal forms which have located themselves along the shores of Lake Superior, finding here all the conditions necessary for maintenance. In Ontario, bogs are the invariable habitats. One mile north of Prince Arthur's Landing, Lake Superior, July 23, 1872, Macoun. Dr John Bell of Montreal detected it on the north-west coast of Newfoundland a few years since. In the United States it is confined to the alpine summits of the different mountain ranges, flourishing upon the White Mountains of New Hampshire and the mountains of Colorado, Utah, Oregon, and California.

DROSERACEÆ.

DROSERA, L.; Lam. Ill. t. 220; Gertn. Fr t 61.

Drosera linearis, Goldie.

Drosera linearis, Goldie, in Edin. Phil. Journal, vi. p. 325; Hooker, Fl. Bor. Am., i. p. 82.

Leaves linear, obtuse, about two lines wide, erect, often circinate at the point, all radical on slender petioles, about as long as the blade, which is bordered with long glandular hairs, while the petiole is entirely naked. Scapes smooth, generally longer than the leaves, from 1-5 flowered, seldom more than three inches high. Calyx glabrous, much shorter than the oval-pointed capsule. Flowers white.

Distribution.—Growing in marshy places, in large tufts, along the north-east coast of Lake Huron, in company with *D. rotundifolia* and *D. longifolia*. In the bright sun light these plants are singularly beautiful. Each hair retains at its extreme point a pearly drop of liquid, apparently the product of a glandular excretion, on which flies become fast and finally destroyed. Goldie detected it on Lake Simcoe, which is its most eastern station. It has been observed on the south shore of Lake Superior by De Houghton, and Drummond found it at Gasper Lake, on the Rocky Mountains.

CARYOPHYLLACEÆ.

STELLARIA, L.; *Torrey*, Flora, i. p. 453.*Stellaria gracilis*, Richardson.*Stellaria gracilis*, *Hooker*, Richardson's Appendix Frankl. Journ. p. 736; *Hook.* Fl. l. c.

Perennial, growing in tufts. Stems weak, glabrous and branching, about eight inches high. Leaves lanceolate, spreading, succulent, upper ones slightly ciliate-margined. Peduncle solitary, axillary or terminal, one-flowered. Pedicel generally over an inch long, spreading. Petals two-parted, slightly longer than the scarious-margined, glabrous, acute sepals. In general appearance this species resembles wide-leaved varieties of *S. borealis*, but its mode of inflorescence is quite different in detail.

Distribution.—Hudson's Bay, Cumberland House (Richardson); Pie Island, Thunder Bay, Lake Superior, growing in tufts close to the water, July 15, 1869.

LINACEÆ.

LINUM, L. (in part); *DC.* Prodr. i. p. 423.*Linum perenne*, L.

Linum perenne, L., Eng. Bot. p. 40; *Nutt.* Gen. i. p. 206; *Schiede*, in Linnæa, i. p. 71; *Hook.* Fl. Bor. Am. i. p. 106; *Linum sibiricum*, L., *DC.* l. c.; *Linum Lewisii*, *Pursh.*, Fl. i. p. 210.

Perennial; whole plant glabrous. Stems from one to two feet high, virgate, branching, from ten to forty stems from the same root. Leaves alternate, linear-lanceolate, acute, becoming linear and bract-like on the branches. Flowers racemose, and nearly opposite the leaves; sepals oval, with membranaceous margins a little shorter than the globose capsule; petals retuse, bright blue in colour, nearly half an inch long, expanding fully an inch. A very beautiful plant in cultivation, remaining in bloom throughout the whole summer.

Distribution.—On dry gravelly soil. Indigenous at Marmora Lake, Peterborough County, Ont., Macoun; Canada, Mrs Percival, *vide* Hooker. Abundant throughout North America, from the Arctic Sea to Mexico, and from Manitoba to the Pacific coast.

Linum striatum, Walt.; Gray.*Linum striatum*, Walt.; Gray; *Linum oppositifolium*, *Engelm.*

Root perennial; stems gregarious, erect or ascending from a decumbent base, slightly viscid, and with the racemose short branches striate, with a few sharp wing-like angles decurrent from the

leaves. Leaves oblong-lanceolate, generally opposite up to the first branch, after that alternate, about twice as long as broad. Flowers scattered along the short erect branches, bright yellow, opening only in bright sunshine; sepals scarcely ovate, pointed equalling the very short brown capsule.

Distribution.—Wet boggy ground along Lake Huron, near the Fishing Islands (Macoun). This is its only known station in Canada. It has generally been confounded with *L. virginianum*, but is well distinguished by its habitat, by its broader leaves, larger flowers, erect branches, and shorter stem. Its range in the United States is limited to the Atlantic sea-board, being reported only from New England, Virginia, and South Carolina.

Linum sulcatum, Riddell, 1836.

Linum sulcatum, Riddell, 1836; *Linum Boottii*, Planchon, 1848; *Linum rigidum*, Pursh, Fl. i. p. 210; Nutt. Gen. i. p. 206; *Linum Berendieri*, Hooker, Bot. Mag. t. 3480.

Stem strictly erect from an annual root, and with the upright or ascending branches striate-angled or grooved. Leaves linear acute, or the upper subulate, rather rigid; a pair of dark glands in place of stipules. Sepals ovate-lanceolate and sharp pointed strongly 3-nerved, and, like the bracts, with rough bristly glandular margins, scarcely longer than the ovoid globose incompletely 10-celled pod. Styles united almost to the middle.—Gray, Manual ed. 5.

Distribution.—Ontario. Dry soils. Rice Lake plains, and near Castleton, County Northumberland; Oak Hills, Hastings County, Ont., Macoun. In the United States the normal form extends from Rhode Island to Illinois and south-westward, while the dwarf, glaucous variety, *L. rigidum*, is apparently confined to the western plains.

SAPINDACEÆ.

Negundo, Moench; Nutt. Gen. i. p. 253.

Negundo acroides, Moench.

Negundo acroides, Moench, Method. p. 334; *Negundo fraxinifolium*, Nutt. Gen. i. p. 253; DC. Prodr. i. p. 596. Hook. Fl. Bor. Am. i. p. 114; *Acer Negundo*, Linn., Michx. Fl. ii. p. 253.

A handsome tree, with a trunk a foot or more in diameter and from 20 to 30 feet high, with irregularly spreading branches, and a smooth yellowish bark. Leaves compound, pinnately 3-foliate; leaflets ovate acuminate, remotely and unequally dentate, serrated above the middle, petiolate, the terminal one the largest, all slightly pubescent. Flowers yellowish green; stamens mostly five,

barren flowers mostly corymbose. Fruit oblong, with large wings dilated upwards.

This is the "Sugar Maple" of Manitoba and the western prairie country, but is nowhere so abundant as to warrant the supposition that sugar in any quantity will ever be made from it.

Distribution.—In Ontario its range is very limited, only having been detected on the River Kaministiquia, about 20 miles from Prince Arthur's Landing, Lake Superior. It is, moreover, observed in some abundance along the margins of the small streams flowing into the Red River and the Saskatchewan, and seems to extend up the valley of the latter to the vicinity of the mountains. In the United States it is chiefly confined to the prairie states, but extends southward into Tennessee and North Carolina, and south-westward into Arkansas.

POLYGALACEÆ.

POLYGALA, *Tourn.*

Polygala Nuttallii, Torrey and Gray.

Polygala Nuttallii, Torr. and Gray, Fl. i. p. 670; *Polygala sanguinea*, Nuttall, not of Linnæus; Judge Logie's Cat. of Plants of Hamilton, Ont.; Dr MacLagan's Cat. of Canadian Plants; *Polygala Mariana*, Pluk. t. 437; *Polygala ambigua*, Torr. and Gray, Fl. N. Am., not of Nutt.

Annual; stem slender, much branched. Leaves narrowly linear, quite small. Flowers in cylindrical spikes, in short peduncles, dense; calyx wings rose-red in our plant; corolla slightly crested. The awl-shaped scaly bracts are persistent on the axis after the flowers or fruit fall off, and constitute an excellent character to distinguish this species from the closely related *P. fastigiata*, whose bracts drop off shortly after the flower or fruit. Seed very hairy; caruncle small.

Distribution.—Ontario. This plant seems to be wholly confined to the vicinity of Hamilton (Judge Logie), and the neighbourhood of Sandwich, in the extreme south-western point of Ontario (Dr MacLagan). It has also been lately detected on the American side of the Detroit River by Henry Gillman. In the United States it is found on dry sandy soil from Massachusetts to Kentucky and southward, Gray; Massachusetts and Rhode Island to Louisiana, A. Wood.

LEGUMINOSÆ.

DESMODIUM, DC.

Desmodium canescens, DC.

Desmodium canescens, DC. Prodr. ii. p. 328; Beck. Bot. p. 84; Darlingt. Fl. Cest. p. 145; *Desmodium viridiflorum*,

DC. l. c., *Excl. Syn.*; *Desmodium Aikenianum*, *Beck. l. c.*; *Hedysarum canescens*, *Linn. Sp.* 1058; *Pursh, Fl. ii. p.* 482; *Hedysarum viridiflorum*, *Willd. Sp. iii. p.* 1192 (not of *Linn.*); *Michx. Fl. ii. p.* 71; *Pursh, l. c.*; *Hedysarum scaberrimum*, *Ell. Sk. ii. p.* 217.

Stem three to five feet high, striate, scabrous pubescent, especially the upper part. Leaflets ovate, acute, from two to four inches long, scabrous above, pubescent beneath. Stipules large, obliquely ovate, acuminate, three to four lines long, finely striate, ciliate, persistent. Flowers in large paniculate racemes, both terminal and axillary on the upper part of the stem. Branches densely canescent, naked, owing to the ovate ciliate bracts falling off early. Pedicels nearly half an inch long, solitary or in pairs. Calyx hairy, bilabiate, upper lip nearly entire. Corolla nearly three times as long as the calyx, purple, becoming paler in drying. Legume from 1-1½ inches long, 3-6 jointed, joints convex on the upper side, more constricted below.

Distribution.—Moist rich soil along river bottoms in the southwestern portion of Ontario, *Dr MacLagan*. This is the only authentic notice we have of its occurrence in Canada. In the United States, from New England to Florida and Louisiana, *A. Wood*; West Vermont to Wisconsin, southward and westward, *A. Gray*.

LESPEDEZA, *Michaux.*

Lespedeza violacea, *Pers.*

Lespedeza violacea, *Pers. Syn. ii. p.* 318; *Pursh, l. c.*; *Hedysarum violaceum*, *Linn. Spec. ii. p.* 749; *Willd. l. c.*; *Hedysarum frutescens*, *Linn. l. c.*; *Lespedeza violacea*, *Pers. var. divergens*, *Torrey and Gray*; *Lespedeza divergens*, *Pursh.*

Stem erect or diffuse, sparingly pubescent, much branched in our specimens. Leaflets oval or oblong, obtuse, slightly mucronate, clothed with appressed pubescence beneath. Racemes axillary, sometimes shorter than the leaves, but in our specimens always longer; apetalous flowers glomerate, and nearly sessile in the axils of the leaves. Legumes minutely pubescent, with short appressed hairs, ovate, much longer than the calyx. In our specimens the flowers are on filiform peduncles which are considerably longer than the leaves. Very few of these much exerted flowers produce fruit.

Distribution.—This is another southern form, and, as regards Ontario, has only been observed in the vicinity of Hamilton, *Judge Logie*, and at Malden, *Dr MacLagan*. Its range in the United States is very extensive, growing from the New England States to Florida and Louisiana. It is essentially a forest species, and therefore will not be found far to the westward.

ROSACEÆ.

AGRIMONIA, *Tourn.* Inst. t. 155.*Agrimonia parviflora*, Ait.

Agrimonia parviflora; Ait., Kew, ed. 1, ii. p. 130; *Pursh*, Fl. i. p. 336; *Agrimonia suaveolens*, *Pursh*. l. c.; *Ell.* Sk. i. p. 636; *Agrimonia Eupatoria*, *Michaux*, Fl. i. p. 287.

Stem from 2-4 feet high, hirsute, with brown spreading hairs. Leaves interruptedly pinnate. Petiole very hairy. Leaflets 11-19 in number, the larger ones from 2-3 inches long, quite narrow and deeply serrate, rough above and pubescent beneath. There are generally 2-3 pairs of small pinnules between each of the larger pairs, which give to the leaves a very graceful appearance. Stipules acutely incised. Racemes virgate, many-flowered. Flowers small and yellow. Pedicels distinct, longer than the bracts. Fruit hispid, with stiff hairs. It is particularly characterised by the numerous resinous dots which are very abundant on the lower surfaces of the leaves among the hairs, and which give to the whole plant a very agreeable balsamic odour, rendering it in most instances somewhat viscous to the touch. It resembles in its foliage *A. repens*, but its leaflets are much narrower, and the flowers only half the size.

Distribution.—Woods and dry meadows. It seems to be confined to the western part of Ontario, having only been observed in the vicinity of London by W. Saunders, and at Malden in the south-west by Dr MacLagan. In the United States it extends from south-western New York through the intervening States to the Mississippi, and westward to Iowa and Tennessee.

Dryas, Linn.; Lam., Ill. t. 443; Gærtn. Fr. t. 74.

Dryas Drummondii, Hooker.

Dryas Drummondii, Hooker, Bot. Mag. t. 2972, and Fl. Bor. Am. l. c.; *Dryas octopetala*, Richardson, Append. Frankl. Journ. ed. 2, p. 21.

Leaves elliptical, slightly attenuate at the base, crenate-serrate, clothed beneath, as well as the prominent veins, with a white tomentum. Sepals ovate. Flowers yellow.

Distribution.—Gravelly beds of rivers and lake margins. In Ontario, it has only been obtained from one locality, the State Islands, Lake Superior, Prof. W. H. Ellis; Island of Anticosti, *Pursh*; Gaspé Peninsula, Dr Bell; sand bars along the Peace River, within the Rocky Mountains, Macoun; Rocky Mountains, Drummond; in the wooded country from lat. 54° N. to 64° N., and about Slave Lake to the Arctic Sea in lat. 68° N., Richardson; Rocky Mountains, lat. 52° N., Bourgeau.

RUBUS, *Tourne.*; *Linna.* Gen. p. 254; *Lam.* Ill. t. 441.

Rubus Nutkanus, *Mocino*.

Rubus Nutkanus, *Mocino*, Fl. Nutk. l. c.; *Seringe* in DC. l. c.;
Link. Bot. Reg. t. 1368; *Bongard*, Veg. Litcha, l. c., p.
131; *Hook.* Bot. Mag. t. 3453, and Fl. Bor. Am. l. c.;
Don. in Sweet Fl. Gard. t. 83; *Rubus parviflorus*, *Nuttall*,
Gen. l. p. 309.

Stems from 3-6 feet high, on Lake Superior, rather slender, flexuous, slightly hirsute, with glandular hairs. Leaves 5-lobed, the lobes nearly equal, broad, unequally and coarse toothed. Stipules often adnate with the petiole, and united with each other. Peduncles few-flowered; flowers very large; petals white; sepals glandular, with very long cusps, scarcely as long as the petals. Fruit red. This species has much the appearance of *R. odoratus*, but is easily distinguished by its large white petals.

Distribution.—In Ontario, it has only been found along the shores of Lake Superior, where it often forms thickets of considerable size. Its eastern limit seems to be on the island of Michilimackinack at the head of Lake Michigan. From this point it extends westward, along both shores of Lake Superior, to Lake Shelandowan, where it disappears. It again appears, however, along the Peace River Valley in lat. 56° N., and is of frequent occurrence in the woods through the Rocky Mountains, and along the Pacific coast.

Rubus neglectus, C. H. Peck.

Rubus neglectus, 22nd Annual Report of the Regents of the University of the State of New York on the Condition of the State Cabinet of Natural History, by C. H. Peck.

Stems recurved, armed with numerous straight prickles; berries dark red, having a whitish bloom; calyx hispid. Stems long, recurved, when young covered with a glaucous bloom, armed with numerous rather strong straight prickles, those on the flowering branches and petioles sometimes recurved. Leaves trifoliate, the leaflets ovate-acuminate, coarsely and doubly serrate, green above, whitish-tomentose beneath, with rather prominent anastomosing veins; lateral ones sessile, terminal ones often unequally 2 or 3-lobed and subcordate. Flowers on ascending or erect branches, axillary and sub-corymbose, the pedicels armed with unequal slender prickles, intermingled with stiff glandular hairs; calyx hispid; fruit dark-clouded red, with a whitish tomentose bloom. Flowers in June, fruit ripe in July.

Intermediate between *R. strigosus* and *R. occidentalis*. From the former it is distinguished by its mode of growth (exactly like *R. occidentalis*), long recurved stems and stout prickles; from the

latter by its more numerous, straight prickles, sessile lateral, leaflets and hispid calyx; from both by the colour and flavour of the berries. It grows sparingly in scrubby cleared lands, associated with its nearly allied species.

Distribution.—Indigenous. Thickets and woodlands. Near Shannonville, Hastings county, and the counties of Northumberland and Victoria; Owen Sound, on the Georgian Bay, Lake Huron (Macoun).

POTENTILLA, L.

Potentilla paradoxa, Nutt.

Potentilla paradoxa, Nutt. MSS.; *Potentilla supina*, Michaux, Fl. i. p. 304; *Hook. l. c.*, not of Linn.

Decumbent at the base, somewhat spreading, pubescent. Leaves pinnate; leaflets 7-9, obovate-oblong, incised, the upper ones confluent. Stipules ovate, entire; pedicel solitary, often recurved in fruit; petals obovate, about equalling the sepals; receptacle hairy; achenia striate, 2-lobed, "the lower portions filled with starch, being as large as the proper carpel."

Distribution.—As far as known, this plant has only been observed on the south-western corner of Lake Ontario, in the vicinity of the city of Hamilton, where it was found in some abundance during the summer of 1874, by J. M. Buchan. It was growing prostrate on the sand and gravel beaches along Burlington Bay. On the southern shore of the same lake, it was detected in precisely the same situation by J. A. Paine, as early as 1865. Dr Gray, in his Manual, ed. 5, seems to consider it an immigrant form from the Southern States. According to Nuttall in *Torrey and Gray*, it is found on the banks of all the great western rivers, the Ohio, Mississippi, Missouri, Wahlamette, &c.

Rosa, Tourn.; Linn.; Lam., Ill. t. 440; Lindl. Monog. Rosar.

Rosa stricta, Lindley.

Rosa stricta, Lindley, Ros. p. 42, t. 7; *Seringe* in DC. l. c.; *Rosa pendulina*, Ait.; *Rosa pendula*, Linn.

Much branched. Stems armed with numerous setaceous, scattered, often deciduous prickles. Flowering branches mostly naked. Leaflets 7-9, oval, firm, glabrous, not shining; the petiole glandular, hispid. Stipules lanceolate, mostly glandular-ciliate. Flowers 1-3, on glabrous or glandular-hispid peduncles. Calyx-segments spreading. Fruit ovoid, pendulous.—Lindley, Ros. p. 42, t. 7.

Distribution.—North shore of Lake Superior, Agassiz; N.E. coast of Lake Superior, and from Fort Garry in Manitoba to Lac la Nun on the Athabasca, Macoun; plains of the Saskatchewan, Drummond; Whisky Island, Lake Huron, Dr Bell.

Pyrus, Linn.; *Lindley* in Linn. Trans. xiii. p. 97.

= *Pyrus coronaria*, L., American Crab-Apple.

Pyrus coronaria, Linn., Spec. i. p. 480; *Hook. &*, Bot. Mag. & 2009; *Lindley*, Bot. Reg. & 651; *Malus coronaria*, Mill. Michx. Fl. i. p. 292; *Michx.* Sylv. ii. p. 67.

A small tree 10-20 feet high, with spreading branches, large, rose-coloured and fragrant blossoms, and fragrant greenish fruit. The latter is as large as a small apple, hard and sour, but much esteemed for preserves. Leaves ovate, rounded at the base, incisedly serrate, often sublobate, straight-veined, pubescent when young, at length smoothish on slender petioles. Petals clawed; pedicels glabrous. Fruit depressed-globose, 1-1½ inch in diameter, somewhat translucent when ripe, ripens in September.

Distribution.—In glades near London, *Saunders*; Prince's Island, Lake Medad, *Judge Logie*; Chippawa and Malden, *Dr MacLagan*; Kettle Point, Lake Huron, *Gilson*. In the United States it grows generally on the borders of woods throughout the midland, western, and southern districts; near Lake Superior, *Dr Pitcher*.

SAXIFRAGACEÆ.

PARNASSIA, Tourne.

Parnassia parviflora, DC.

Parnassia parviflora, DC. Prodr. i. p. 329; *Hook.* Fl. Bor. Am. i. p. 82; *Parnassia palustris*, var. β , *Wahl.*

Very slender, from 4-8 inches high. Scapes with a single bract-like leaf, extending about one-third the distance of the scape. Radical leaves ovate, attenuate into a petiole; the cauline leaf linear-arched, sessile. Petals quite small, sessile, a little longer than the calyx. Sterile filaments, about 5 in each set, sometimes 9, seldom none. Flowers 6-10 lines in diameter. Whole plant much smaller than *P. palustris*, from which in other respects it differs considerably. The root-leaves of the latter are often heart-shaped, and never taper into a petiole, its cauline leaves, moreover, are more than half an inch wide and nearly an inch long, whilst those of *P. parviflora* are mere bracts. The flowers also of the *P. palustris* are nearly twice as large, with fewer veins.

Distribution.—Wet rocky shores of lakes and rivers. Borders of the river St Anne and the river Jacques Cartier, *Abbé Brunet*; north and east shores of Lake Superior, Red Bay Lake Huron, Fort Edmonton, on the Saskatchewan, and at the Canon on Peace River, B. Columbia, *Micouin*. Labrador, *Batters*. Sandy banks of rivers on the Rocky Mountains, *Drummond*. In the United States: north-west shore of Lake Michigan and westward, *Craig*; White Fish Bay, Wisconsin, *H. Gillman*. Rocky Mountains of

Colorado, *Hall* and *Harbour*. Huntington and Ruby Valleys, Nevada, and in the Wahsatch; 6000 feet altitude, *S. Watson*.

SAXIFRAGA, *Linn.*; *R. Brown*, in *Parry's First Voyage*,
Suppl. p. 273.

Saxifraga tricuspidata, *Retz.*

Saxifraga tricuspidata, *Retz*, Prodr. Fl. Scand.; *Pursh*, Fl. i. p. 312; *Don.*, Saxifr. l. c. p. 446; *Seringe*, in DC. Prodr. iv. p. 47; *Hook.* Fl. Bor. Am. i. p. 254. *Saxifraga* Chamissoi, *Sternb.* Rev. Saxifr. Suppl. p. 12, t. 10.

Stems short, tufted; leaves growing in rosettes on the autumn shoots; lower ones crowded, oblong, with three very sharp teeth, the margins very slightly ciliate. Flowers few, large, somewhat corymbose at the top of the short flowering stem, which is almost naked, having only a few short bract-like leaves. Sepals thick, ovate; shorter than the oblong-ovate, yellow or whitish petals (white in our Cariboo specimens). Capsule ovoid, apiculate with the conical diverging styles. Stigmas somewhat capitate.

Distribution.—Growing in little tufts on moist or dry rocks, especially in mountainous regions. North shore of Lake Superior, *Agassiz*. Rocks at the Peace River canon, B. Columbia; at Stewart's Lake, Upper B. Columbia, *Macoun*. Rocky Mountains, *Bourgeau*. Arctic and Sub-arctic America, Hudson's Bay, and Lake Winnipeg, lat. 50° N., *Hooker*. Unalaska, *Chamisso*. Greenland, *R. Brown*. Lately detected on the north shore of Lake Superior, within the province of Ontario, by *H. Gillman*.

HEUCHERA, *Linn.*; *Gærtn.* Fr. t. 177; *B. Brown*, in *Richardson's* Appx. Frankl. Journ. ed. 2, p. 52, t. 29.

Heuchera americana, *L.*

Heuchera Americana, *Linn.* Spec. i. p. 226; *Willd.* Spec. i. p. 1328; *Ell.* Sk. i. p. 327; *Torrey*, Fl. i. p. 280; *DC.* Prodr. iv. p. 51; *Darlingt.* Fl. Cest. p. 175; *Heuchera* cortusa, *Michaux*, Fl. i. p. 171; *Heuchera* viscida, *Pursh.* Fl. i. p. 187; *Heuchera* glauca, *Raf.*, Med. Flora, i. p. 244.

Scapes from 1½ to 3½ feet high, generally naked; sometimes with a few bracts, glandular, and often hispid, with short hairs. Leaves roundish, cordate, generally somewhat 7-lobed; lobes short and roundish, crenate-dentate; teeth mucronate, slightly hispid, with oppressed hairs above, pubescent on the veins beneath. *Panicle elongated, loose, many-flowered*; pedicels divaricate; bracts linear or subulate, very small; petals spatulate, about as long as the calyx, purplish, and somewhat unequal; stamens very much exerted in the fully expanded flower; root astringent, hence the common name, *Alum root*.

Distribution.—Woods in the extreme south-west of Ontario; only detected by Dr MacLagan, but doubtless will be met with in greater abundance when the country is more carefully examined. Its range in the United States is rather extensive growing more or less plentifully from Connecticut in the North to Alabama and Missouri in the South. It has also been met with in Wisconsin, but is of very rare occurrence. It is essentially a forest species; while its congener, *H. hispida*, seems to prefer the dry prairie country.

ONAGRACEÆ.

EPILOBUM, Linn.; *Gärtn. Fr.* t. 31.

Epilobium paniculatum, Nutt. MSS.

Glabrous or glandular-pubescent above. Stem erect, slender, terete, dichotomous above. Leaves narrowly linear, obscurely serrulate, acute, attenuate at the base, mostly alternate and fascicled. Flowers few, terminating the spreading filiform and almost leafless branches. Calyx tube infundibuliform. Petals obcordate, nearly twice exceeding the calyx lobes. Capsules short, acute at each end, straight or slightly curved, erect or spreading. Stems from 3 inches to 3 feet high. Flowers 1-4 lines in length, light rose-colour. Capsule 2-1 inch in length. The whole plant sometimes glabrous throughout.

Distribution.—Only recorded from one station in Ontario, at Oxendon, Colpoys Bay, Georgian Bay, Lake Huron, *Macoun*. In the United States, from Washington Territory to Sacramento Valley, and eastward to Colorado; frequent in the mountains of Nevada and in the Wahsatch; 4500-7000 feet altitude, *Scribn Watson*, in King's Report of Explorations in the 40th Parallel. Oregon, and the Straits of Du Fuco, *Dr Sconlar*. Rocky Mountains, *Nuttall*.

MELASTOMACEÆ.

RHEXIA, Linn.; *R. Brown*, in Luckey's Voy, p. 436.

Rhexia virginica, L.

Rhexia virginica, Linn. Spec. i. p. 346; Lam. Ill. t. 283. f. 2; Michaux, l. c.; Bot. Mag. t. 968; DC. Prodr. iii. p. 121; *Rhexia septemnervia*, Walt. Car. p. 130.

Stem square, the angles narrowly winged, sparsely hispid. Leaves sessile, oval lanceolate, ciliate-serrulate, acute, sparsely hispid above, and on the ribs of the lower surface. Calyx hispid, the tube above the ovary longer than the segments. Flowers large, numerous, in corymbose cymes; petals bright-purple, ovate, hispid beneath, caducous. Anthers long and prominent, crooked, golden-yellow above, with a purple line beneath.

Distribution.—Grows in wet ground. Its only known locality in Ontario is on the sandy margin of Muskoka Lake. In the United States: Massachusetts and Connecticut, near the coast, to Louisiana and Arkansas, *Torrey* and *Gray*; Wisconsin and Illinois, *Dr Gray*.

LYTHRACEÆ.

LYTHRUM, *Linn.* (partly); *Juss. Gen.* p. 332.

Lythrum alatum, *Pursh.*

Lythrum alatum, *Pursh.*, *Fl.* i. p. 334; *Nutt. Gen.* i. p. 303; *Bot. Mag.* t. 1812; *Ell. Sk.* i. p. 545; *DC. Prodr.* iii. p. 81; *Lythrum vulneraria*, *Schrank.* pl. rar. Hort. Monac. t. xxvii. fide *DC.*; *Lythrum Kennedyanum*, *H. B.* and *K.* *Nov. Gen.* fide *DC.*

Perennial. Stem and branches quadrangular, Stem 1–2 feet high, striate, the wings narrow. Leaves (of Ontario specimens) closely sessile, slightly cordate at the base, the upper ones about the length of the flowers, mostly acute; the lower ones opposite, ternately verticillate or scattered; those of the virgate branches alternate. Flowers nearly sessile, minutely bibracteolate, axillary, solitary; calyx tube 12-striate, 12-toothed, alternate teeth cornute; corolla deep violet-purple, wavy, 6-petaled; stamens 6.

Distribution.—Wet places in the vicinity of Malden, South-western Ontario, *Dr MacLagan*. In the United States: Michigan, Wisconsin, and southward, *Dr Gray*; Louisiana, Arkansas, but not in the New England States, *Torrey* and *Gray*; Texas, *Drummond*. A variable species extends into Mexico.

UMBELLIFERÆ.

ARCHEMORA, *DC. Mem. Umb.* p. 52, and *Prodr.* iv. p. 188.

Archemora rigida, *DC.*

Archemora rigida, *DC. Prodr.* iv. p. 188; *Darlingt. Fl. Cest.* p. 195; *Archemora tricuspidata* and *denticulata*, *DC. Prodr.* iv. p. 188; *Sium rigidum*, *Linn. Spec.* i. p. 251; *Sium rigidum*, *tricuspidatum* and *denticulatum*, *Ell. Sk.* i. p. 354; *Sium marginatum*, *Michaux.* *Fl.* i. p. 168; *Ceananthe rigida*, *Nutt. Gen.* i. p. 189; *Pastinaca rigida*, *Spreng.* in *Schult. Syst.* vi. p. 586; *Torrey, Fl.* i. p. 314.

Stem rigid, striate, smooth. Leaves pinnately divided, smooth, variable in form, and occasionally obovate, but more commonly oblong-lanceolate, entire or remotely toothed, the teeth often very large, and sometimes reduced to two near the summit, or sometimes small and scattered. Umbels 2 to 3, spreading, smooth, of many

slender rays. Petals white. Fruit 3 lines long, with sub-equal, greenish ribs, and large purple vittæ filling the intervals. Com-missure white. The variety *ambigua*, not found in Ontario, differs from the present species in its linear, long, and narrow leaflets. It is the *Eranthe ambigua* of Nuttall.

Distribution.—Sandy swamps near Malden, south-western Ontario, Dr Macdagan. In the United States, it ranges from New Jersey and Western New York to Michigan and Illinois, and southward to Louisiana and Florida.

Thaspium, Nutt. Gen. i. p. 196; DC. Prodr. iv. p. 153.

Thaspium barbinode, Nutt.

Thaspium barbinode, Nutt. Gen. i. p. 196; DC. Prodr. iv. p. 154; *Darlingt. Fl. Cest.* p. 192; *Ligusticum barbinode*, Michx. Fl. i. p. 167; *Pursh, Fl.* i. p. 193; *Thaspia trifoliata*, Spreng. in Schult. Syst. vi. p. 615; *Torrey, Fl.* i. p. 317.

Stem pubescent at the nodes. Lower leaves triternate, upper ones biternate and usually opposite, segments 1-2 inches long, cuneate-ovate, acute or acuminate, unequally and incisely serrate, entire towards the base. Umbels terminal, and opposite the upper leaves on peduncles 1-3 inches long. Involucre usually wanting, but sometimes 1-2 linear leaflets; involuclers 3-4 leaved. Petals deep yellow. Styles nearly erect, as long as the ovary. Fruit 2-3 lines long, elliptical, sometimes with only the dorsal and marginal ribs of the carpel winged, at other times with all the ribs equally ribbed. Stem 2-3 feet high, angular and grooved, branching above.

Distribution.—Banks of rivers and streams. Along the banks of the Detroit River, Ontario side, Dr Macdagan; also near the River Thames, in the vicinity of London, W. Saunders; Chippawa, south-western Ontario, Torrey and Gray Fl. p. 616; in the United States, it ranges from western New York to Wisconsin, and southward to Florida, Dr Chapman.

CAPRIFOLIACEÆ.

Symphoricarpos, Dill.; Elth. p. 371, t. 278; DC. Prodr. iv. p. 338.

Symphoricarpos occidentalis, R. Brown.

Symphoricarpos occidentalis, R. Brown in Richards. App. Frankl. Journ. ed. 2, p. 6; Hook. l. c.

Shrub 1-4 feet high. Leaves ovate, 1-3 inches long, rather obtuse, somewhat hairy above, pubescent underneath, the lower pairs with wavy margins; the petioles about $\frac{1}{2}$ of an inch long.

Spikes dense, terminal and axillary, nodding, nearly sessile. Calyx teeth minutely ciliate. Corolla somewhat funnel-form, densely bearded inside, rather larger and more expanded than in *S. racemosus*, purplish and white. Stamens and bearded style exserted. Berries white, remaining on the plant during the autumn and winter. The *Wolf-berry* of the Canadians.

Distribution.—Wooded river banks. North shore of Lake Superior, within the confines of Ontario, *Agassiz*. Fort Gratiot, Michigan, opposite Sarnia, Ont., south shore of Lake Huron, *Dr Pitcher*. From Lake Superior westward over the plains, and through the Peace River Valley, and west of the Rocky Mountains to Quesnelle in Upper B. Columbia, *Macoun*. Saskatchewan Valley, *Drummond*. Northern Michigan, Illinois, and westward, *Gray*. Oregon, *Douglas*. Colorado, *Hall and Harton*.

Lonicera, *Linn.*; *Desf.* Fl. Atl. i. p. 183; *DC.* Prodr. iv. p. 330.

Lonicera parviflora, Lam., var. *Douglasii*, A. Gray.

Lonicera parviflora, *Hooker*, l. c. var. β ; *Lonicera parviflora*, var. β , *Torrey and Gray*, Fl. N. Am. p. 7, vol. ii., pt. 1; *Lonicera Douglasii*, *DC.*, l. c.; *Caprifolium Douglasii*, *Lindley* in Hort. Trans. vii. p. 244; *Caprifolium parviflorum*, *Richards*. Appx. Frank. Journ. ed. 2, p. 6.

Differs from the normal *parviflora* in its greener leaves, more or less downy, or even somewhat villous-tomentose beneath, and its crimson or deep dull purple corolla. Stem 6–10 feet long, trailing or twining. Leaves 2–3, or on young shoots even 4 inches long, with a slight and sparse deciduous pubescence underneath, the lower ones often narrowed at the base, but sessile or connate, the upper pair perfoliate. Flowers in heads of one or more approximate whorls; corolla ringent, short, glabrous externally, gibbous at the base, crimson, or deep dull purple. Stamens and styles exserted. Berries orange-coloured.

Distribution.—Rocky banks of rivers and lakes. At the top of a sandhill, Nipigon River, north shore of Lake Superior, also on sand dunes on the River Pic, north-east coast, *Macoun*. North shore of Lake Superior, *Agassiz*. Saskatchewan plains, *Douglas*. Near Fort Gratiot, Michigan, south shore of Lake Huron, *Dr Pitcher*. Limestone cliffs along the Scioto, Ohio, *Sullivan*. Northern Ohio to Wisconsin and northward, A. Gray.

Lonicera involucrata, Banks.

Lonicera involucrata, *Herb.* Banks; *Spreng.* Syst. i. p. 759; *DC.* Prodr. iv. p. 336; *Lindley*, Bot. Regist. t. 1179; *Hooker*, Fl. Bor. Am. i. p. 284; *Lonicera Ledebourii*,

Eschscholtz. in Mem. Acad. St. Petersburg. x. p. 284; *DC.* *et. c.*; *Chum. and Schlecht.* in Linnæa, iii. p. 138; *Hook. and Arnott*, Bot. Beechey, p. 143, and Supp. p. 349; *Xylosteum involucreatum*, *Richards.* Appx. Frank. Journ. ed. 2, p. 6.

Stem 2-10 feet long, often supported. Branches distinctly 4-angled. Leaves 2-3 inches long, on petioles 2-4 lines in length, obtuse or acuminate, hirsute-pubescent beneath; peduncles shorter than the leaves, 2-3 flowered. Bracts somewhat pubescent and glandular, the exterior ovate or sub-cordate, often nearly half an inch in length, the interior broadly obovate or obcordate, at first very small, but becoming large and conspicuous in fruit. Corolla yellowish, 6-7 lines long, pubescent, glandular, and cylindraceous; the lobes short. Stamens included. Stigma generally partially exerted.

Distribution.—Damp rocky ground. North shore of Lake Superior, by *Agassiz*; 16 miles up the Kaministiquia, and along the left bank of the Pic River, Lake Superior, *Macoun*; Saskatchewan plains and wooded country from lat. 54° N. to 64° N., Rocky Mountains, and N.W. coast between 54° N. and 56° N., *Torr. and Gray*; California, *Douglas, Nuttall*; East Humboldt Mountains, Nevada, and in the Wahsatch and Uintas, 7000-9000 feet altitude, *Sereno Watson*; Mount Lincoln, Colorado, at 13,000 feet altitude, *Coulter*; and along streams in the foot-hills and among the mountains of Colorado, *Porter*.

RUBIACEÆ.

GALIUM, *Linn.*; *Lam.* Ill. t. 60; *Gærtn.* Fr. t. 24; *A. Richard*, Rubiac. in Mem. Soc. Hist. Nat. part v. p. 133; *Endl.* Gen. p. 522.

Galium pilosum, *Ait.*

Galium pilosum, *Ait.*, *Kew.* ed. 1, p. 145; *Pursh*, Fl. i. p. 104; *Torrey*, Fl. i. p. 167; *Darlingt.* Fl. Cest. p. 101; *Galium punctipilosum* β *pilosum*, *DC.*, Prodr. iv. p. 601; *Galium purpureum*, *Walt.* Car. p. 87.

Stems often 1-2 feet high, often several from the same root, ascending, hirsute on the angles, mostly simple, except the short spreading flowering branches. Leaves about three-fourths of an inch long, 4 in a whorl, oval, indistinctly veined, hirsute on both sides, and punctate with pellucid dots. Peduncles generally ditrichotomous at the extremity of the branches, each division 2-3-flowered. Flowers paniculate-cymulose. Lobes of the brownish-purple corolla acute or acuminate. Fruit very strongly hispid with white bristles.

Valeriana.—Dry fields and sterile shady soil. Vicinity of Windsor, South-western Ontario. *D. M. Gray*. In the United States from Rhode Island and Vermont to Illinois, and southward to Louisiana and Texas.

VALERIANACEÆ.

VALERIANA, *Tourn.*; *Linn.*; *Neck. Elem.* i. p. 122; *DC. Mem. Valer. and Prodr.* iv. p. 632.

Valeriana edulis, Nutt.

Valeriana edulis, Nutt. MSS.; *Valeriana* — nov. spec. *Sullivan*, Cat. Ohio Plants; *Valeriana ciliata*, *Torrey* and *Gray*, Fl. N. Am. l. c.; *Patrinia longifolia*, *Macnab* in *Edin. Phil. Journ.* xix.; *Patrinia ceratophylla*, *Hooker*, Fl. Bor. Am. i. p. 290.

Stem one to three or sometimes four feet high in fruit; sometimes leafless, very smooth, striate. simple. Root-leaves entire, spatulate-lanceolate, tapering out into a slender sheathing base, four to nine inches long, clustered; the veins somewhat parallel but reticulated; the cauline ones pinnately cleft into 3-7 lance-linear, acute segments. Both radical and cauline leaves have their margins densely and minutely ciliate. Flowers in an elongated compound panicle; corolla very short, greenish white, subconical-campanulate. Fruit ovate, compressed, 4-ribbed, crowned with the late calyx limb of 10 or 12 plumose setæ. Root fusiform, often 6-12 inches long, resembling that of the carrot both in colour and appearance, mucilaginous, bitter and aromatic to the taste. When baked or steamed in a closed vessel, these roots, apparently pernicious, become converted into an agreeable and wholesome pulp, much relished as food by the aborigines of the country.

Distribution.—Alluvial prairies and river bottoms. This interesting species has been detected in only one locality within the province, viz., the valley of the Maitland River, and within six miles of its embouchure into Lake Huron, *Gibson*. It was apparently obtained from the same district in 1834 by Mr J. MacNab. In the United States, from Ohio to Wisconsin and westward, *A. Gray*. Washington Territory, Utah, and New Mexico, Tayabe Mountains and Ruby Valley, Nevada, and in the Wahsatch, 6000 feet altitude, *Sereno Watson*, in "King's Report." Denver and Canon City, Colorado, *Dr Smith*.

COMPOSITÆ.

MIKANIA, *Willd.*; *Spec.* iii. p. 1452; *DC. Prodr.* v. p. 181.

Mikania scandens, Willd.

Mikania scandens, *Willd.* *Spec.* iii. p. 1743; *Pursh*, Fl. ii. p. 517; *Bigle*, Fl. Boston, ed. 3, p. 314; *Darlingt.* Fl.

Cest., p. 454. *E. torium scandens*, Linn.; Michx. ¹⁸⁴
 H. p. 97

Stem glabrous, shining. *Leaves* coriaceous, repand-toothed, acuminate, the lobes divaricate, rather unequal, membranaceous, slightly scabrous or pubescent or nearly glabrous, on slender petioles. *Heads* in pedunculat., axillary corymbs of whitish or pink-coloured flowers. *Scales* of the involucre lanceolate. *Achenia* minutely glandular. *Anthers* appendiculate at the apex.

Distribution.—Moist shady places and along streams and rivers. Has only been reported by Dr MacLagan from the vicinity of Malden, south-western Ontario. It is a species of a decided Southern range, so that its appearance in Ontario is a somewhat abnormal feature in its geographical distribution. In the United States it is found from E. New England to Kentucky, and southward to Louisiana and Florida.

ASTER, *Tourn. Inst.* t. 174; *Linn. Gen.* No. 954.

Aster ericoides, Linn.

Aster ericoides, Linn., *Spec.* ii. p. 875 (Excl. Syn. *Dill.*); Ait., *Kew* (ed. 1), iii. p. 20., *Willd. Spec.* iii. p. 2027; *Pursh*, *Fl.* ii. p. 546, *Ell. Sk.* ii. p. 348; *Aster ericoides* and *Aster glabellus*, *Nees. Ait.* p. 101. *L'Herb.* in *Herb.* *Hooker and Herb. Torr.*; *DC. Prodr.* v. p. 242; *Aster sparsiflorus*, *Michx.* *Fl.* ii. p. 242; *Aster tenuifolius* β *ericoides*, *Muhl. Cat.* p. 77; *Aster dumosus*, *Willd. Enum.* ii. p. 859, *Aster subulatus*, *ramosissimus*, and *leptophyllus*, *Hort. Par. (DC.)*

Glabrous or slightly hairy, racemose compound; the simple bran- chlets or peduncles racemose, and mostly unilateral on the virgate spreading branches. *Leaves* rather rigid; the radical and lower cauline oblanceolate or oblong spatulate, tapering into a short margined petiole, often serrate, the others linear lanceolate and linear subulate, entire, acute at each end. *Scales* often hemispherical, or often slightly turbinate, involucre with acute or abruptly acuminate tips terminating the broader closely appressed lower portion; the outermost subulate from a very short base. *Heads* usually scattered along the branches, but sometimes rather crowded, 3-4 lines in diameter. *Rays* 15-25, white or pale lilac-purple; the disk frequently turning red-lish purple. *Achenia* with a dense minute pubescence, turpid. *Torr. and G.*, *Fl. N. A.*

Distribution.—Barren soils. In the Province, from Huron, Ont., to In the United States from N. N. to Wis- and southward, *Dr Gray*.

Aster borealis, Provancher.

Aster borealis, *Provancher*, *Flori Canadienne*, 1862; *Aster laxifolius*, *Nees*, β *borealis*, *Torrey and Gray*, *Fl. N. A.*; *Aster laxifolius*, α and β , *Lindley* in *Hook. Fl. Bor.-Am.* ii. p. 10; *DC. Prodr.* v. p. 236 (excl. γ *carneus*); *Aster salicifolius*, *Richards*, *App. Frank. Journ.* ed. 1, p. 748.

Stem strict, smooth and glabrous, or pubescent towards the summit. Leaves vary much in appearance, narrowly linear-lanceolate, elongated, with margins sometimes scabrous, or sparingly serrulate, or even often entire; the upper surface generally slightly scabrous. At times the upper leaves are found to be rather shorter than the lower. Heads solitary, or few, or somewhat crowded on the strict (often very short) branches. Involucre about the length of the disk; the scales in 2-3 series, generally somewhat equal, but sometimes decidedly unequal, lax, the summits more or less spreading or squarrose when old.

Distribution.—Peat bogs and swamps. Vicinity of Lake Burwell, Lambton County, *Gibson*; several bogs in Central and Eastern Ontario, *Macoun*. In the United States it appears only to have been observed in Oregon. Lake Huron, *Dr Pitcher*. Saskatchewan Valley, *Drummond*. Arctic America, and west to the Rocky Mountains, *Torrey and Gray*.

10th June 1875.—Sir ROBERT CHRISTISON, Bart.,
in the Chair.

The following Communications were read:—

1. *Account of some Experiments on Dionæa Muscipula (Venus' Fly-Trap)*. By THOS. A. G. BALFOUR, M.D., F.R.S.E., F.R.C.P.E.*

My attention was specially directed to the subject of *Dionæa*, *Drosera*, &c., by certain articles which appeared in different journals, containing interesting accounts of what had been done in regard to these plants, and of the curious results which had been obtained. Some of these notices had an air of truth about them, while others seemed indebted for their existence rather to the vivid imagination of the

* I was much obliged to the Regius Keeper of the Garden for the opportunity of carrying on my experiments there, and I have also to acknowledge the considerate kindness of Mr M'Nab, and the valuable assistance rendered by Mr Robert Lindsay in conducting the experiments.