ANNALS

OF THE

BOTANICAL SOCIETY OF CANADA.

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PHOSPHORUS IN THE ATMOSPHERE.—Mr. C. McLaren has lately given in the Edinburgh Scotsman, an abstract of a memoir on this subject by M. Barral, which was read to the Academy of Sciences on the 21st November, 1860. It appears that M. Barral had detected phosphate of lime in rain water some years ago, but doubts arose whether its presence might not be due to the glass or porcelain vessels in which it was kept. To obviate this difficulty he employed vases and eudiometers of platinum, and operated upon two portions of rain water, collected, during five successive years, under his own inspection; the one at the Luxembourg in Paris, the other in the Park of Soulins in the open country. The water was evaporated in large quantities, and the residuum examined chemically. Considering this residuum first, simply as *impurities* imbibed by water passing through the atmosphere, he found that 2278 English pints, or 570 gallons, of Paris rain water, yielded 350 troy grains of dry residuum. Of the rain water which fell in the country at the park of Soulins, 171 gallons yielded 46 grains of dry residuum. The impurities, therefore, in 100 gallons of Paris rain water, compared with an equal quantity from the open country, are as 226 to 78, or nearly as *three to one.* In London, with its coal fires, the impurities must be three times greater. M. Barral's experiments, directed to the discovery of the amount of *phosphorus* in the water collected in different localities, did not show any appreciable difference in this particular between the water at Paris, and that of the park of Soulins. The results of his experiments varied considerably; but taking a mean, he computed that 440 gallons of the rain water examined contained from 8 to 15 troy grains of phosphorus. This is an exceedingly minute quantity, and yet the effects deducible from it are not altogether without importance. By calculation, he computes, that the atmosphere delivers annually to the soil *about* 2400 *troy grains of phosphorus to each acre of land.* Phosphorus is extracted from bones, in which it exists, in the shape of a phosphate of lime. Phosphate of lime is an essential part of the food of cereal plants, and hence the wonderful effects of bone meal in increasing crops. That water, by itself, or its elements, oxygen and hydrogen, is necessary to the growth of plants, has been long known, but it is a new and interesting fact, if Mr. Barral's conclusions are correct, that *the clouds which supply water to the earth, send down a refined and valuable manure with it.* No doubt the quantity is inconsiderable, but small though it be, the restoration of fertility to exhausted lands by allowing them to lie fallow for a course of years—a practice followed by the Arabs—must be partly the effect of it. Wheat is an exhausting crop, because much of its substance consists of phosphoric acid, and Mr. Barral admits that the quantity of this substance carried off by one crop of wheat could not be replaced by the atmosphere in less than twenty years.

Of late years, the discoveries that have been made in regard to ammonia and the apparent power of plants to take up free nitrogen, have modified considerably

our views on the subject of the Chemistry of Plants, more especially with regard to the sources of plant food. The above researches have also an important bearing in this respect, and if borne out by further investigation will lead us to attach still more importance to the atmosphere as a source of plant food.

In connection with this subject it may be mentioned that there is a singular want of direct and satisfactory experiments as to the real value, as a manurial application to the soil, of the mineral phosphate of lime, Apatite. Judging from the number of Canadian specimens that have been lately brought to the Laboratory of Queen's College for examination and analysis, an abundant supply of this material might be exported from Canada for agricultural purposes. The attention of English agriculturists is therefore invited to the subject.

Sea-Weed as a Manure.—The attention of the English farmer has been recently called to the use of sea-weed as a manure. This material is thrown up in enormous quantities on the shores of Britain, and on the east coast of Scotland it is extensively employed to fertilize sand dunes that would otherwise be worthless. In dry sandy soils it acts in two ways; first, by directly contributing food materials to the crop, and, secondly, by the hygroscopic action of the mucilaginous tissues in maintaining a certain degree of humidity in the arid soil, a result that is no doubt aided by the presence of the sea-salt accompanying the weed. The richness of the ash of the common sea-weed in potash, soda, phosphates, and other materials of plant growth, shows that it has a high manurial value. In Greenland specimens, the ash has been found to contain ten per cent of phosphates. The proportion of water in the recent weed is so large, however, that sea-weed cannot be profitably carried to great distances, but along the shores of the lower St. Lawrence and in the other maritime provinces, where it can be readily obtained at certain seasons, its value can scarcely be over-rated. The processes that have been suggested for converting the sea-weed into a paste for transport, mixing with peat ashes, &c., do not seem likely to lead to any useful result, so far as the British American provinces are concerned.

Steeps for Seeds.—Of the many "steeps" that have been recommended to facilitate the germination of seeds, the most intelligible is that of caustic potash, or carbonate of potash, applied by M. Andre Seroy to seeds naturally protected by fatty or oily pulp. He reports that the seeds of Hollies, Magnolias, Yews, and the like, which often lie dormant in the ground for a couple of years, come up readily after treatment with potash and subsequent rubbing with sand.

Blanching of Flowers.—It is well known that light is as necessary to plants as a due supply of heat and moisture. The effects of its absence are often singular. We know that plants grown in darkness do not exhibit their usual healthy green color, light being required for the development of chlorophyll. Advantage is taken of this circumstance in the blanching of salads and vegetables, and the same

process is now being applied to flowers. It appears that in Paris there is a great demand for white lilacs for ladies' bouquets in winter, and as the common white lilac does not force well, the purple "Lilas de Morly" is used. The flowers of this variety, when made to expand at a high temperature, in total darkness, are of a pure white; those of the Persian lilac will not whiten.

PAPER MATERIALS.—The cry for "more rags" which the paper-makers raised some years ago, necessarily failed to increase the supply of rags, but it served to bring materials to the paper-mill that had not been previously thought of. Hollyhock stems and straw and heather, and a hundred other substances, were tried and found suitable in various degrees. Many of these, while capable of being converted into paper, could not be profitably used in the manufacture; but several have taken their place as really important sources of paper fibre. Plants that require to be cultivated exclusively for this purpose are not likely to yield satisfactory results, and of late years, therefore, attention has been especially directed to the waste products of agriculture. In all agricultural plants woody fibre is produced to a greater or less extent, and that of the straw of cereal grains has been used for a number of years to a considerable extent. The leaves and husks of Indian Corn (*Zea Mays, L.*) are also coming into extensive use, as appears from interesting details published by Professor Lindley in the Gardeners' Chronicle. Dr. Lindley's account of the manufacture appears to be founded upon statements that have appeared in the *Breslauer Gewerbeblatt* and the Daily Telegraph, a London paper. The following extracts will be of interest on this side of the Atlantic, where Indian Corn is produced in such enormous quantities:—"Recent experiments have proved Indian Corn to possess not only all the qualities necessary to make a good article, but to be in many respects superior to rags. The discovery to which we allude is a complete success, and may be expected to exercise the greatest influence upon the price of paper. Indian Corn, in countries of a certain degree of temperature, can be easily cultivated to a degree more than sufficient to satisfy the utmost demands of the paper market. Besides, as rags are likely to fall in price, owing to the extensive supply resulting from this new element, the world of writers and readers would seem to have a brighter future before it than the boldest fancy would have imagined a short time ago. This is not the first time that paper has been manufactured from the blade of Indian Corn; but, strange to say, the art was lost, and required to be discovered anew. As early as the seventeenth century, an Indian Corn paper manufactory was in full operation in the town of Rievi, in Italy, and enjoyed a world-wide reputation at the time; but with the death of its proprietor the secret seemed to have lapsed into oblivion. Attempts subsequently made to continue the manufacture were baffled by the difficulty of removing the flint and resinous and glutinous matter contained in the blade. The recovery of the process has at last been effected, and is due to the cleverness of one Herr Moritz Diamant, a Jewish writing-master

in Austria, and a trial of his method on a grand scale, which was made at the Imperial manufactory at Schlogelmuhle, near Glognitz (Lower Austria), has completely demonstrated the certainty of the invention. Although the machinery, arranged as it was for the manufacture of rag-paper, could not of course fully answer the requirements of Herr Diamant, the results of the essay were wonderfully favorable. The article produced was of a purity of texture and whiteness of color that left nothing to be desired; and this is all the more valuable from the difficulty usually experienced in the removal of impurities from rags. The proprietor of the invention is Count Carl Octavio Zu Lippe Weissenfeld, and several experiments give the following results:—

"1. It is not only possible to produce every variety of paper from the blades of Indian Corn, but the product is equal, and in some respects even superior, to the article manufactured from rags.

"2. The paper requires but very little size to render it fit for writing purposes, as the pulp naturally contains a large proportion of that necessary ingredient, which can at the same time be easily eliminated if desirable.

"3. The bleaching is effected by an extraordinarily rapid and facile process, and, indeed, for the common light colored packing paper the process becomes entirely unnecessary.

"4. The Indian Corn paper possesses greater strength and tenacity than rag paper, without the drawback of brittleness so conspicuous in the common straw products.

"5. No machinery being required in the manufacture of this paper for the purpose of tearing up the raw material and reducing it to pulp, the expense, both in point of power and time, is far less than is necessary for the production of rag paper.

"Count Lippe having put himself in communication with the Austrian Government, an imperial manufactory for Indian Corn paper (*maishalm papier*, as the inventor calls it) is now in course of construction at Pesth, the capital of the greatest Indian Corn growing country in Europe. Another manufactory is already in full operation in Switzerland; and preparations are being made on the coast of the Mediterranean for the production and exportation on a large scale of the pulp of this new material."

New Upright Tomato.—A tomato has been introduced by Messrs. Vilmorin, & Co., of Paris, which is described as growing quite upright and requiring no artificial support. It branches less than the common sorts, does not bear so freely, but its fruit is larger and more regularly formed. Seeds of this variety have been received from Messrs. Vilmorin, for distribution among the Members of the Botanical Society of Canada.

Vilmorin's Double Zinnias.—A new race of Purple Zinnias, quite double, have been introduced by Messrs. Vilmorin, the seeds of which had been received from

India. These Zinnias form perhaps the most valuable addition that has been made to our flower garden plants during the year. A sufficient supply of seeds has been obtained for the Members.

Tea Culture.—Tea culture, long confined to China and Japan, is now being extended over the globe. A valuable report on this subject has been presented by Prof. Cleghorn, of the India Service, to the Botanical Society of Edinburgh. The following are notes made during his tours, upon the tea plants seen in the different districts of the Presidency of Madras:—1. Shevaroy Hills (4000 feet); several well grown trees at Yercand, introduced by G. Fischer, which have not been picked or pruned, and have been left to nature, but are growing vigorously. 2. Coorg (4500 feet, rain-fall 120 inches, mean temp. 68°). A case of plants was brought from China by Colonel Dyce in 1843; those at Mercara appear to be over luxuriant, producing a rapid growth of leaves, and not bearing seed with regularity. 3. Nundidroog (4800 feet). A number of plants have lately been sent to this Hill Sanatarium; they were beginning to droop in the Lal Bagh Garden, Bangalore, but there is hope of their thriving in their new location. The mean temp. of Bangalore is 75°, and the average rain-fall 35 inches. The climate being too dry and too hot, the plants necessarily become dwarfed. 4. Bababooden Hills (5600 feet, rain-fall and mean temp. not known). Four plants from General Dyce's stock were received from Mercara in 1847; these grew well without care. Colonel Porter, superintendent of Nuggur, raised 23 plants above Ghat, near the Sicar bungalow, and a number of seedlings have been planted out about a thousand feet lower by Mr. Denton, coffee planter. 5. Nilgiri Hills—*a. Coonoor* (6000 feet, rain-fall 55 inches). *b. Ootacamund* (7300 feet, rain-fall 60 inches, mean temperature 50°), introduced or raised by Mr. McIvor, Government Gardens, from Saharunpore seed, and by General F. C. Cotton, at Woodcote; *c. Kaity*—Introduced or raised by Sir S. Lushington and Lord Elphinstone; *d. Kulhutty*—Introduced or raised by Mr. Rae. 6. Pulni Hills (7100 feet). Major Hamilton reported that a considerable number of tea plants at Kudaikarnal, were several inches above ground, and appeared fresh and healthy. 7. Curtallum (1200 feet). Flowering specimens from the old spice gardens, correspond with the standard figures of *Thea Chinensis.* The shrubs are 20 years old, 12 to 15 feet high; where the seed came from is not known. 8. Travancore.—Tea trees grow luxuriantly in Messrs. Binney & Co.'s plantations (formerly Mr. Huxham's) 40 miles east of Quilon, on the road to Curtallam, and from whence some plants were procured ten or twelve years ago, which were planted at Vellymallay, near Udagiri (1800 feet, rain-fall 80 inches), and at Atkaboo, near Tinnevelly frontier (3200 feet, rain-fall 40 inches). At both places they are growing luxuriantly. These facts are taken from General Cullen's letter, and seeds received from him were planted and throve on the Nilgiris, at an elevation of 550 feet. In tea, as in all cultivated plants, there are variations, the dis-

crimination of which is of the utmost importance commercially, and also in an economical point of view. This much is known, that the seed having been obtained from different parts of China, the introduced plant varies in stature exceedingly, from a bushy shrub of 3½ feet to a ramous tree 25 feet high. There is also a vast difference between the narrow-leaved forms and broad-leaved specimens in some of the localities mentioned. At present the leaves are taken indifferently from several sorts, which should not be done when preparing tea for commercial purposes; and the means of manufacture are of the rudest description.

The tea shrub of commerce, though long confined to Eastern Asia, is now cultivated far beyond the limits of China and Japan—in Java (under the Equator), in Assam, the Northwest Provinces of Hindostan, on the banks of the Rio Janeiro, and recently in North America. From the published reports of Mr. Fortune and Dr. Jameson it appears to prefer a climate probably of 67 ° to 73 ° mean temperature. Such is nearly the mean temperature of the hillslopes near Kunur, Kotagiri, and of many of the valleys in the eastern and northern slopes of the Pulni and Nilgiri Hills, and also of the Bababooden range in Mysore, and of Kudra Muka in South Canara. It ought to be observed, as illustrative of the hardiness of the tea shrub, that the cultivation extends over a great breadth of latitude (from the banks of the Rio Janeiro, 22½ ° south latitude, to the province of Shanting in China, 36½ ° north latitude), and that, as we recede from the equator, the lower latitude compensates for the difference of altitude. The Chinese cultivate on the lower slopes of the hills, whilst in the Northwest Provinces the culture is carried on between 2000 and 6000 feet. This valuable plant has been found wild in Upper Assam and Cachar, whilst its congeners abound on the Nilgiri and other mountain ranges of southern India. Its cultivation, therefore, might be attempted with good prospect of success in some of the localities above mentioned. In the plantation near Kunur we have the opinion of four competent judges that the experiment had entirely succeeded as regards the growth of the plants. It now only remains to prove the merchantable character of the leaf, and this, I hope, will soon be tested. So far as Dr. Cleghorn could judge, the aid of a few practised manipulators is all that is required to conduct the manufacturing processes. This has been lately sanctioned by Government, and there will thus be opened up a new sphere for British energy and capital. The field is a wide one, and when occupied by private enterprise, it is not necessary that Government should give assistance further. A grant of land for tea cultivation has lately been made to Mr. Rae, near Utakamund. One remarkable advantage of tea cultivation is that it may be carried on, in a fine climate, above the range of jungle fever, which proves so injurious to many settlers in India.*

*The Botanical Society is desirous of obtaining particulars respecting American Tea culture.

EFFECTS OF NARCOTIC AND IRRITANT GASES ON PLANTS.—Mr. John S. Livingston has conducted a series of valuable experiments in the Royal Botanic Garden, Edinburgh, which lead to the conclusion that gases divide themselves into two classes as regards their action on plants—viz: into narcotic and irritant gases. This distinction, to whatever cause traceable, is as real in the case of plants as in that of animals. When subjected to the influence of a narcotic gas, the color, it was observed, never became altered, and the plants looked as green and succulent at the end of the experiment as at the beginning. Whenever the plant began to droop, though removed to a forcing bed, and watered, in no instance did it recover, but died down even more speedily than it would have done if left to the continued action of the gas. In one word, narcotic gases destroy the life of the plant. With irritant gases, on the other hand, action is more of a local character. The tips of the leaves first begin to be altered in colour, and the discoloration rapidly spreads over the whole leaf, and, if continued long enough, over the whole extent of the plant. But if removed before the stem has been attacked by the gas, the plants always recover—with, however, the loss of their leaves. In a short time they put out a new crop, and seem in no way permanently injured; but of course, if repeatedly subjected to an atmosphere of irritant gas, the plant is destroyed.

LIST OF PLANTS COLLECTED ON THE SOUTH AND EAST SHORES OF LAKE SUPERIOR, AND ON THE NORTH SHORE OF LAKE HURON, IN 1860.

BY ROBERT BELL, ATTACHED TO THE GEOLOGICAL SURVEY OF CANADA, CORRESPONDING MEMBER OF THE BOTANICAL SOCIETY.

THE SPECIES DETERMINED BY B. BILLINGS, JR., F. B. S. C.

RANUNCULACEÆ.

Anemone Pennsylvanica, L. Ke-we-naw Point. July 4th. Stoney bed of a brook. Schibwah River. August 6th. Bed of the river. In flower at both localities.

Anemone nemorosa, L. Opposite Gros Cap. June 15th, in flower.

Thalictrum Cornuti, L. Ke-we-naw Point. July 4th, in flower.

Ranunculus aquatilis, L., var. divaricatus. LaCloche Island. October 3rd. In shoal water, no flower.

Ranunculus repens, L. Ke-we-naw Point. July 4th.

Caltha palustris, L. Opposite Gros Cap. June 15th, in flower.

Coptis trifolia, Salisb. Opposite Gros Cap. June 15th, in flower.

Actæa spicata, L., var. rubra, Michx. Opposite Gros Cap. June 15th, in flower.

Actæa spicata, var. alba, Michx. Grand Island. June 22nd.

NYMPHÆCAEÆ.

Nymphœa odorata, Aiton. Goulais River and Sou-sou-wa-ga-mi Creek. July 25th, in flower.

Nuphar advena, Aiton. Sou-sou-wa-ga-mi Creek. June 29th, in flower, in still water.

FUMARIACEÆ.

Corydalis glauca, Pursh. Island east of Thessalon River. Sept. 21st and 22nd, in flower and fruit. Black mould on rocks.

CRUCIFERÆ.

Nasturtium palustre, DC. Goulais Point, in the dry bed of a pond. July 28th, in fruit and flower.

Cardamine hirsuta, L. Goulais Point, in the dry bed of a pond. July 28th, in flower.

Arabis patens. Sullv. Marquette. June 28th, in flower, near houses.

Lepidium Virginicum, L. Mississangi River. Sand on River Bank. Sept. 24th, in fruit and flower.

VIOLACEÆ.

Viola Canadensis, L. Grand Island. June 22nd, in flower.

HYPERICACEÆ.

Hypericum ellipticum, Hooker. Goulais Point, July 28th, and Sault Ste. Marie, July 20th, in flower.

Hypericum mutilum, L. Sault Ste. Marie. July 20th, in flower.

Hypericum Canadense, L. Mouth of Mississangi River. Sept. 22nd, in fruit.

CARYOPHYLLACEÆ.

Stellaria longifolia, Muhl. Sault Ste. Marie. Sept. 20, in flower.

OXALIDACEÆ.

Oxalis Acetosella, L. Opposite Grand Island. June 23rd, in fruit and flower.

GERANIACEÆ.

Geranium Carolinianum, L. Marquette. June 28th, in fruit.

Geranium Robertianum, L. Head of Goulais Bay, at the base of a cliff of quartz. Aug. 23rd, in fruit.

BALSAMINACEÆ.

Impatiens fulva, Nutt. Amagos Creek. Low wet sand. August 1st, in flower.

CELASTRACEÆ.

Celastrus scandens, L. Namainse. Aug. 14th. Climbing among rocks. Fruit ripe.

SAPINDACEÆ (ACERACEÆ).

Acer Pennsylvanicum, L. Island east of Mississangi River.

Acer spicatum, Lam. Two Heart River. June 29th, in flower.

Acer rubrum, L. Two Heart River. June 29th, in fruit. Portlock Harbor, Sept. 15th.

POLYGALACEÆ.

Polygala paucifolia, Willd. Near White Fish Point, growing in sand among Red Pines. June 17th, in flower.

LEGUMINOSÆ.

Astragalus Cooperi, Gray. East side of LaCloche Island, in reddish loom. Oct. 3rd. Fruit ripe.

Lathyrus maritimus, Bigelow. Very abundant in sand on both sides of Lake Superior, and the North side of Lake Huron.

Lathyrus palustris, L. Hilton Village, St. Joseph's Island. Sept. 12th.

Lathyrus palustris, L. var. myrtifolius. Grand Island. June 24th, in flower.

ROSACEÆ.

Prunus Americana, Marshall. Opposite Gros Cap. June 15th, in flower.

Prunus pumila, L. Amago's Creek. August 4th, in fruit.

Prunus Virginiana, L. Gros Cap. July 15th, in flower. July 25th, in fruit.

Spiræa salicifolia, L. Sault Ste. Marie. July 20th, in flower.

Geum strictum, Aiton. Opposite Grand Island. June 20th, in flower.

Geum rivale, L. Sault Ste. Marie. July 20th, in fruit.

Potentilla Norvegica, L. Near L'Anse. July 4th, in flower.

Potentilla fruticosa, L. Namainse. Open stoney ground. August 15th, in flower.

Potentilla tridentata, Aiton. Marquette. June 28th, in flower.

Potentilla palustris, Scop. West of Grand Island. June 25th. In a Marsh, Sou-sou-wa-ga-mi Creek. June 29th, in flower.

Rubus odoratus, L. Goulais Bay. July 27th, in flower.

Rubus villosus, Aiton. Grand Island. June 22nd, in flower.

Rubus Canadensis, L. Schib-wah River, gravelly bank. August 6th, no flower.

Rosa lucida, Ehrhart. Grand Island. June 23rd, in flower.

Cratægus coccinea, L. ? Pancake River. August 15th.

Pyrus arbutifolia, L. Opposite Gros Cap. June 15th, in flower.

ONAGRACEÆ.

Epilobium angustifolium, L. Sou-sou-wa-ga-mi Creek, burnt ground. June 15th, in flower.

Epilobium coloratum, Muhl. East end of Batch-ah-wah-nah Bay, on low land. August 2nd and 12th, in flower.

Œnothera biennis, L. L'Anse, sandy shore. July 5th, in flower.

Œnothera pumila, L. Shib-wah River. Shore. August 6th, in flower.

Circœa alpina, L. Gros Cap. June 25th, in fruit and flower.

GROSSULACEÆ.

Ribes lacustre, Poir. Gros Cap. June 25th, fruit ripe.

Ribes prostratum, L'Her. Grand Island. June 23rd, fruit ripe.

SAXIFRAGACEÆ.

Saxifraga Virginiensis, Michx. Mouth of Mississaugi River, bank of river. September 22nd.

Mitella diphylla, L. Ke-we-naw Point. July 4th, in fruit. Also at Gros Cap.

Chrysosplenium Americanum, Schwein. Sou-sou-wa-ga-mi Creek. June 22nd.

UMBELLIFERÆ.

Sanicula Marylandica, L. Grand Island. June 22nd, in flower. Gros Cap, July 25th, in fruit.

Sium lineare, Michx. Sault Ste. Marie. July 20th, in flower.

Osmorrhiza brevistylis, DC. Grand Marais. June 21st, in flower.

Conium maculatum, L. Grand Island, in a clearing. June 24th, in flower.

ARALIACEÆ.

Aralia racemosa, L. Opposite Grand Island. June 23rd, on good land.

CORNACEÆ.

Cornus Canadensis, L. Opposite Gros Cap, very common. July 15th, in flower.

Cornus stolonifera, Michx. Bank of a Creek, Grand Marais. June 21st, in flower.

CAPRIFOLIACEÆ.

Symphoricarpus racemosus, Michx. East side LaCloche Island. October 3rd, in fruit.

Lonicera parviflora, Lam. Point aux Pins. June 23rd, sand.

Lonicera hirsuta, Eaton. Pancake River. August 15th, sand.

Lonicera ciliata, Muhl. Opposite Gros Cap. June 15th, in fruit.

Diervilla trifida, Mœnch. Sault Ste. Marie. July 5th and 20th, in flower.

Sambucus pubens, Michx. Opposite Grand Island. June 23rd, in fruit. Fruit ripe at Limestone Mountain, Ke-we-naw Point, July 3rd.

Viburnum nudum, L. Ten miles west of Iriquois Point. July 16th, in flower.

Viburnum Opulus, L. Sault Ste. Marie. July 19th, in flower. Gros Cap, July 23rd, in flower.

RUBIACEÆ.

Galium trifidum, L. Sault Ste. Marie. July 19th, in fruit.

Galium triflorum, Michx. Grand Island. June 22nd, in flower; also, at Sigamouk, near LaCloche, Sept. 27th.

Michella repens, L. Opposite Grand Island. June 23rd, good land.

COMPOSITÆ.

Liatris cylindrica, Michx. East side LaCloche Island. Rocky Prairie land. Oct. 3rd, in fruit.

Eupatorium perfoliatum, L. Island east of Mississaugi River. September 25th, in flower.

Aster macrophyllus, L. Mouth of Thessalon River. Sept. 20th, in flower.

Aster Tradescantii, L.? Mouth of Mississaugi River. Sept. 22nd, in flower.

Aster oblongifolius, Nuttall. LaCloche Island. October 2nd, in flower.
Erigeron Philadelphicum, L. Goulais River. July 26th, in flower.
Erigeron strigosum, Muhl. Sault Ste. Marie. July 20th, in flower.
Solidago Virgaurea, L., var. humilis. Gros Cap, on trap rocks. July 25th, in flower.
Solidago altissima, L. Island East of Mississaugi River, low and sandy. Sept. 22nd, in flower.
Solidago Canadensis, L. Barren stony land, East side of Goulais Bay. July 25th, in flower. East side Mississaugi River, Sept. 22nd, in flower.
Solidago lanceolata, L. Amago's Creek, August 1st, and Schib-wah River, August 6th, in flower.
Helianthus decapetalus, L. Mouth of Mississaugi. Sept. 24th, in flower.
Achillea Millefolium, L. Grand Island. June 23rd. Marquette, June 28th, in flower.
Tanacetum Huronense, Nutt. Ten miles West of Iriquois Point, sandy soil. July 16th, in flower.
Artemisia Canadensis, Michx.? Schib-wah River. August 6th, in fruit.
Antennaria margaritacea, R. Brown. Batch-ah-wah-nah Bay. July 28th, in flower.
Senecio aureus, L. Sault Ste. Marie. July 19th, in flower. Gros Cap. July 25th, in flower.
Arnica mollis, Hooker. Gros Cap. July 25th, in flower.
Circium muticum, Michx. Amago's Creek. August 1st, fruit ripe.
Cynthia Virginica, Don. Near L'Anse, in clearings. July 4th, in flower.
Hieracium Canadense, Michx. Schib-wah River. August 4th, in flower.
Nabalus albus, Hooker. Mouth of Thessalon River, sand. Sept. 20th, in flower.
Lactuca elongata, Muhl. Sault Ste. Marie. July 20th, in flower.

LOBELIACEÆ.

Lobelia inflata, L. Mouth of Mississaugi. Sept. 24th, in flower.
Lobelia Kalmii, L. LaCloche Island, shore of flat limestone rock. October 1st, in flower; also, at the Palledeau Islands.

CAMPANULACEÆ.

Campanula rotundifolia, L. L'Anse, amongst grass on a sandy shore. July 5th, in flower.

ERICACEÆ.

Gaylussacia resinosa, Torr and Gr. Sou-sou-wa-ga-mi Creek, sandy soil. June 29th, in flower.
Vaccinium macrocarpon, Aiton. L'Anse, low sandy flat. July 5th.
Vaccinium Pennsylvanicum, Lam. Two miles west of Two Heart River. June 19th, in fruit.

Chiogenes hispidula, Torr and Gr. Ten miles west of Iriquois Point, on sandy soil. July 16th.

Epigœa repens, L. Ten miles west Iriquois Point. July 16th.

Cassandra calyculata, Don. Sou-sou-wa-ga-mi Creek, in a marsh. June 29th, in fruit.

Cassiope hypnoides, Don. South side LaCloche Island. Dry silt on limestone rocks. October 6th.

Kalmia glauca, Ait. East side LaCloche Island. Oct. 1st, in fruit. Opposite Gros Cap, June 15th, in flower.

Ledum latifolium, Ait. Opposite Gros Cap. June 15th, in flower.

Loiseleuria procumbens, Desv. Two Heart River. June 19th.

Pyrola rotundifolia, L. Amagos Creek. August 1st, in flower.

Pyrola minor, L. Opposite Grand Island, on good land; commencing to flower. June 23rd.

Moneses uniflora, L. Ke-we-naw Point. Fine sandy soil on the banks of a creek. July 4th, in flower.

Chimaphila umbellata, Nutt. Sou-sou-wa-ga-mi Creek. July 9th, in flower.

Monotropa Hypopitys, L. Between Huron and Sou-sou-wa-ga-mi Creeks, in moss among Balsams, Spruces, &c. July 7th, in flower.

AQUIFOLIACEÆ.

Nemopanthes Canadensis, DC. Opposite Gros Cap, sandy soil. June 15th, in flower. Ten miles west of Iriquois Point, July 16th, in fruit.

PLANTAGINACEÆ.

Plantago major, L. Mouth of Mississaugi River. Sept. 22nd, in fruit.

PRIMULACEÆ.

Trientalis Americana, Pursh. Opposite Gros Cap, very common. June 15th, in flower.

Lysimachia stricta, Ait. Sault Ste. Marie. Moist ground on road sides. July 19th, in flower.

LENTIBULACEÆ.

Utricularia vulgaris, L. Sou-sou-wa-ga-mi Creek, in still warm water. June 19th, without flowers or fruit.

Utricularia cornuta, Michx. Pancake River, in mud on the edge of a marshy bay. August 15th, in flower.

SCROPHULARIACEÆ.

Chelone glabra, L. Shib-wah River, growing at the edge of water. August 6th, in flower.

Melampyrum Americanum, Michx. L'Anse. July 5th. Ten miles west of Iriquois Point, July 16th, not in flower.

VERBENACEÆ.

Verbena hastata, L. Little Current, Manitoulin Island. Sept. 29th, in fruit.

LABIATÆ.

Mentha Canadensis, L. Sault Ste. Marie. July 20th, in flower.

Lycopus Europæus, L. Shib-wah River. August 4th, in flower.

Calamintha glabella, Benth., var. Nuttallii. West side of LaCloche Island. Shore of flat limestone. October 1st, in flower and fruit. East side of same Island, October 3rd, in flower and fruit.

Calamintha Clinopodium, Benth. Sault Ste. Marie. July 20th, in flower.

Nepeta Cataria, L. Little Current, Manitoulin Island. Sept. 29th, in flower.

Prunella vulgaris, L. Sault Ste. Marie. July 20th, in flower.

Scutellaria galericulata, L. Ke-we-naw Point, in a little swamp. July 4th, in flower.

Scutellaria parvula, Michx. Islands east of Mississaugi River. Sept. 5th, in fruit.

Galeopsis Tetrahit, L. Sault Ste. Marie, July 20th, in flower. L'Anse, July 4th, in flower.

GENTIANACEÆ.

Halenia deflexa, Griseb. Sault Ste. Marie. July 20th, in flower.

Gentiana crinita, Willd. Palledeau Islands. Sept. 19th, in flower.

Menyanthes trifoliata, L. Opposite Gros Cap. June 15th, in flower.

APOCYNACEÆ.

Apocynum cannabinum, L. L'Anse, sandy shore. July 5th.

ARISTOLOCHIACEÆ.

Asarum Canadense, L. Ke-we-naw Point. Low, fertile, sandy soil. July 4th, in flower.

CHENOPODIACEÆ.

Blitum capitatum, L. Little Current. Sept. 29th, in flower.

POLYGONACEÆ.

Polygonum Persicaria, L. Mouth of Mississaugi. Sept. 22nd, in fruit.

Polygonum aviculare, L. Mouth of Mississaugi River. Sept. 22nd, in flower.

Polygonum ramosissimum, Michx. Mouth of Mississaugi River. Growing in cracks in rocks. Sept. 22nd, in fruit.

Polygonum sagittatum, L. Sault Ste. Marie. Moist ground on road sides. July 19th, in flower.

Polygonum cilinode, Michx. Head of Goulais Bay, climbing a cliff, May 23rd. Near L'Anse, July 4th, in flower.

Rumex obtusifolius, L. Sault Ste. Marie. July 20th, in flower.

Rumex Acetosella, L. Mississaugi River. Sept. 22nd, in flower.

ELÆAGNACEÆ.

Shepherdia Canadensis, Nutt. East side LaCloche Island. Oct. 3rd.

SANTALACEÆ.

Comandra umbellata, Nutt. Near Two Heart River. June 29th, in flower.

URTICACEÆ.

Urtica gracilis, Ait. Sault Ste. Marie. July 2nd, in flower.

Laportea Canadensis, Gaudich. Ke-we-naw Point. July 4th, in flower.

CUPULIFERÆ.

Quercus rubra, L. Batch-ah-wah-nah River. Manitoulin Island and Portlock Harbour.

Corylus rostrata, Ait. Sou-sou-wa-ga-mi Creek. July 9th, in fruit.

MYRICACEÆ.

Myrica Gale, L. Sou-sou-wa-ga-mi Creek. June 29th, in fruit.

Comptonia asplenifolia, Ait. LaCloche Trading Post. Sept. 29th.

SALICACEÆ.

Salix discolor, Muhl. L'Anse. July 5th, in fruit.

Salix sericea, Marshall. L'Anse. July 5th, in fruit.

Salix petiolaris, Smith. Sault Ste. Marie. July 20th.

Salix angustata, Pursh. L'Anse. July 5th, in fruit.

Salix rostrata, Richardson. Gros Cap. June 15th, in flower.

CONIFERÆ.

Juniperus Virginiana, L. Namainse, gravelly and rocky shore, August 15th. South side LaCloche Island, October 2nd.

ARACEÆ.

Arisæma triphyllum, Torr. Opposite Grand Island. June 23rd, in flower.

Calla palustris, L. Opposite Gros Cap. June 15th, in flower.

NAIADACEÆ.

Potamogeton prælongus, Wulf. Goulais River. July 25th, in fruit.

Potamogeton lucens, L., var fluitans. Goulais River. July 25th, in fruit.

Potamogeton natans, L. Sou-sou-wa-ga-mi Creek, in still water. June 29th, in fruit.

ALISMACEÆ.

Sagittaria variabilis, Engelm. Sault Ste. Marie. July 20th, in flower.

ORCHIDACEÆ.

Gymnadenia tridentata, Lindl. Opposite Grand Island. June 23rd, in flower.

Platanthera orbiculata, Lindl. Opposite Grand Island. June 23rd, in flower.

Platanthera Hookeri, Lindl. Two Heart River. June 19th, in flower.

Platanthera bracteata, Torr. Grand Marais. June 21st, in flower.

Platanthera psycodes, Gray. Sault Ste. Marie. Wet pasture field. June 20th, in flower.

Goodyeria pubescens, R. Brown. Opposite Grand Island. Good soil. June 23rd, in flower.

Listera convallarioides, Hooker. Opposite Grand Island. June 23rd, in flower.
Arethusa bulbosa, L. Marsh near L'Anse. June 30th, in flower.
Corallorhiza innata, R. Brown. Opposite Grand Island. June 23rd, in fruit.
Cypripedium pubescens, Willd. East side LaCloche Island. October 3rd, in fruit.
Cypripedium acaule, Aiton. Opposite Gros Cap. June 15th, in flower.

IRIDACEÆ.

Iris versicolor, L. Amago's Creek. August 1st, in flower.

SMILACEÆ.

Trillium cernuum, L. Grand Marais. June 21st, in flower.
Medeola Virginica, L. St. Joseph's Island. Opposite Campment D'Ours. Sept. 10th, in flower.

LILIACEÆ.

Smilacina racemosa, Desf. Opposite Grand Island. June 23rd, in flower.
Smilacina trifolia, Desf. Opposite Gros Cap. June 15th, in flower.
Smilacina bifolia, Ker. Opposite Gros Cap, very common. June 15th, in flower.
Clintonia borealis, Raf. Opposite Gros Cap. June 15th, in flower.
Allium Canadense, Kalm. Batch-ah-wah-nah River. August 10th. South side of LaCloche Island. October 6th.
Lilium Philadelphicum, L. East side LaCloche Island. October 3rd, in fruit.

MELANTHACEÆ.

Uvularia grandiflora, Smith. Ke-we-naw Point. July 4th, in fruit.
Streptopus amplexifolius, DC. Grand Marais, good soil. June 21st, in flower.
Streptopus roseus, Michx. Opposite Gros Cap. June 15th, in flower.

JUNCACEÆ.

Juncus effusus, L. Opposite Gros Cap. June 23rd, commencing to flower. L'Anse, July 4th, in flower. Mississaugi River, Sept. 22nd, in fruit.
Juncus nodosus, L. LaCloche Island. October, in fruit.
Juncus stygius, L. Bruce Mines. Sept. 20th, in flower.

ERIOCAULONACEÆ.

Eriocaulon septangulare, Withering. Mouth of Pancake River, growing in mud at the margin of a marshy cove. August 15th, in flower.

CYPERACEÆ.

Dulichium spathaceum, Pers. Sou-sou-wa-ga-mi Creek. June 29th, before flowering.
Eleocharis palustris, R. Brown. L'Anse. July 5th, in flower. Batch-ah-wah-nah Bay, in water. August 4th, in fruit.
Scirpus pungens, Vahl. Upper end of Goulais Bay. July 27th, commencing to flower.
Scirpus lacustris, L. Near Schib-wah River. August 8th, in flower. This is the rush from which the Indians make their mats.

Scirpus sylvaticus, L. Sault Ste. Marie. July 20th, in fruit.
Scirpus Eriophorum, Michx. Sault Ste. Marie. July 21st, in flower.
Eriophorum gracile, Koch. West of Grand Island in a marsh. June 25th, in fruit.
Carex canescens, L., var. vitilis. Ke-we-naw Point. July 4th, in fruit.
" *stellulata*, Good. Opposite Gros Cap. June 15th, in fruit.
" *lagapodioides*, Schk. Ke-we-naw Point. July 4th, in flower.
" *stricta*, Lam. West of Grand Island, marsh. June 25th, fruit ripe.
" *aquatilis*, Wahl. Island east of Mississaugi River. Sept. 25th, fruit ripe.
" *plantaginea*, Lam. Grand Island. June 22nd, fruit ripe.
" *debilis*, Michx. Opposite Gros Cap. June 15th, in fruit. Ke-we-naw Point, July 4th, in fruit.
" *retrorsa*, Schw.? Grand Marais. June 21st, in flower.
" *intumescens*, Rudge. Grand Marais. June 21st, in flower.

GRAMINEÆ.

Zizania aquatica, L. (Wild Rice). Marsh at the mouth of Mississaugi River. Sept. 21st, in fruit.
Sporobolus heterolepis, Gray. East side LaCloche Island, barren prairie. October 3rd, fruit ripe.
Agrostis scabra, Willd. Namainse. Growing on a road. August 15th, fruit ripe.
Agrostis alba, L. Ke-we-naw Point. July 4th, in flower.
Cinna arundinacea, L. var. pendula. Marquette. June 28th, in flower.
Muhlenbergia glomerata, Trim. Gneiss. Point between Shib-wah and Batch-ah-wah-nah Rivers. August 9th, in flower.
Brachyelytrum aristatum, Beauv. Ke-we-naw Point. July 4th, in flower.
Calamagrostis Canadensis, Beauv. Sault Ste. Marie, July 20th. Ke-we-naw Point, July 4th, in flower. Mississaugi River. September 25th, in fruit.
Glyceria Canadensis, Trin. Ke-we-naw Point, coming into flower. July 4th. Sault Ste. Marie, July 20th, in flower.
Glyceria nervata, Trin? Ke-we-naw Point. July 4th, in fruit.
Glyceria aquatica, Trin. Sault Ste. Marie. July 20th, in fruit.
Poa pratensis, L. Grand Island. June 22nd, in flower.
Poa compressa, L. LaCloche Island, growing along cracks in flat beds of limestone. October 6th, in fruit.
Festuca ovina? LaCloche Island. October 6th. Barren prairie land.
Bromus Kalmii. Prairie land, east side LaCloche Island. October 3rd, in fruit.
Bromus ciliatus, L. Sault Ste. Marie. July 20th, in flower.
Triticum repens, L. L'Anse, sandy shore. July 5th, in flower.
Hordeum jubatum, L. Sault Ste. Marie, in a clearing, sandy soil. July 20th, in fruit.

Elymus Canadensis, L. Mouth of Thessalon River, September 21st, in fruit. Point Aux Pins, July 23rd, in flower.

Avena striata, Michx. Opposite Grand Island, June 23d. Ke-we-naw Point, July 4th, in flower.

Phalaris arundinacea, L. Sault Ste. Marie. July 19th, in fruit.

Milium effusum, L. Opposite Grand Island. June 23rd, in fruit.

Panicum xanthophysum, Gray. LaCloche Trading Post. September 28th, in fruit.

Andropogon scoparius, Michx. East side LaCloche Island, barren prairie. October 3rd, grains ripe.

EQUISETACEÆ.

Equisetum sylvaticum, L. Wet ground, opposite Gros Cap. June 15th.

Equisetum hyemale, L. Two Heart River. Ke-we-naw Point. July 4th, in fruit.

Equisetum scirpoides, Michx. Opposite Grand Island. June 23rd, in fruit.

FILICES.

Polypodium vulgare, L. North-west from Granite Point. June 28th, in fruit.

Polypodium Phegopteris, L. Opposite Grand Island. June 23rd, in fruit.

Polypodium Dryopteris, L. Opposite Grand Island. June 23rd, in fruit.

Struthiopteris Germanica, Willd. Ke-we-naw Point. July 4th, in fruit.

Pteris aquilina L. Grand Island. June 22nd, in fruit.

Adiantum pedatum, L. Ke-we-naw Point. July 4th, in fruit.

Asplenium Trichomanes, L. Namainse. Dry ground on the top of a mountain. July 4th, in fruit.

Asplenium Filix femina, R. Brown. Schibwah River. August 4th, in fruit.

Woodsia Ilvensis, R. Brown. North-west from Granite Point. June 28th, in fruit.

Aspidium spinulosum, Swartz. Goulais River, July 26th. Opposite Grand Island, June 23rd. Ke-we-naw Point, July 4th, with sori.

Onoclea sensibilis, L. Amago's Creek. August 1st.

Osmunda regalis, L. Opposite Gros Cap, June 15th. Sou-sou-wa-ga-mi Creek, June 29th. Schib-wah River, August 4th, in fruit.

Osmunda Claytoniana, L. Ke-we-naw Point, wet soil. July 4th, in fruit.

Osmunda cinnamomea, L. Opposite Gros Cap, June 15th. Two Heart River, July 19th, in fruit.

Botrychium Virginicum, Swartz. Opposite Grand Island. June 23rd, in fruit.

LYCOPODIACEÆ.

Lycopodium clavatum, L. Between Thessalon and Mississaugi Rivers. September 21st, in fruit.

Lycopodium complanatum, L. St. Joseph's Island, opposite Campment D'Ours. September 10th, in fruit.

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MUSCI.

Sphagnum cyclophyllum, Sullv. & Lesqx. Opposite Grand Island. June 23, no fruit.
Sphagnum squarrosum, Pers. Opposite Grand Island. June 23rd, no fruit.
Polytrichum commune, L. Opposite Grand Island. June 23rd, no fruit.
Polytrichum juniperinum, Hedw. Grand Island. June 22nd, in fruit.
Mnium rostratum, Schwægr. Opposite Grand Island. June 23rd, no fruit.
Neckera pennata, Hedw. Goulais River, on dead trees. July 26th, in fruit.
Hypnum triquetrum, L. Goulais River. July 26th, no fruit.
Hypnum splendens, Hedw. Goulais River. Covers the ground in dark shady places. July 20th, no fruit.
Hypnum Crista-Castrensis, L. Goulais River, on dead logs. July 20th, no fruit.

HEPATICÆ.

Fegatella conica, Corda.
Madiotheca platyphylla, Dumort. Trunk of a dead cedar, Goulais River. July 26.

LICHENES.

Cetraria lacunosa, Ach. East side LaCloche Island. October 3rd, in fruit.
Evernia jubata, Fr. North end of Goulais Bay, hanging from small dead spruces. July 26th.
Peltigera opthosa, Hoffm. Goulais River, on dead logs, lying on the ground.
Sticta pulmonaria, Ach. Goulais River, on logs and rocks. July 26th.
Stereocaulon denudatum, Floerk. Between Thessalon and Mississaugi Rivers, on metamorphic rocks. September 21st.
Cladonia rangiferina, Hoff. Between Thessalon and Mississaugi Rivers. Abundant on metamorphic rocks. September 21st.
Umbilicaria Dillenii, Tuckm. ("Tripe de roche"). North end Goulais Bay, growing on perpendicular cliff of quartz, July 27th. Schib-wah River, August 6th, on cliffs of syenite.

SUPPLEMENTARY LIST OF TREES AND SHRUBS FOUND GROWING AROUND LAKES SUPERIOR AND HURON.

Acer saccharinum, Wang. Sugar Maple. Abundant and of large size on good land on both sides of Lake Superior and on the North shore and islands of Lake Huron.
A. spicatum, Lam. Ground Maple. Abundant almost everywhere; is the principal underbrush in the woods.
Fagus ferruginea, Ait. Beech. On good soil only.
Corylus Americana, Walt. Hazel Nut. South side Lake Superior; not common.

Betula excelsa, Ait. Yellow Birch. On both sides of Lake Superior and the North side of Lake Huron. Grows luxuriantly in the fertile valley of the Goulais River, the country between Goulais Bay and the Sault Ste. Marie, and on the Manitoulin Islands.

B. papyracea, Ait. White or Canoe Birch. Everywhere on poor soil.

Alnus incana, Willd. Alder. Bordering streams, around both lakes.

Ulmus racemosa, Thomas. Rock Elm. On the best lands along the South side of Lake Superior and on all the Manitoulin Islands.

U. Americana, L. Swamp Elm. Abundant in the vallies of the rivers entering the East side of Lake Superior and North side of Lake Huron.

Fraxinus Americana, L. White Ash. Small trees met with on Ke-we-naw Point.

F. sambucifolia, Lam. Black Ash. Common on low lands around both lakes.

Quercus rubra, L. Red Oak. Plentiful, but of small size, on the East side of Lake Superior. Grows to a good size on the Manitoulin Islands.

Tilia Americana, L. Basswood. A few trees on the best lands on the South side of Lake Superior.

Pyrus Americana, DC. Mountain Ash. Around both lakes; not abundant. Best flower about the 28th of June.

Prunus Americana, Marsh. Wild Red Plum. Abundant on the Prairies on Bar River (Great Lake George), and on Walker's Creek (opposite St. Joseph's Island), and along the banks of streams entering Portlock Harbour.

P. Pennsylvanica, L. Pigeon Cherry. Extremely abundant on rocky burnt land on the East shore of Lake Superior, and North Shore of Lake Huron.

P. Virginiana, L. Choke Cherry. East side of Lake Superior. Grows in sheltered places, not shaded by larger trees, and bears abundance of fruit.

P. pumila, L. Dwarf Cherry. Abundant, growing on sand and gravel along the beach and banks of rivers on the east side of Lake Superior.

Rhus typhina, L. Sumach. East shore of Lake Superior, and North shore of Lake Huron.

R. Toxicodendron, L. Poison Ivy. Very abundant on the islands and North shore of Lake Huron. Frequently met with on the East shore of Lake Superior.

Populus tremuloides, Michx. Common Poplar. Plentiful on poor soil on the East side of Lake Superior and North side of Lake Huron.

P. Grandidentata, Michx. Large Leaved Poplar. East shore of Lake Superior; not common.

P. balsamifera, L. Balsam Poplar. Around both lakes, fringing rivers and sandy bays.

Ribes Cynosbati, L. Wild Gooseberry. East shore of Lake Superior.

Rubus strigosus, Michx. Red Raspberry. Very abundant on the East shore of Lake Superior and on the islands and North shore of Lake Huron.

Abies Canadensis, Michx. Hemlock Spruce. Scattered through hard-wood bush around both lakes.

A. nigra, Poir. Black Spruce. On poor land amongst the hills around both lakes.

A. alba, Michx. White Spruce. Very abundant around both lakes; attains a large size in the Goulais River country.

A. balsamea, Mar. Canada Balsam. Very abundant around both lakes; grows on both good and bad soil.

Larix Americana, Michx. Tamarack. Around both lakes; of small size and not abundant.

Pinus Strobus, L White Pine. Scarce on the South side of Lake Superior; plentiful around Batch-ah-wah-nah Bay (east side); good trees scattered amongst the hard-wood timber of the fertile and extensive level track through which the Goulais River flows; groves in places on the North shore of Lake Huron.

P. resinosa, Ait. Red Pine. The sandy strip of country bordering the south side of Lake Superior, from Whitefish Point to the Pictured Rocks, is covered principally with groves of red pine. Sandy bays on the east shore of Lake Superior and north shore of Lake Huron, are generally bordered with red pines; they likewise grow abundantly on a red marly soil on the east side of LaCloche Island.

P. Banksiana, Lam. Northern Scrub Pine. Abundant on barren sand dunes along the South shore of Lake Superior and on dry, sandy and rocky situations on the east shore, and also on the north side of Lake Huron.

Thuja occidentalis, L. Common White Cedar. Abundant on low land near rivers and marshes around both lakes.

Juniperus Virginiana, L. Red Cedar, (prostrate variety). On rocky and gravelly situations on east side of Lake Superior and north side of Lake Huron.

J. communis, L. Common Juniper. With the last species.

Taxus baccata, L, var. Canadensis. Ground Hemlock. Abundant around both lakes, especially in the bottoms of shaded rocky glens.

ON THE ECONOMICAL USES OF STICTA PULMONARIA HOFFM.

By A. T. Drummond, B. A.

The Lichen which forms the subject of the present paper, I have selected, not so much on account of any marked interest that is to be attached to it from the beauty of its structure, or the variety of its economical applications, as from its being one of the most common Lichens in our vicinity—so common, in fact, and so conspicuous from its large, handsome thallus, that it cannot but have attracted the notice of many of you. It occurs upon several kinds of trees, among which may be mentioned the Oak, Beach, Ash, and Maple, as well as upon rocks in moist situations. Saxicolous specimens, however, although sometimes very large, are generally sterile. Its geographical range is not very great when compared with some others of our Lichens, which are almost cosmopolites. Yet, besides occurring in Canada, it has been found in India upon the Himalayas, in Siberia, Britain, Sweden, Norway, France and Germany. Small and delicate as this Lichen is, when compared with the "time-stained" trunks upon which it flourishes, yet it is known to attain a very great age, one author stating that, after the lapse of upwards of fifty years, he had, upon the same tree, noticed the same specimen of Sticta pulmonaria, in precisely the same position.

It would be altogether foreign to the object of this paper to enter minutely into the distinctive characters of this Lichen; suffice it to say that it may be easily recognized from other species of the same genus, as well as from other Lichens generally, by its greenish or olive-colored thallus, which is reticulately pitted in a very perceptible manner, and frequently roughened by pale soredia; by the under surface being marked by gibbi, or discolored spots; and by the lacinæ or marginal segments of the thallus being broad, elongated, and very abruptly terminated. When moist, it is of a more or less vivid hue, which, on drying, changes to olive brown.

In treating of the economical uses of Sticta pulmonaria, I purpose making the following divisions, viz., first, its use as an article of food; secondly, its employment as a medicine; and thirdly, its applications in the arts. First, then, in regard to its use as an article of food. There is a marked resemblance in properties

between Sticta pulmonaria and Cetraria Islandica, the well-known "Iceland Moss." Like that Lichen, Sticta pulmonaria contains gum, starch, bitter and astringent principles, and a brownish colouring matter. Its nutritive and demulcent properties depend upon the presence of the former two, viz., the gum and starch. The starch, however, contained in it is of too small an amount to be of itself of much practical use. An article of diet which is said to be very light and pleasant is, with little difficulty, obtainable from this plant in the following way :—After having thoroughly disengaged from it all extraneous substances, let it be steeped in a weak solution of some alkali, as of carbonate of soda, or potash, in order to neutralize the effect of the bitter principle, already mentioned as existing in it, which would otherwise impart a disagreeable taste to the article to be prepared. Then let it be taken out and floated in cold water for a minute or two, that any of the solution adhering to it may be removed. On being boiled for a short time in water, sugar having been added during the process, and then allowed to cool, it will be found to yield a jelly of a brownish hue, which is due to the presence of colouring matter, extracted by the boiling water. To give the jelly an additional flavour, wine or spices may be added. It was, at one time, in Britain, a favourite article of diet for invalids. Secondly, in regard to its employment as a medicine. In mediæval medicine, in Britain, as well as other countries, Lichens were very extensively employed, chiefly as demulcents, purgatives, tonics, astringents, febrifuges and nutrients. Several were lauded as sovereign remedies in particular diseases. For instacce, the common Peltigera canina was the basis of the celebrated "pulvis contra rabiem," or "pulvis antilyssus," the alleged never-failing cure for hydrophobia. Another instance is that of Sticta pulmonaria, which acquired its familiar designations, "Oak Lung," and "Lungwort," as well as its specific name "Pulmonaria," either from its supposed efficacy in all pulmonary diseases, as a nutrient demulcent, or tonic, or from a fancied resemblance between the reticulate-pitted thallus to the structure of the lungs. However its name may have originated, it was for a long time regarded, not merely as a speedy cure for such diseases as ulcers of the Lungs, consumption, spitting of blood, etc., but was used both as a tonic and astringent in a great variety of other complaints. As an external application for wounds, it was considered very beneficial. Allusion has already been made to its frequent use as a nutrient in the form of jellies or diet-drinks by invalids generally. In Sweden it was no unusual circumstance for the peasantry to give it to their cattle, but more particularly the sheep, in epidemic catarrh ; whilst in Germany it was mixed with salt, and given to the cattle for similar purposes. The virtues of the plant, are, however, generally believed to have been more imaginary than real, writers on the subject generally ascribing their origin to the already alluded to fancied resemblance between its thallus and the lungs. I now come to consider the last, but certainly the most important division of the subject, viz., the

applications of Sticta pulmonaria in the arts. Insignificant and apparently trifling as Lichens are, yet some of them yield products that render them very valuable in the arts. Dyes are the more important products at present obtained from them, though there is no doubt, now that attention is being more directed to them by scientific men, and that Chemistry is making such rapid progress, they will be found to possess many properties hitherto unknown to science—properties that will render them exceedingly useful from their contributing to the comforts or necessities of man. An advance has been made even within the last few years, several species having been found to yield dyes quite as valuable as those obtained from Rocella tinctoria, or Lecanora tartarea. Sticta pulmonaria, although not, at the present time, ranked among those Lichens which are thus important as furnishing some particular product, yet has properties that, in many respects, attach to it considerable interest. For instance, the bitter principle contained in it has, in Sweden and Siberia, been applied to the purposes of the brewer as a substitute for hops. The Monks of a certain Monastery in the latter country acquired quite a reputation for the beer which they brewed, they having been accustomed to flavor it with the bitter principle of this species of Sticta. Again, the tanner has made it subservient to his purposes. The astringent principle which it contains, and which renders it valuable to the tanner, is most likely due to the presence of tannic acid. However, even were this Lichen an efficient substitute for the bark of the Oak, Sumach and other trees which are employed in tanning, it could not be obtained in sufficient abundance to meet the probable demand for it. This fact, too, would, I think, be an effectual bar to its use in brewing, as a substitute for hops. It might, certainly, be propagated by artificial means, but, as it has not yet been proved that Lichens are undestructive to trees, such a proceeding, whilst beneficial in one way, might prove detrimental in another. The most valuable property of this Sticta, and which has been the most largely applied in the arts, is its capability of yielding a brownish colouring matter. There are several ways in which this dye may be obtained. The Lichen may be macerated in milk of lime, and its colorific principles precipitated by the addition of hydrochloric or acetic acid. Or, it may be steeped in a solution of carbonate of soda for several days. But the most simple method, and which most fully developes the colouring matter, is by ammoniacal maceration. Previous to being macerated in the solution, the plant should be carefully cleansed from earthy and other extraneous substances, which are generally found adhering to it, and then pulverized. The liquid, after the Lichen has been placed in it, should be frequently stirred in order that every part may be well exposed to the action of the oxygen of the atmosphere. If submitted to the above process for a period of about ten days, Sticta pulmonaria yields a very good brown dye, which has been, and is still, to a great extent, applied to the dyeing of various woolen goods by the peasantry of Norway and Sweden, and other countries. In

England, Ireland, and Scotland, where this Lichen is one of the "Crotals," it was also used by the same class of persons for similar purposes, but from the increased facilities now afforded for travelling and transit, the adoption by manufacturers of recent inventions, the application of new discoveries in Science to the improving of the quality of textile fabrics, and the cheapness of the article produced, all consequent on the progress of civilization, the employment of this, as well as other dyes formerly used by the lower classes, has been for the most part discontinued. I say for the most part, because in the collection of the vegetable products of Scotland at the Great Exhibition of 1851, yarns dyed by this and other "Crotals," were exhibited. In the collection of dye-lichens and lichen-dyes at the same Exhibition, specimens of this Lichen were shown, and its dye was stated by some manufacturers to be used by them, whilst others remarked that it might be employed with advantage to the orchil maker. The crotals are still commonly used in Inverness-shire.

In conclusion, I would again remark that I did not select this Lichen for the subject of the present paper, on account of its having any great variety of economical applications. There are other Lichens which are far more valuable to the manufacturer, the physician and others. The Roccellas, Lecanoras, Cetrarias, and Umbilicarias are instances of this. But taking its uses few as they are, and pondering them well, all I think, will agree with the poet when he said,

"That not alone in trees and flowers
The spirit bright of beauty dwells;
That not alone in lofty bowers
The mighty hand of God is seen;
But more triumphant still in things men count as mean."

REPORT ON THE HUBBARD SQUASH.

The Committee of Ladies appointed at last meeting to submit to trial the specimens of Hubbard Squash, presented to the Society by Mr. Briggs, beg to report that they have individually had the Squashes cooked in various ways, and have found this variety to possess valuable qualities. It is remarkably rich in flavor, easily cooked, and forms, both as a vegetable and in tarts, a better dish than any other squash.

Persons who do not relish squashes, and had not eaten them before, have found the Hubbard Squash to be delicious. The only drawback is, that the outer skin is remarkably hard, requiring the application of a saw or axe, before cooking.

Fifth Meeting.

THURSDAY EVENING, 28TH MARCH, 1861.

The Very Rev. Principal Leitch, D. D., President, in the Chair. This being an Extra Meeting, called for the special purpose of disposing of an accumulation of Papers, no other business was brought forward. There was a full attendance of Members and Subscribers.

The following Letters and Papers were read :—

ROYAL GARDENS, KEW,
February 16, 1861.

SIR,—I beg you will present my sincere thanks to the Fellows and Subscribers of the Botanical Society of Canada, for the distinguished mark of respect they have shown me in electing me an Honorary Member of their body,—a compliment the more gratifying, because I have always felt, and still feel, the deepest interest in everything connected with Botanical research throughout British North America ; and I am persuaded that many new discoveries may yet be made in Canada, through the exertions of resident members of its Botanical Society.

I have the honor to be,

Sir,

Your faithful and obedient servant,

W. J. HOOKER.

To PROFESSOR LAWSON, &c., &c., Secretary, Botanical Society of Canada.

ROYAL BOTANIC GARDEN, EDINBURGH,
25th February, 1861.

SIR,—I have to acknowledge the receipt of your letter of 11th January, announcing my election as an Honorary Member of the Botanical Society of Canada, and I beg to return my best thanks for the distinguished honor which the Society has thus conferred on me. I shall be happy if I can in any way advance the interests of the Society. With best wishes for its prosperity,

I am, Sir,

Your obedient servant,

J. H. BALFOUR.

DR. GEORGE LAWSON, Secretary, Botanical Society of Canada.

SUGGESTIONS TO THE MEMBERS OF THE BOTANICAL SOCIETY OF CANADA, WITH REFERENCE TO A COLONIAL FLORA.

By Sir William J. Hooker, K. H.

Royal Gardens, Kew,
February 16th, 1861.

It gives me great pleasure to hear of the formation of a Botanical Society in Canada. It is now 20 years since the publication of my Flora of British North America;—and I had therein occasion to remark, "It is to be wished that the southern boundaries of Canada, adjoining the State of Maine and the great Lakes Huron and Superior were accurately searched, as it can hardly be doubted that this line of country would yield many plants not hitherto discovered in British North America, though known to exist in the United States under similar situations and of latitude and of elevation above the level of the sea." Indeed it is a singular fact, that we have a more complete knowledge of the extreme arctic vegetation of America, and of the remote shores of British Columbia than of the southern boundary of Canada. Not, indeed, that I expect new species of plants to be discovered there, but I believe many might be detected at present only recorded as natives of the United States.

Now, here would be an interesting field for the active working members of the Botanical Society to explore, and I would take leave most respectfully to recommend it to their attention, and, if possible, during the forthcoming summer.

The Flora Boreali-Americana has been long out of print, and it had the misfortune to be published on too expensive a scale. I am, at this time, in communication with His Grace the Duke of Newcastle, on the subject of the publication of a *cheap series* of *Colonial Floras* of ALL our Colonies; and I was required to give in to His Grace an enumeration of all the Colonies, the vegetation of which was sufficiently known to justify the Flora being published, and among those recommended for early notice is, doubtless, British North America. Already the Flora of Hong-Kong is completed and published; that of the British West Indian Islands is now complete, and the cost upon our Government for the assistance they kindly propose to give is all estimated for, and laid before the Treasury. Thus a first-rate publisher is enabled to sell them at a cost not exceeding 16s. a vol. of 500 pages. Now it is for the purpose of rendering such a Flora of British North America more complete that I would ask the aid of the active botanists of Canada. Any information connected with the discovery of plants new to their Colony will be faithfully recorded, as well as the names of the discoverers; and well prepared specimens confirmatory of their accuracy, with the exact locality, I shall thankfully receive.

I would recommend too that the country within our boundary about Lakes Ontario and Superior, and our most south-western boundary be carefully explored. The Americans have sent me some interesting plants from their side the boundary very recently, especially one or two good Ferns from Lake Superior.

The Cryptogamic plants generally of British North America, would well repay a careful search for them, and in *all* the orders. No doubt that they are numerous and beautiful ;—but unless the number was tolerably complete it would be better to omit them.

I do not know if any Botanist accompanied the late important expedition to the Red River Settlement, and to the plains towards the Rocky Mountains, which was sent out by the Canadian Government. If so, probably some good and even new species were found. Much cannot be expected from a plain country, which has been so well ransacked by Drummond, Richardson, Douglas, Hector, Palliser, and, above all, Bourgeau. The collections of the latter are very fine. I do not know what mountains you have in Canada proper, of such height as to change the nature of the vegetation as you ascend. Such elevations always produce good plants, especially Cryptogams.

I am, Sir,

Your faithful and obedient servant,

W. J. HOOKER.

To Professor Lawson, &c., &c., &c.

On the motion of Judge Logie, of Hamilton, seconded by Andrew Drummond, Esq., Manager of the Montreal Bank, the Society's thanks were voted to Sir William Hooker, and the Secretary was requested to communicate to him the desire of the Society, to aid by the personal exertions of the members, and in every other possible way, in forwarding the important object of a Canadian Flora.

ON THE ASCLEPIAS INCARNATA, L., AS A FIBRE PRODUCING PLANT.

By Alexander Logie.

At the present time, when so much difficulty is felt in obtaining fibrous materials in sufficient quantity to satisfy the requirements of modern civilization, and particularly to supply the constantly increasing demand for materials suitable for the manufacture of paper, it may not be out of place to direct the attention of the members of this Society to one of our native plants, which possesses a fibre of great strength and beauty, apparently well adapted not only to be employed in the manufacture of paper, but also of textile fabrics of various kinds.

The plant to which I refer is the Asclepias incarnata, one of the natural order of Asclepiadaceæ, or milkweed family. The common milkweed Asclepias Cornuti, found in abundance in our fields, is well known from its singular looking flowers, the quantity of milky juice that exudes from it when broken, and from the pods which, in the autumn, are filled with a silky-cottony looking substance enveloping the seeds. The young shoots of this species are also frequently eaten in the country as a substitute for asparagus, and it is sometimes called wild asparagus. The Asclepias incarnata has a more showy flower than the Asclepias Cornuti; the divisions of the corolla being of a purplish color, and the hoods of the crown of a flesh color (hence the specific name incarnata), and it has scarcely any of the milky juice found in the other species. It is a perennial herbaceous plant, growing naturally in rich moist ground, and on low rich banks of streams; sometimes it is found growing in swamps, but it does not appear to thrive when growing in water. In the autumn of 1859, I found it growing in several places in the waters of Burlington Bay, near the shore; but, in the following year, on visiting two of the localities where I had observed it growing in water, not a plant was to be seen. The water in the Bay was unusually high in 1859 and 1860, and had evidently covered the low banks on which it had originally grown; and although the plants survived for a time their immersions in the water, they appear ultimately to have been killed by it. That it may be successfully grown on dry ground has been proved by Mr. John Freed, a gardener in Hamilton, who has had a plant growing in his garden for some years in a dry sandy loam. The cultivated plant appeared to me to possess a stronger and brighter fibre than the plant in its native state; but my opportunities of observing it have not been sufficient to enable me to say positively that such is the case.

In the spring of 1860 some of the stalks and fibre of the Asclepias incarnata, furnished by Mr. Freed, were exhibited at a meeting of the Hamilton Association, and a portion of it was taken by a member of the Association and handed to Mr. McMicking, a paper manufacturer in Dundas, for examination. A letter from him was, at a subsequent meeting, read to the Association, of which the following is a copy:—

"Dear Sir,—I have tested, in some measure, the sample of Asclepias incarnata you gave me, which results as follows:

"1. The sample was bleached in 3 minutes.
"2. Is of a beautiful high color.
"3. A brilliant lustre.
"4. Strong flexible silky fibre.
"5. Parts of shive (wood bark, &c.) 737.
" " lint (dressed fibre) 263—1000.
"6. Is worth dressed 5 cents per pound.

" QUERIES.

" 1. Can a quantity be had in an indigenous state ?
" 2. Will it be an advantage to cultivate ?
" 3. What will it cost to gather, cultivate, &c. ?

" Yours, &c.,

" (Signed) J. McMICKING.

" Gore Paper Mills, April 2, 1860."

With this note Mr. McMicking sent a specimen of the fibre, which had been bleached for three minutes, and a specimen of Manilla fibre, the substance generally employed in the manufacture of paper, which had been bleached for twenty-four hours. The fibre of the Asclepias was whiter and of a brighter color than that of the Manilla, notwithstanding the length of time the latter had been subjected to the action of the chemical substances used in bleaching. It is important to notice this, as the ease with which it may be bleached increases its value, both as a material for making paper, and as a material for making cloth.

Mr. McMicking stated to me lately, that while it is not worth more than five cents per pound for making paper, he considers it worth ten cents per pound for other purposes, and that there could be no doubt as to its utility and value as a fibre. The only doubt he felt was as to the possibility of cultivating it successfully and profitably.

The application of the fibre to the manufacture of coarse cloth is not new ; but I am not aware that its capability of making fine cloth has been tested, or that any attempt has been made to ascertain whether or not it can be cultivated successfully and profitably. I have sent some seed, in the hope that some of the members of the Botanical Society will give it a trial. The seed might be sown in any good, moist garden soil, and the plants be transplanted in the following spring to the place where it is intended they shall remain, and set out at distances not less than eighteen inches apart each way. By measuring the ground and weighing the fibre, an estimate might be formed as to the probability of its cultivation proving profitable.

An interesting series of specimens, including stalks of the plant, and samples of the fibre in various stages of preparation, were exhibited to the meeting, in illustration of Judge Logie's remarks.

LIST OF PLANTS FOUND GROWING IN THE NEIGHBORHOOD OF HAMILTON, DURING THE YEARS 1859 AND 1860,

By Alexander Logie,

*Including Plants collected by Miss Kate Crooks, in the neighborhood, and a few found in other places in Canada West.**

Ranunculaceæ.

Atragene Americana, Sims. Mountain side, east of Hamilton. End of May, 1860.

Clematis Virginiana, L. Glandford. 1st August, 1860.

Anemone Virginiana, L. Carrol's Point, East Flamboro'. 7th July, 1859.

Anemone Pennsylvanica, L. Carrol's Point. 7th July, 1859.

Anemone nemorosa, L. (var. quinquefolia). Oaklands. 31st May, 1859.

Hepatica triloba, Willd. Mountain side, west of Hamilton. 6th April, 1860.

Thalictrum anemonoides, Michx. Oaklands. 31st May, 1859.

Thalictrum dioicum, L. Mountain side. 12th May, 1860.

Ranunculus aquatilis, L. Burlington Beach, near Water-works. July, 1859.

Ranunculus Purshii, Richardson. Creek in Glandford. 25th May, 1860. A peculiar form, with less divided leaves and small flowers, was found in a marsh near Millgrove, growing with *Campanula aparinoides*. 31st July, 1860.

Ranunculus recurvatus, Poir. Sulphur Spring near Ancaster. July, 1859.

Ranunculus repens, L. Common. Summer of 1859.

Ranunculus acris, L. Common. Summer of 1859.

Ranunculus abortivus, L. Road side near city. 4th May, 1860.

Ranunculus sceleratus, L. Common. July, 1860.

Ranunculus pusillus, Pursh. 1859.

Caltha palustris, L. Wet ground east of City, near Mr. Aikman's house. 25th April, 1860.

Coptis trifolia, Salisb. Shore of Lake Medad. 17th May, 1860.

Aquilegia Canadensis, L. Mountain side west of Hamilton, common. 24th May, 1859.

Actæa spicata, L. vars. rubra and alba. Mountain side west of city, common. May and June, 1859.

Magnoliaceæ

Liriodendron tulipifera, L. Field near toll gate west of city, on road to Dundas. 21st June, 1860. There are also two large trees near the Railway Station, Hamilton, and a large tree in Glandford, having a diameter of

*The dates cited indicate when the Plants were obtained in flower. A few localities and dates have been added of Plants found during the present summer, since the Society's meeting at which the list was presented.

between 4 and 5 feet. This tree is also found growing about Niagara, and between Niagara and Hamilton, below the Mountain. It is rather rare in this locality, but it is common in the western parts of the Province near Chatham.

BERBERIDACEÆ.

Caulophyllum thalictroides, Michx. Mountain side near Hamilton. 4th May, 1860.
Podophyllum peltatum, L. Common. 7th June, 1860.

NYMPHÆACEÆ.

Nymphœa odorata, Aiton. Burlington Bay. July, 1860.
Nuphar advena, Aiton. Burlington Bay. July, 1860.

SARRACENIACEÆ.

Sarracenia purpurea, L. Shore of Lake Medad. 23rd June, 1860. Also found in great abundance in a bog near Millgrove.

PAPAVERACEÆ.

Chelidonium majus, L. Mountain side, behind Mr. Brown's house. 15th June, 1859.
Sanguinaria Canadensis, L. Mountain-side near Water-works Reservoir. 25th April, 1860.

FUMARIACEÆ.

Adlumia cirrhosa, Rafinesque. 2nd August, 1860.
Dicentra Cucullaria, D C. Mountain-side west of Hamilton. 28th April, 1860.
Dicentra Canadensis, D C. Same locality. 12th May, 1860. Both species of Dicentra are found in great abundance in the locality specified.
Fumaria officinalis, L. Burlington Beach, 1860.

CRUCIFERÆ.

Nasturtium officinale, Brown. Found at Galt by Miss Crooks. May, 1860.
Dentaria diphylla, L. Mountain-side west of Hamilton. 15th May, 1860.
Dentaria laciniata, Muhl. Same locality. 28th April, 1860. Both species are found in great quantities in the locality specified.
Dentaria maxima, Nutt. Found at Galt by Miss Crooks. May, 1860.
Cardamine rhomboidea, D C. Galt. Found by Miss Crooks. May, 1860. (Also in Dr. Craigie's list of plants found at Hamilton, and published in the Canadian Journal, Vol. II, page 222.)
Cardamine rhomboidea, var. purpurea. Woods west of city. 4th May, 1860.
Cardamine hirsuta, L. Wet ground west of city, near Cline's Mill. 24th May, 1860.
Cardamine Virginica, Michx. Found at Galt, by Miss Crooks. May, 1860.
Cardamine pratensis, L. Beaver meadow beyond Millgrove. 7th June, 1861.
Arabis Canadensis, L. Hamilton. July, 1860.
Erysimum cheiranthoides, L. Road sides. 12th August, 1859.
Sisymbrium officinale, DC. Roadside. 12th August, 1859.

Sinapis arvensis, L. Fields, Hamilton. 9th August, 1859.
Lepidium Virginicum, L. Roadsides. June, 1860.
Lepidium intermedium, Gray. Hamilton. June, 1859.
Capsella Bursa-pastoris, Mœnch. Hamilton. July, 1859.

CAPPARIDACEÆ.

Polanisia graveolens, Raf. Burlington Beach, common. July 1859.

VIOLACEÆ.

Viola blanda, Willd. Woods west of Hamilton, 15th May, 1860.
Viola cucullata, Aiton. Common. 4th May, 1860.
Viola rostrata, Pursh. Woods near Mr. Brydge's house. 4th May, 1860.
Viola pubescens, Aiton. Common. 4th May, 1860.
Viola striata, Aiton. Common. June, 1860.
Viola Canadensis, L. Common. August, 1859.
Viola sagittata, Aiton. Galt. Found by Miss Crooks, in June, 1860. (Also, in list of Hamilton plants published in the Canadian Journal, vol. 1, p. 222.)
Viola Muhlenbergii, Torr. Wood near Barton Lodge, on Mountain. 16th May, 1861.

CISTACEÆ.

Helianthemum corymbosum, Michx. Found by Miss Crooks at Galt. May, 1860.

DROSERACEÆ.

Drosera rotundifolia, L. Banks of a small lake near Paris, C. W. 15th August, 1859.

PARNASSIACEÆ.

Parnassia Caroliniana, Michx. Banks of the Rocky Saugeen, near Durham. 13th August, 1860. (In list of Hamilton plants published in Canadian Journal, Vol. II, page 222.)

HYPERICACEÆ.

Hypericum perforatum, L. Fields. July, 1859.
Hypericum ellipticum, Hook. Field in Hamilton. 5th August, 1859.

CARYOPHYLLACEÆ.

Silene inflata, Smith. Field in the city. 31st July, 1859.
Silene antirrhina, L. Galt. Found by Miss Crooks. June, 1860.
Agrostemma Githago, L. Wheat fields at Waterdown. June, 1860.
Stellaria media, Smith. Common. July, 1859.
Stellaria longifolia, Muhl. Beasley's Hollow. 28th May, 1860.

PORTULACCACEÆ.

Portulacca oleracea, L. Cultivated grounds, common. June, 1859.
Claytonia Virginica, L. Open woods west of the city, at the foot of the Mountain, common. April, 1860.

MALVACEÆ.

Malva rotundifolia, L. Road sides. July, 1859.

Abutilon Avicennæ, Gært. Road side at Binckley's, near Dundas. 8th Sept., 1860.

TILIACEÆ.

Tilia Americana, L. Woods. Common. July, 1859.

OXALIDACEÆ.

Oxalis stricta, L. Road-sides and waste places. July, 1859.

GERANIACEÆ.

Geranium maculatum, L. Fields and woods, common. 15th May, 1859.

Geranium Robertianum, L. Mountain side. Common. July and August, 1859.

BALSAMINACEÆ.

Impatiens pallida, Nutt. Wet places. Beverly and East Flamboro. July, 1859.

Impatiens fulva, Nutt. Same localities. July, 1859.

RUTACEÆ.

Zanthoxylum Americanum, Miller. Found by Miss Crooks, at Galt. End of May, 1860. (In list of Hamilton Plants published in Canadian Journal, Vol. II, page 222.)

ANACARDIACEÆ.

Rhus typhina, L. Fields west of city. June, 1860.

Rhus Toxicodendron, L. Carrol's Point and Princes Island. June, 1859.

VITACEÆ.

Vitis cordifolia, Michx. Carrol's Point and other places. June, 1859.

Ampelopsis quinquefolia, Michx. Woods at Ancaster. July, 1860.

RHAMNACEÆ.

Ceanothus Americanus, L. East Flamboro, along sides of road to Waterdown. Common. July, 1859.

Rhamnus alnifolius, L'Her.? Millgrove Marsh. 23rd May, 1861. This plant is not determined with certainty; it may be *Rhamnus lanceolatus*, Pursh.

CELASTRACEÆ.

Celastrus scandens, L. Mountain side near J. M. Williams' house. 9th June, 1860.

Euonymus obovatus, Nutt. Mountain side near Mr. Whyte's house. 4th June, 1859.

SAPINDACEÆ.

Staphylea trifolia, L. Mountain side, west of Hamilton. 9th June, 1860.

Acer saccharinum, Wang. Woods, common. May, 1859.

Acer rubrum, L. Woods, common. April, 1859.

Acer spicatum, Lambert. Mountain side west of Hamilton. 25th May, 1859.

POLYGALACEÆ.

Polygala Senega, L. Prince's Island. June, 1860.

Polygala Nuttallii, Torr. and Gray. Prince's Island. 31st August, 1860.

Polygala paucifolia, Willd. Near Lake Medad. 17th May, 1860, and at Galt, by Miss Crooks.

LEGUMINOSÆ.

Lupinus perennis, L. Found at London, C. W., by Miss Crooks. July, 1860.
Trifolium arvense, L. Near Dundurn. July, 1859.
Trifolium pratense, L. Fields. July, 1859.
Trifolium repens, L. Fields. July, 1859.
Trifolium procumbens, L. Fields. July, 1859.
Medicago lupulina, L. Fields. July, 1859.
Astragalus Canadensis, L. Burlington Heights near old Desjardins Canal. 4th August, 1859.
Desmodium acuminatum, D C. West Flamboro, near Dundas. August, 1859.
Desmodium Canadense, D C. August, 1859.
Lespideza hirta, Elliott. Prince's Island. August, 1860.
Lespideza capitata, Michx. Prince's Island. August, 1860.
Vicia Americana, Muhl. Paris, C. W. 13th June, 1860. In list of Hamilton flora, published in Canadian Journal, vol. 2, p. 222.
Lathyrus palustris, L. Carrol's Point. 9th June, 1859.
Lathyrus myrtifolius, Muhl. Carrol's Point. 9th June, 1859.
Lathyrus ochroleucus, Hook. Hill side in Cemetery grounds. 24th June, 1861.
Apios tuberosa, Mœnch. Prince's Island, and near Desjardins Canal. 25th Aug., 1860.
Amphicarpæa monoica, Nutt. Prince's Island. 25th August, 1860.

ROSACEÆ.

Prunus Americana, Marsh. Near Barton Church. 18th May, 1860.
Cerasus Virginiana, D.C. Mountain side, west of Hamilton. 18th May, 1860.
Cerasus serotina, D.C. May, 1860.
Spiræa salicifolia, L. Millgrove. 31st July, 1860.
Spiræa opulifolia, L. Found by Miss Crooks at St. Thomas, in fruit.
Gillenia trifoliata, Mœnch. Princes Island. 21st June, 1860.
Agrimonia Eupatoria, L. Oaklands. 23rd July, 1859.
Geum album, Gmelin. Foot of Mountain west of city. 25th June, 1860.
Waldsteinia fragarioides, Tratt. Found by Miss Crooks in Galt. May, 1860. (In list of Hamilton plants, published in Canadian Journal, Vol. II, page 222.
Fragaria Virginica, L. Fields. 12th May, 1860.
Fragaria vesca, L. Fields. 15th May, 1860.
Dalibarda repens, L. Millgrove. 31st July, 1860.
Potentilla Norvegica, L. Burlington Heights. 16th June, 1860.
Potentilla Canadensis, L. Oaklands. 30th June, 1859.

Potentilla anserina, L. Carrol's Point. 7th July, 1859.
Rubus odoratus, L. Borders of fields, common. 4th July, 1859.
Rubus triflorus, Rich. Marsh at Millgrove. 23rd May, 1861.
Rubus occidentalis, L. Field below mountain, Hamilton. 15th June, 1861.
Rubus strigosus, Michx. Fields. 7th June, 1860.
Rubus villosus, Aiton. Fields. 7th June, 1860.
Rosa blanda, Aiton. East Flamboro. Waterdown road. July, 1860.
Rosa lucida, Ehrhart. Fields west of city. 6th July, 1860.
Rosa rubiginosa, L. Fields west of city. 6th July, 1860.
Pyrus coronaria, L. Princes Island. 28th May, 1860.
Pyrus arbutifolia, L. var. melanocarpa. Millgrove Marsh. 19th June, 1861.
Cratægus tomentosa, L. Hamilton. June, 1860.
Amelanchier Canadensis, Torr. and Gr. (var. Botryapium). Sulphur Spring, Ancaster. 4th May, 1860. Var. rotundifolia (A. ovalis D.C.) Prince's Island. 20th May, 1861.

LYTHRACEÆ.

Nesæa, verticillata, Gray. Burlington Beach near Water-works, and in old Desjardins Canal, Burlington Heights. 25th August, 1860.

ONAGRACEÆ.

Epilobium angustifolium, L. Waterdown Road, and on Mountain west of city. 6th July, 1860.
Epilobium coloratum, Muhl. Ancaster. August, 1859.
Œnothera biennis, L. Mountain side near city. 9th August, 1859.
Œnothera glauca, Michx. Found on dry waste ground at Mount Forest. 12th August, 1860.
Circœa alpina, L. Sulphur Spring near Ancaster. 22nd July, 1859.

GROSSULACEÆ.

Ribes hirtellum, Michx. Fields west of city. 6th June, 1860.
Ribes lacustre, Poir. Wet grounds west of city. 6th June, 1860.
Ribes floridum, L. Fields west of city. 6th June, 1860.

CRASSULACEÆ.

Penthorum sedoides, L. Road sides. 29th July, 1859.

SAXIFRAGACEÆ.

Saxifraga Virginiensis, Michx. Top of Mountain west of city. 24th May, 1859.
Mitella diphylla, L. Mountain side. Common. 24th May, 1859.
Mitella nuda, L. Mount Forrest. 12th August, 1860.
Tiarella cordifolia, L. Mountain side. 24th May, 1859.

HAMAMELACEÆ.

Hamamelis Virginica, L. Waterdown Road. November, 1859.

UMBELLIFERÆ.

Hydrocotyle Americana L. Ancaster. October, 1860.

Sanicula Canadensis, L. Woods west of city. 21st July, 1860.
Sanicula Marilandica, L. Prince's Island. 14th July, 1860.
Daucus Carota, L. Found by Miss Crooks. August, 1860.
Heracleum lanatum, Michx. Beasley's Hollow. 22nd June, 1860.
Thaspium aureum, Nutt. Prince's Island. 26th May, 1860.
Sium lineare, Michx. Millgrove. 30th July, 1860.
Zizia integerrima, D.C. Prince's Island. 21st June, 1860.
Cryptotænia Canadensis, D.C. Mountain side west of city. 16th June, 1860.
Osmorrhiza brevistylis, D.C. Mountain side west of city. 16th June, 1860.

ARALIACEÆ.

Aralia racemosa, L. Mountain behind Mr. Brown's house. July, 1859.
Aralia nudicaulis, L. Prince's Island. 28th May, 1860.
Aralia quinquefolia, Gray. July, 1859.
Aralia trifolia, Gray. Glanford. 25th May, 1860.

CORNACEÆ.

Cornus Canadensis, L. Marsh near Millgrove and at Lake Medad. 23rd June, 1860.
Cornus florida, L. Woods beside Waterdown Road. 17th May, 1860. This tree is found in great numbers about Ancaster, particularly in the valley below Ancaster and West Flamboro. It is also found near the Albion Mills.
Cornus circinnata, L'Heritier. Mountain side near the city. 9th June, 1860.
Cornus paniculata, L'Heritier. Filman's lot on Mountain. 29th June, 1860.
Cornus stolonifera, Michx. Oaklands. June, 1859.
Cornus alternifolia, L. Mountain side west of Hamilton. May, 1860.

CAPRIFOLIACEÆ.

Linnæa borealis, Gron. Shore of Lake Medad. 23rd June, 1860.
Symphoricarpus racemosus, Michx. Brow of Mountain above Hamilton and at Stoney Creek. July, 1860.
Lonicera parviflora, Lamarck. Mountain side west of city. 9th June, 1859.
Lonicera ciliata, Muhl. Mountain west of Hamilton. 15th May, 1860.
Diervilla trifida, Mœnch. Waterdown road, and on Prince's Island. 11th June, 1860.
Triosteum perfoliatum, L. Fields west of Hamilton. June, 1859.
Sambucus Canadensis, L. Sides of fields. 9th July, 1860.
Sambucus pubens, Michx. Mountain side. 12th May, 1860.
Viburnum pubescens Pursh. Waterdown road. 11th June, 1860.
Viburnum acerifolium, L. Mountain west of city. 9th July, 1859.

RUBIACEÆ.

Galium Aparine, L. Mountain near J. M. Williams' house. 6th June, 1860.

Galium trifidum, L., (var. tinctorium.) Paris. 15th August, 1859.
Galium asprellum, Michx. Open woods near city. 16th June, 1860.
Galium triflorum, Michx. Woods west of city. 28th July, 1859.
Galium boreale, L. Carrol's Point. 4th July, 1860.
Cephalanthus occidentalis, L. Marsh near Millgrove. 31st July, 1860.
Mitchella repens, L. Woods, common. Not found in flower.
Oldenlandia purpurea, Gray, (var. longifolia.) Found by Dr. Craigie at Paris, C. W. 13th June, 1860.

COMPOSITÆ.

Liatris cylindracea, Michx. Found by Miss Crooks at Westminster, C. W. July, 1860. (In list of Hamilton flora published in Canadian Journal, vol. 2, p. 222.)
Eupatorium purpureum, L. At Millgrove. 31st July, 1860. Also a variety with opposite petioled leaves, broader, and more deeply serrate; flowers smaller and of a deeper purple. Paris. 15th August, 1859.
Eupatorium perfoliatum, L. Paris. 15th August, 1859. Also at Millgrove and other places near Hamilton.
Eupatorium ageratoides, L. Waterdown road. 27th August, 1859.
Erigeron Canadense, L. Fields. Common. August, 1860.
Erigeron bellidifolium, Muhl. Prince's Island. May, 1860.
Erigeron Philadelphicum, L. Fields. Common. August, 1860.
Erigeron strigosum, Muhl. Fields. Common. September, 1860.
Erigeron annuum, Persoon. Fields. Common. August, 1860.
Solidago bicolor, L. Fields about Hamilton. 25th August, 1860.
Solidago latifolia, L. Fields near Hamilton. 27th August, 1860.
Solidago cæsia, L. Fields, Hamilton August, 1860.
Solidago nemoralis, Aiton. Fields, Hamilton. August, 1860.
Solidago odora, Aiton. Fields, Hamilton. August, 1860.
Inula Helenium, L. Road sides. Common. August, 1860.
Ambrosia artemisiæfolia, L. Road sides. July, 1860.
Xanthium strumarium, L. Road sides. Common. 8th September, 1860.
Helianthus divaricatus, L. Fields. 1859.
Helianthus strumosus, L. Fields. 1859.
Bidens frondosa, L. Wet places. 1859.
Bidens cernua, L. Wet places. 1859.
Bidens chrysanthemoides, Michx. Wet ground on the Mountain. 1860.
Helenium autumnale, L. August, 1860.
Maruta Cotula, DC. Common. 1860.
Achillæa Millefolium, L. Fields. August, 1859.
Leucanthemum vulgare, L. Road sides and fields, common. July, 1860.

Tanacetum vulgare, L. Road sides near dwellings. 1859.
Gnaphalium decurrens, Ives. September, 1860.
Gnaphalium polycephalum, Michx. Hill side near Sulphur Spring. Ancaster. 29th July, 1859.
Antennaria margaritacea, R. Brown. Dry fields, Burlington Heights. Aug., 1860.
Antennaria plantaginifolia, Hook. Road sides. Ancaster. 4th May, 1860.
Senecio vulgaris, L. Road sides. 1859.
Cirsium lanceolatum, Scop. Common. 1860.
Cirsium muticum, Michx. August, 1860.
Cirsium arvense, Scop. Common. August, 1860.
Lappa major, Gærtn. Common. 1860.
Hieracium Canadense, Michx. Hamilton. August, 1860.
Hieracium Gronovii, L. Ancaster. 1st October, 1860.
Nabalus altissimus, Hook. Prince's Island. 31st August, 1860.
Nabalus albus, Hook. Filman's lot. 27th August, 1860.
Nabalus Fraserii, DC. Prince's Island. 31st August, 1860.
Taraxacum dens-leonis, Desf. Common. May, 1860.
Luctuca elongata, Muhl. Common. Sept. 1860.
Sonchus oleraceus, L. Common. August, 1860.
Aster Tradescantii, L. Waterdown road. 3rd Sept., 1860.
Aster Novæ angliæ, L. End of Sept., 1860.
Aster undulatus, L. August, 1860.
Aster cordifolius, L. 1859.
Aster macrophyllus, L. 1860.
Aster lævis, L. Sept. 1860.
Aster. Several others not determined.

CAMPANULACEÆ.

Campanula rotundifolia, L. East Flamboro, near Mr. Carrol's. 1859.
Campanula aparinoides, Pursh. Marsh at Millgrove. 31st July, 1860.
Campanula Americana, L. Woods near Cline's Mill, west of city. 28th July, 1859.
Specularia perfoliata, DC. Field opposite to J. M. Williams' house. Aug., 1859.

ERICACEÆ.

Chiogenes hispidula, Torr and Gray. Marsh at Millgrove, in fruit. 31st July, 1860.
Gaultheria procumbens, L. Woods, common. 23rd July, 1859.
Pyrola rotundifolia, L. var. asarifolia. Lake Medad. 23rd June, 1860. Var. uliginosa. Lake Medad. 23rd June, 1860.
Pyrola elliptica, Nutt. Carrol's Point. 7th July, 1859.
Pyrola secunda, L. East Flamboro, near Carrol's. 4th July, 1859.
Moneses uniflora, Gray. Lake Medad. 23rd June, 1860.

Chimaphila umbellata, Nutt. Sulphur Spring, Ancaster. 23rd July, 1859.
Andromeda polifolia, L. Found by Miss Crooks at Westminster, in fruit. July, 1860.
Ledum latifolium, Aiton. Marsh at Millgrove and at Lake Medad. 23rd June, 1860.
Pterospora Andromedea, Nutt. Woods near Cline's Mill, west of city.
Monotropa uniflora, L. August, 1860.
Monotropa Hypopitys, L. Found by Miss Crooks. 1860.
Vaccinium Pennsylvanicum, Lamarck. Woods near Waterdown Road. May, 1860.
Vaccinium sp. Not determined with certainty, apparently *Vaccinium vacillans*, Kalm. Near Waterdown road. 1860.
Vaccinium corymbosum, L. Marsh at Millgrove, in fruit. 31st July, 1860.
Cassandra calyculata, Don. Millgrove Marsh. 23rd May, 1861.

LOBELIACEÆ.

Lobelia cardinalis, L. Wet ground near road side, Township of Beverly. Aug., 1859.
Lobelia syphilitica, L. Waterdown road, and in field east of city, near N. Merrit's house. 27th August, 1859.
Lobelia inflata, L. Road sides, common. 5th August, 1859.
Lobelia spicata, Lamarck. Prince's Island. 14th July, 1860.
Lobelia Kalmii, L. Collingwood, C. W. 16th August, 1860.

PLANTAGINACEÆ.

Plantago major, L. Common. 8th August, 1859.

PRIMULACEÆ.

Trientalis Americana, Pursh. Woods near Cline's Mill. 24th May, 1860.
Lysimachia ciliata, L. Woods near Cline's Mill. 28th July, 1859.
Lysimachia quadrifolia, L. East Flamboro, near Mr. Carrol's. 4th July, 1859.
Lysimachia longifolia, Pursh. Collingwood. 16th August, 1860.
Naumburgia thyrsiflora, DC. Swamp near Cumminsville. June, 1860.

LENTIBULACEÆ.

Utricularia vulgaris, L. Burlington Bay, near Mr. Carrol's. 4th July, 1859.
Utricularia cornuta, Michx. Found by Miss Crooks in a swamp at Westminster. 2nd August, 1860.

OROBANCHACEÆ.

Epiphegus Virginiana, Barton. Cline's Mill, and in Township of Glanford, common. 22nd August, 1860.
Conopholis Americana, Wallr. Woods behind Cline's Mill, Hamilton. 15th June, 1861.

SCROPHULARIACEÆ.

Verbascum Thapsus, L. Common, road sides and waste ground. August, 1860.

Linaria vulgaris, Miller. Road sides near dwellings. August, 1860.
Chelone glabra, L. Wet places, common. 15th August, 1859.
Pentstemon pubescens, L. Waterdown road, near Burlington Heights. 4th July, 1859.
Mimulus ringens, L. Wet places, common. August, 1859.
Veronica Americana, Schw. 24th June, 1861.
Veronica serpyllifolia, L. 22nd May, 1861.
Veronica officinalis, L. 15th June, 1861.
Veronica triphyllos, L. Cultivated ground, Hamilton, probably introduced. 20th May, 1861.
Veronica officinalis, L. Common. 9th June, 1859.
Gerardia tenuifolia, Vahl. Prince's Island. 31st August, 1860.
Gerardia integrifolia, Gray. Waterdown road. 27th August, 1859.
Gerardia quercifolia, Pursh. Prince's Island. 31st August, 1860.
Gerardia flava, L. Oaklands. Found by Miss Crooks. August, 1859.
Gerardia pedicularia, L. Waterdown road and other places, common. 27th Aug., 1859.
Castilleja coccinea, Spreng. Mountain beyond Mr. Brydge's house. 11th May, 1860.
Pedicularis Canadensis, L. Mountain side, near Mr. Brydge's. 6th June, 1859.
Melampyrum Americanum, Michx. Near Desjardins Canal. Burlington Heights. August, 1859.

VERBENACEÆ.

Verbena hastata, L. Road sides. August. 1860.
Verbena urticifolia, L. Road sides. August, 1860.
Phryma Leptostachya, L. Woods west of city. July, 1860.

LABIATÆ.

Teucrium Canadense, L. Burlington Heights, near Desjardins Canal. July, 1859.
Collinsonia Canadensis, L. Prince's Island. July, 1859.
Monarda didyma, L. Near Mount Forest. August, 1860.
Monarda fistulosa, L. Barton Church. 22nd July, 1859.
Monarda punctata, L. Bellhouse Farm, East Flamboro. 19th August, 1859.
Nepeta Cataria, L. Common. July, 1859.
Brunella vulgaris, L. Common. 21st July, 1859.
Scutellaria laterifolia, L. Wet places, common. 15th August, 1859.
Scutellaria galericulata, L. Near Desjardins Canal, Burlington Heights. July, 1859.
Isanthus cæruleus, Michx. Found at Westminster, C. W., by Miss Crooks. July, 1860.

BORAGINACEÆ.

Echium vulgare, L. Road side, London, C. W. Found by Miss Crooks. 10th July, 1860.

Onosmodium hispidum, Michx. Westminster, C. W. Found by Miss Crooks. July, 1860.

Lithospermum arvense, L. Road sides. May, 1859.

Myosotis palustris, With. Wet places, common. June, 1860.

Cynoglossum officinale, L. Road sides and fields, common. July, 1860.

Cynoglossum Virginicum, L. Galt. Found by Miss Crooks. 8th June, 1860.

Cynoglossum Morisoni, DC. Road sides, common. July, 1860.

HYDROPHYLLACEÆ.

Hydrophyllum Virginicum, L. Woods, mountain side beyond Mr. Brydge's house, abundant. June, 1859.

POLEMONIACEÆ.

Phlox divaricata, L. Common, in open woods west of city. 7th June, 1860.

CONVOLVULACEÆ.

Calystegia sepium, Brown. Waterdown road, near mouth of creek. July, 1859.

Cuscuta Gronovii, Willd. 25th Sept., 1859.

SOLANACEÆ.

Physalis viscosa, L. St. Thomas, C. W. Found by Miss Crooks. 30th Aug., 1860. (Also in list of Hamilton flora in Canadian Journal, vol. 2, p. 222.)

Solanum Dulcamara, L. Road side, near Barton Church. 5th Aug., 1859.

Solanum nigrum, L. Road side, near Dundas. 3rd Sept., 1860.

Datura Stramonium, L. Burlington Beach, common. 1st August, 1860.

Nicandra physaloides, Gærtn. St. Thomas. Found by Miss Crooks. Aug., 1860.

GENTIANACEÆ.

Halenia deflexa, Griseb. Collingwood. 16th August, 1860. (In list of Hamilton plants, Canadian Journal, vol. 2, p. 222.)

Gentiana crinita, Willd. Prince's Island. 31st August, 1860.

APOCYNACEÆ.

Apocynum androsæmifolium, L. Common, Carrol's Point. 4th July, 1859.

Apocynum cannabinum, L. Carrol's Point. 4th July, 1859.

ASCLEPIADACEÆ.

Asclepias Cornuti, Decaisne. Fields and road sides, common. July, 1859.

Asclepias incarnata, L. Low wet grounds, common. July, 1859. This species has a strong and valuable fibre, capable of being manufactured into cloth or paper.

Asclepias variegata, L. July, 1859.

Asclepias tuberosa, L. East Flamboro, near Mr. Carrol's. 4th July, 1859.

OLEACEÆ.

Fraxinus Americana, L. Not common. Field at east end of city. 21st May, 1861.

Fraxinus sambucifolia, Lamarck. Common in swamps, not observed in flower.

ARISTOLOCHIACEÆ.

Asarum Canadense, L. Mountain side, west of Hamilton, common. June, 1859.

NYCTAGINACEÆ.

Phytolacca decandra, L. Road side, near Stoney Creek. 26th Aug., 1859.

CHENOPODIACEÆ.

Chenopodium album, L. Common. August, 1859.

Chenopodium hybridum, L. About dwellings. Sept. 1859. (Doubtful if this species has become naturalized, as it is generally found in cultivated grounds.)

Chenopodium Botrys, L. Road sides, common. Sept. 1859.

Chenopodium ambrosioides, L. Road sides, common. Sept. 1859.

Blitum capitatum, L. Common in newly cleared lands. In fruit, August, 1860.

AMARANTACEÆ.

Amarantus paniculatus, L. Near dwellings in cultivated ground. 9th August, 1859.

Amarantus retroflexus, L. Near dwellings. 9th August, 1859.

POLYGONACEÆ.

Polygonum Pennsylvanicum, L. Field near Stoney Creek. August, 1859.

Polygonum amphibium, L. Marsh, mouth of Waterdown Creek. August, 1860.

Polygonum Persicaria, L. Common. July, 1859.

Polygonum acre, H. B. K. Wet places. September, 1860.

Polygonum Hydropiper, Michx. Wet places. September, 1859.

Polygonum aviculare, L. Common. July, 1859.

Polygonum Convolvulus, L. Common. July, 1859.

Polygonum dumetorum, L. Found by Miss Crooks at St. Thomas. August, 1860.

Rumex Acetosella, L. Common. June, 1860.

Rumex crispus, L. Common. July, 1859.

LAURACEÆ.

Sassafras officinale, Nees. Ancaster. May, 1860. This tree is common in the neighborhood of Ancaster, on Prince's Island, and in East Flamboro, between Waterdown and Burlington Bay.

Benzoin odoriferum, Nees. Found by Miss Crooks at Westminster, in July, 1860. Not in flower. Said to grow in Ancaster. (In list of Hamilton Plants in Canadian Journal, Vol. II, page 222.)

THYMELEACEÆ.

Dirca palustris, L. Sulphur Spring, Ancaster. 4th May, 1860.

SANTALACEÆ.

Comandra umbellata, Nutt. Mountain top near Mr. Brydge's house, and near the Albion Mills. June, 1859.

EUPHORBIACEÆ.

Euphorbia obtusata, (var. platyphylla, L.) Pursh. Shore of Lake Ontario, below Stoney Creek. July, 1860.

URTICACEÆ.

Ulmus Americana, L. Common. April, 1860.

Ulmus fulva, Michx. Woods, Mountain side near Ancaster. 10th May, 1861.

Urtica gracilis, Ait. Mountain side behind the city. Common. August, 1860.

Laportea Canadensis, Gaudich. Sulphur Spring, near Ancaster. July, 1859.

Pilea pumila, Gray. Hamilton. 5th August, 1859.

PLATANACEÆ.

Platanus occidentalis, L. Banks of several small streams at and near Stoney Creek and at Grimsby. Said to be the largest North American tree, excepting the Wellingtonia gigantea, Lindley, of California. None of those in the neighborhood of Hamilton, though large, are of extraordinary size. Not observed in flower.

JUGLANDACEÆ.

Juglans cinerea, L. Common along sides of Mountain and other places. May, 1860. In flower, 27th May, 1861.

Juglans nigra, L. Common. There are some very large trees still standing in the outskirts of the city and in the neighborhood, but most of the large trees have been cut. Small and medium sized trees are common. May, 1860; also in flower, 27th May, 1861.

Carya alba, Nutt. Common. 6th June, 1860.

CUPULIFERÆ.

Quercus alba, L. Common. May, 1860.

Quercus macrocarpa, Michx. East Flamboro, near Desjardins Canal. 4th June, 1861.

Quercus rubra, L. Woods, common. May, 1860, and 4th June, 1861.

Castanea vesca, L. Common, particularly in the valley between Ancaster and West Flamboro, does not extend to the north further than West Flamboro, in the direction of Toronto, much beyond Wellington Square, is found to the east in the direction of Niagara. 21st July, 1859.

Fagus ferruginea, Aiton. Woods, common. 4th June, 1861.

Carpinus Americana, Michx. Common, near Ancaster. In flower. 10th May, 1861.

Ostrya Virginica, Willd. Common. 9th May, 1861.

Corylus rostrata, Ait. Waterdown road. 6th May, 1861.

BETULACEÆ.

Betula papyracea, Ait. Woods near borders of Burlington Bay. June, 1859. Sterile flowers, 7th May, 1861.

Betula lenta, L. Wood near Dundas. Not observed in flower.

Alnus incana, Willd. Oaklands. 16th April, 1860.

SALICACEÆ.

Salix nigra, Marsh. 1st June, 1861.

CONIFERÆ.

Pinus strobus, L. Common. June, 1860.

Abies Canadensis, Michx. Mountain west of Hamilton. 24th May, 1861.

Abies nigra, Poir. Millgrove marsh. 23rd May, 1861.

Abies alba, Michx. Swampy ground near Brock road, not observed in flower.

Juniperus Virginiana, L. Near Mr. Carrol's house, on high bank of the Bay. 25th May, 1861.

Larix Americana, Michx. Marsh near Millgrove. 29th April, 1861.

Thuja occidentalis, L. Common in swamps. Northern parts of East and West Flamboro. 17th May, 1861.

Taxus baccata, L., var. Canadensis. Mountain side, beyond Mr. Brydge's house. 29th April, 1861.

ARACEÆ.

Arum triphyllum, L. Mountain side, west of city, common. 12th May, 1860.

Calla palustris, L. Lake Medad. June, 1860.

Symplocarpus fœtidus, Salisb. Oaklands. 16th April, 1860.

TYPHACEÆ.

Sparganium ramosum, Huron. Beach near Water Works. 9th July, 1859.

NAIADACEÆ.

Potamogeton perfoliatus, L. Burlington Bay, near the beach. July, 1859.

Potamogeton pectinatus, L. Burlington Bay. July, 1859.

Potamogeton natans, L. Burlington Bay, near beach. July, 1859.

ALISMACEÆ.

Sagittaria variabilis, Englemann. Burlington Bay near beach, common. Aug., 1860.

ORCHIDACEÆ.

Orchis spectabilis, L. 6th June, 1859.

Gymnadenia tridentata, Lindley. Millgrove, border of Marsh. 31st July, 1860.

Platanthera flava, Gray. Prince's Island. 14th July, 1860.

Platanthera dilatata, Lindley. Millgrove. 31st July, 1860.

Platanthera leucophæa, Nutt. Millgrove. 31st July, 1860.

Platanthera psycodes, Gray. Millgrove. 31st July, 1860.

Platanthera bracteata, Torrey. Mountain, near J. M. Williams' house. 6th June, 1860.

Platanthera hyperborea, Lindley. Sulphur Spring, Ancaster. 19th July, 1859.
Platanthera orbiculata, Lindley. Near Albion Mills. June, 1860.
Platanthera Hookeri, Lindley. Near Brock Road, west of Desjardins Canal. 31st July, 1860.
Goodyera pubescens, R. Brown. Sulphur Spring, near Ancaster. 5th August, 1859. Common. The leaves of this plant pounded and applied in the form of a poultice are said to be a cure for the bite of a rattle-snake.
Corallorhiza innata, R. Brown. Prince's Island. 23rd May, 1860.
Corallorhiza multiflora, Nutt. Woods near Lake Medad. 23rd June, 1860.
Pogonia ophioglossoides, Nutt. Bog at Millgrove. 31st July, 1860.
Calypso borealis, Salisbury. Shore of Lake Medad. 17th May, 1860.
Cypripedium pubescens, Willd. Prince's Island. 6th June, 1860.
Cypripedium parviflorum, Salisbury. Mountain beyond Mr. Brydge's house. June, 1859.
Cypripedium spectabile, Swartz. Lake Medad. 23rd June, 1860.
Cypripedium acaule, Aiton. 24th May, 1860.

AMARYLLIDACEÆ.

Hypoxis erecta, L. Prince's Island. 21st June, 1860.

IRIDACEÆ.

Iris versicolor, L. About shores of Burlington Bay. June, 1860.
Sisyrinchium Bermudianum, L. Prince's Island. 28th May, 1860.

SMILACEÆ.

Smilax. Not determined with certainty. Supposed to be *Smilax Pseudo-China* of Linnæus. Border of field west of city, in front of Mr. Williams' house. End of June, 1860.
Trillium erectum, L. Woods. Common. 4th May, 1860.
Trillium pendulum, Willd. Mountain side below Barton Lodge. 16th May, 1860.
Trillium grandiflorum, Salisb. Woods. May, 1860. (Miss C.)
Medeola Virginica, L. Woods near Lake Medad. 23rd June, 1860.

LILIACEÆ.

Polygonatum biflorum, Elliott. Woods. June, 1859.
Smilacina racemosa, Desf. Woods, side of Mountain, west of Hamilton. Common. 4th June, 1859.
Smilacina stellata, Desf. Prince's Island. 28th May, 1860.
Smilacina trifolia, Desf. Marsh at Millgrove. 19th June, 1861.
Smilacina bifolia, Ker. Common. May, 1859.
Lilium Philadelphicum, L. East Flamboro, near Mr. Carrol's. 4th July, 1859.
Lilium Canadense, L. Found by Miss Crooks, near Hamilton. July, 1860.

MELANTHACEÆ.

Uvularia perfoliata, L. Woods west of city. 12th May, 1860.
Prosartes lanuginosa, Don. Woods. June, 1859.
Streptopus roseus, Michx. Woods near Lake Medad. 17th May, 1860.
Tofieldia glutinosa, Willd. Shore of Georgian Bay at Collingwood. 16th Aug., 1860.

PONTEDERIACEÆ.

Pontederia cordata, L. Burlington Beach. 2nd August, 1860.*

In order to make the List of the Flora of Hamilton as complete as possible, I have copied, from a List published in the Canadian Journal, vol. 2, page 222, the names of all the Phænogamous plants not included in the foregoing list, viz.—

Ranunculus fascicularis, Muhl. 24th June.
Barbarea vulgaris, R. Brown. 22nd July.
Viola ovata, Nutt. V. s. gittata var. ovata, Torr and Gray. 4th May.
Lechea minor, Lamarck. 13th Sept.
Hypericum corymbosum, Muhl. 19th July.
Saponaria officinalis, L. 26th July.
Silene noctiflora, L. 31st June.
Cerastium hirsutum, Muhl. C. vulgatum, L. 4th June.
Polygala fastigiata, Nutt. 17th Aug.
Lathyrus ochroleucus, Hook. 7th June.
Lathyrus maritimus, Bigelow. 30th June.
Desmodium cuspidatum, Torr and Gray. 31st July.
Desmodium nudiflorum, DC. 31st July.
Desmodium paniculatum, DC. 4th Aug.
Desmodium Dillenii, Darlington. 4th Aug.
Baptisia tinctoria, R. Brown. 5th Aug.
Phaca neglecta, Torr and Gray. Astragalus Cooperi. 15th Aug.
Phaseolus helvolus, L. 20th Aug.
Cerasus Pennsylvanicus, L. 27th May.
Cratægus coccinea, L. 4th June.

* NOTE.—In the foregoing list I have omitted some of the natural orders of Phænogamous plants, such as Gramineæ, Cyperaceæ, Juncaceæ and Salicaceæ, and all the Cryptogamia for the reason that I have only had time to examine and determine a very limited number of Plants belonging to these orders. I hope at some future time to be able to furnish a supplementary list of these Plants, and also of such of the other Phænogamous plants to be found in this neighborhood, not hitherto observed by me.

A. L.

HAMILTON, MARCH, 1861.

Rubus triflorus, Richardson. 29th May.
Geum Virginianum, L. 30th June.
Geum strictum, Aiton. 30th June.
Circœa Lutetiana, L. 16th July.
Epilobium palustre, L. 5th Aug.
Chrysosplenium Americanum, Schw. 8th May.
Cicuta bulbifera, L. 26th July.
Archangelica atropurpurea, Hoffm. 30th June.
Viburnum Lentago, L. 12th June.
Galium lanceolatum, Torr. 31st June.
Aster miser, L. 31st July.
Aster corymbosus, Aiton. 31st July.
Aster simplex, Willd. 4th Aug.
Aster multiflorus, Aiton. 28th Aug.
Aster longifolius, Lamarck. 28th Aug.
Aster puniceus, L. 28th Aug.
Aster acuminatus, Michx. 28th Aug.
Aster dumosus, L. 13th Sept.
Aster pre. anthoides, Muhl. 13th Sept.
Aster azureus, Lindley. 13th Sept.
Aster patens, Aiton. 13th Sept.
Diplopappus albus, Hook. Aster ptarmicoides. 15th Aug.
Helianthus tracheliifolius, Willd. 16th July.
Helianthus giganteus, L. 15th Aug.
Rudbeckia hirta L. 12th July.
Bidens connata, Muhl. 26th July.
Polymnia Canadensis, L. 26th July.
Solidago altissima, L. 4th August.
Solidago Canadensis, L. 26th July.
Solidago squarrosa, Muhl. 18th August.
Solidago puberula, Nutt. 28th August.
Solidago Muhlenbergii, Torr. and Gr. 28th August.
Circium discolor, Spreng. 4th August.
Hieracium paniculatum L. 20th August.
Hieracium longipilum, Torr. 5th August.
Artemisia Canadensis, Michx. 20th August.
Artemisia gnaphalioides, (var. of A Ludoviciana.) 20th August.
Lobelia puberula, Michx. 20th July.
Chimaphila maculata, Pursh. 31st July.
Lysimachia stricta, Aiton. 10th July.

Aphyllon uniflorum, Torr. and Gr. 19th June.
Verbascum Blattoria, L. 4th July.
Scrophularia Marilandica, L. 30th July.
Veronica peregrina, L. 30th May.
Veronica Anagallis, L. 31st July.
Stachys aspera, Michx. 31st July.
Melissa Clinopodium. 21st July.
Leonurus cardiaca, L. 30th July.
Pycnanthemum incanum, Michx. 18th August.
Hedeoma pulegioides, Persoon. 18th August.
Scutellaria parvula, Michx. 20th August.
Hydrophyllum Canadense, L. 3rd July.
Frasera Caroliniensis, Walt. 25th June.
Gentiana quinqueflora, Lamarck. 25th September.
Gentiana Andrewsii, Griseb. 28th August.
Asclepias phytolaccoides, Pursh. 2nd July.
Asclepias debilis. 30th June.
Chenopodium urbicum, L. 5th August.
Polygonum arifolium, L. 13th September.
Polygonum sagittatum, L. 13th September.
Polygonum lapathifolium. 13th September.
Rumex Hydrolapathum, Hudson. 15th August.
Euphorbia polygonifolia, L. 4th July.
Euphorbia corollata, L. 24th July.
Acalypha Virginica, L. 5th Aug.
Spiranthes cernua, Richardson. 28th Aug.
Trillium cernuum, L. 8th May.
Allium tricoccum, Aiton. 3rd July.
Lilium superbum, L. 12th July.
Tofieldia pubens, Aiton. 17th Aug.

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