

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion
along interior margin/
La reliure serrée peut causer de l'ombre ou de la
distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear
within the text. Whenever possible, these have
been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées.

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Continuous pagination/
Pagination continue
- Includes index(es)/
Comprend un (des) index

Title on header taken from: /
Le titre de l'en-tête provient:

- Title page of issue/
Page de titre de la livraison
- Caption of issue/
Titre de départ de la livraison
- Masthead/
Générique (périodiques) de la livraison

Additional comments: /
Commentaires supplémentaires:

Pagination is as follows: 29-40, 74-101 p.

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
						✓					

Excursion to Butternut Grove, 31st May.

May, 1890.

THE
* OTTAWA NATURALIST *

VOLUME IV. No. 2.

The
TRANSACTIONS.

Of the
* Ottawa Field-Naturalists' Club *

(Organized March, 1879.- Incorporated March, 1884.)

CONTENTS.

	PAGE
On Some of the Larger Unexplored Regions of Canada. By Dr. G. M. Dawson.....	29
Editorial Announcements.....	40
Flora Ottawaensis. By J. Fletcher.....	74

OTTAWA, CANADA:

W. F. Mason, Printer, 45 & 50 Queen St.

Issued May 1st, 1890.

Published-Monthly at \$1.00 per annum.

Patron :

HIS EXCELLENCY THE LORD STANLEY OF PRESTON,
GOVERNOR GENERAL OF CANADA.

President : DR. R. W. ELLS.

Vice-Presidents :

1st, R. B. WHYTE. | 2ND, J. BALLANTYNE.

Secretary : T. J. MACLAUGHLIN (Dept. Public Works).

Treasurer : JAMES FLETCHER (Experimental Farm).

Librarian : W. A. D. LEES (P. O. Box 258).

Committee : { MISS E. BOLTON, MISS G. HARMER, MISS M. A. MILLS,
H. M. AMI, W. H. HARRINGTON, A. G. KINGSTON.

Standing Committees of Council :

Publishing—JAMES FLETCHER, *Editor*; W. A. D. LEES, W. H. HARRINGTON, *Assistant Editors*.

Excursions—R. B. WHYTE, T. J. MACLAUGHLIN, H. M. AMI, MISS G. HARMER, MISS M. A. MILLS.

Soirées—JAMES FLETCHER, J. BALLANTYNE, A. G. KINGSTON, MISS E. BOLTON.

Lecturers :

Geology—H. M. AMI, DR. R. BELL, A. P. LOW.

Botany—JAMES FLETCHER, R. B. WHYTE, WM. SCOTT.

Conchology—REV. G. W. TAYLOR, F. R. LATCHFORD.

Entomology—T. J. MACLAUGHLIN, J. FLETCHER, W. H. HARRINGTON.

Ornithology—W. A. D. LEES, PROF. J. MACOUN, A. G. KINGSTON.

Zoology—J. BALLANTYNE, H. B. SMALL, W. P. LETT.

The Librarian will furnish the Publications of the Club at the following rates :—

Transactions,—

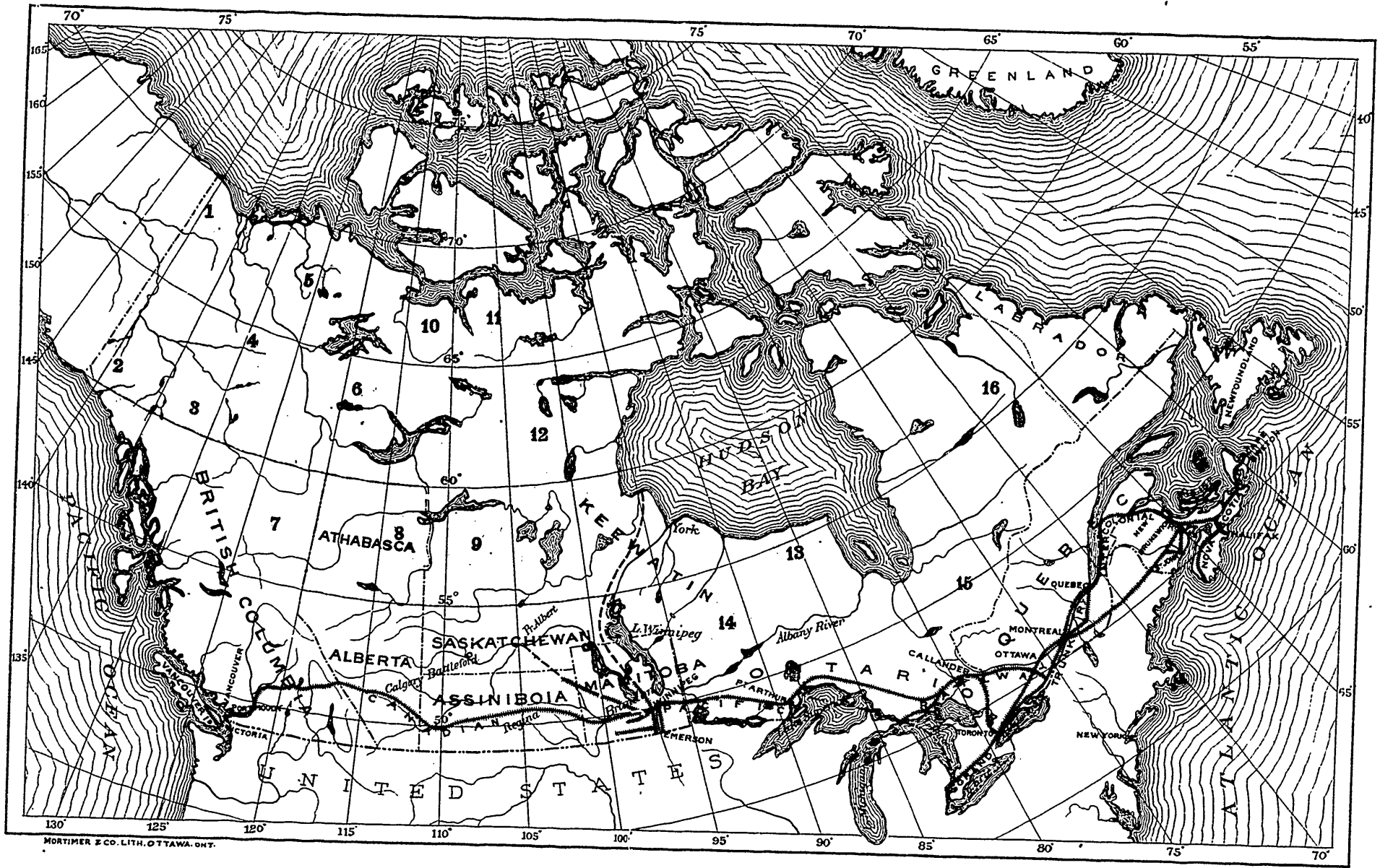
Part 1, Not sold singly	}	\$1.00 for Vol. I.
“ 2, 25 cts.; to members, 15 cts.		
“ 3, 25 “ “ 15 “	}	To members, 50 cts.
“ 4, 25 “ “ 15 “		
“ 5, 30 “ “ 20 “	}	\$1.00 for Vol. II.
“ 6, 40 “ “ 25 “		
“ 7, 30 “ “ 20 “		

The Ottawa Naturalist, \$1.00 per annum.

Monthly parts, 10 cents each; to members, 4 cents.

Quarterly parts, 25 cents each; to members, 10 cents.

NOTICE.—The Treasurer begs to call the attention of members to his advertisements.



MORTIMER & CO. LITH. OTTAWA. ONT.

DOMINION OF CANADA.—OUTLINE MAP SHEWING THE LARGER UNEXPLORED AREAS, 1890.

(To illustrate paper by George M. Dawson.)

ON SOME OF THE LARGER UNEXPLORED REGIONS OF CANADA.

(By G. M. Dawson, D.S., Assoc. R.S.M., F.G.S., F.R.S.C.)

(Read 7th March, 1890.)

If on reading the title of the paper which I had promised to contribute to the Ottawa Field-Naturalists' Club, any one should have supposed it to be my intention to endeavour to describe or forecast the character of the unexplored areas mentioned, I must, in the first place disclaim any such intention. The very existence of large regions of which little or nothing is known, is of course stimulating to a fertile imagination, ready to picture to itself undiscovered "golden cities a thousand leagues deep in Cathay," but such unscientific use of the imagination is far removed from the position of sober seriousness, in which I ask your attention to the facts which I have to present.

Fortunately, or unfortunately as we may happen to regard it, the tendency of our time is all in the direction of laying bare to inspection and open to exploitation, all parts, however remote, of this comparatively small world in which we live, and though the explorer himself may be impelled by a certain romanticism in overcoming difficulties or even dangers met with in the execution of his task, his steps are surely and closely followed by the trader, the lumberer, or the agriculturist, and not long after these comes the builder of railways with his iron road. It is, therefore, rather from the point of view of practical utility than from any other, that an appeal must be made to the public or to the government for the further extension of explorations, and my main purpose in addressing you to-night is to make such an appeal, and to show cause, if possible, for the exploration of such considerable portions of Canada as still remain almost or altogether unmapped.

What I have to say, in fact, on this subject, resolves itself chiefly into remarks on the map exhibited here, upon which the unexplored areas to which I am about to refer, are clearly depicted in such a manner, I believe, as almost to speak for themselves.

It is very commonly supposed, even in Canada, but to a greater extent elsewhere, that all parts of the Dominion are now so well known that exploration, in the true sense of the term, may be considered as a thing of the past. This depends largely upon the fact that the maps of

the country generally examined are upon a very small scale, and that upon such maps no vast areas yet remain upon which rivers, lakes, mountains or other features are not depicted. If, however, we take the trouble to enquire more closely into this, and consult perhaps one of the geographers whose name may appear on the face of the map which we have examined, asking such awkward questions as may occur to us on the sources of information for this region or that, we may probably by him be referred to another and older map, and so on till we find in the end that the whole topographical fabric of large parts of all these maps rests upon information of the vaguest kind.

Of most of the large areas marked upon the map here shown, this is absolutely true, and the interests of knowledge with respect to these would be better subserved if such areas were left entirely blank, or, at least, if all the geographical features drawn upon them appeared in broken lines, in such a way as to show that none of them are certain. In other regions, the main geographical outlines, such as the courses of the larger rivers, are indicated approximately, with such accuracy as may be possible from accounts or itineraries derived from travellers or from officers of the Hudson Bay Company; or from the descriptions or rough sketches of Indians or other persons by whom the region has been traversed, but who have been unprovided with instruments of any kind and whose knowledge of the country has been incidentally obtained.

There is, in the case of such partially explored regions, more excuse for the delineation of the main features on our maps, as these may be useful in imparting general information of a more or less inexact kind. We can scarcely, however, admit that such regions have been explored in any true sense of that term, while they are certainly unsurveyed, and very little confidence can be placed in maps of this kind as guides in travel. When, ten years ago, I struck across from Fort McLeod, on the west side of the Rocky Mountains, with the purpose of reaching Fort Dunvegan on the Peace, through a country densely forested and without trails or tracks of any kind, I had so much confidence in the existing maps of that region as to assume that Dunvegan was at least approximately correct in position on them. As often as possible I took observations for latitude, and each night

worked out our position by latitude and departure, till at a certain point I was about to turn off to the north of the line previously followed with the confident anticipation of finding Dunvegan. Just here, very fortunately, we fell in with some Indians, and though our means of communicating with them were very imperfect, we gathered enough to lead us to accept the guidance of one of them, who promised to lead us to the fort, but took an entirely different direction from that I had proposed taking. He was right, but Dunvegan proved to be, as shown on the maps, nearly forty miles west of its real position. Fortunately no very great importance attached to our reaching Dunvegan on a given day, but none the less, this practical experience proved to me very conclusively the desirability of showing features in broken lines, or otherwise indicating their uncertainty when they have not been properly fixed.

It must be confessed, however, that most of the travellers ordinarily to be found in these unexplored regions, being Indians or hunters, traders and others travelling under the guidance of Indians do not depend on the latitudes or longitudes of places, or on the respective bearings of one place from another. The Indians follow routes with which they have been familiar since childhood, or when beyond the boundaries of their own particular region of country, go by landmarks, such as mountains, lakes and rivers which have been described to them by their neighbours. Their memory in this respect is remarkable, but it must be remembered that among their principal subjects of conversation when sitting about the camp-fire are the distances in day's journeys from place to place, the routes which they have followed or have known others to follow, the difficulties to be encountered on these, the points at which food of different kinds may be obtained, and the features which strike them as being remarkable in the country traversed. Returning, however, from this digression, which began with the statement that accurate maps of such regions as are at present merely traversed by traders and Indians, are not imperative from the point of view of such travellers, it may with confidence be affirmed that such maps and the explorations upon which they are based, are absolutely essential to civilized society, to show in the first place what the natural resources of these regions are and how they may be

utilized, in the second by what highways such regions may be most easily reached.

A glance at the map will show, that while many of the larger unexplored areas may be affirmed to lie to the north of the limit of profitable agriculture, considerable regions situated to the south of this limit still await examination. Large districts, again, in which no farmer will ever voluntarily settle, may afford timber which the world will be glad to get when the white pine of our nearer forests shall become more nearly exhausted, while with respect to mineral resources, it is probable that in the grand aggregate the value of these which exist in the unexplored regions will be found, area for area, to be equal to those of the known regions, comparing each particular geological formation with its nearest representative. On the grounds alone, therefore, of geographical knowledge, and of the discovery and definition of the reserves of the country in timber and minerals, the exploration of all these unknown or little-known regions may be amply justified.

Taking a line drawn north and south in the longitude of the Red River valley, which is, as nearly as may be, the centre of Canada from east to west, it may confidently be stated that by far the larger part of the country in which agricultural settlement is possible lies to the west, while the great bulk of the actual population lies to the east of this line. Looking to this grand fundamental fact, I believe it may safely be affirmed that some members of this audience will live to see the day when these conditions with respect to population will be boldly reversed and in which the greater number of our representatives in Parliament gathering here will come from this great western region.

This disposition of the cultivable land depends partly upon the physical characteristics of the country, and in part on its climatic conditions. Beyond Winnipeg, and stretching therefrom to the west and north-west, is the great area of prairie, plain and plateau which, wider near the forty-ninth parallel than elsewhere on the continent, runs on in one form or other, though with diminishing width, to the Arctic Ocean. This is, generally speaking, an alluvial region, and one of fertile soils. Very fortunately, and as though by a beneficent provision of nature, the climatic features favour the utilization of this belt.

The summer isothermals, which carry with them the possibility of ripening crops, trend far to the north.

Let us trace, for example, and as a rough and ready index of the northern limit of practicable agriculture of any kind, that isothermal line which represents a mean temperature of 60° Fahrenheit in the month of July. Passing through the southern part of Newfoundland and touching the island of Anticosti, this line runs to the north end of Mistassini Lake, and thence crosses Hudson Bay, striking the west shore a short distance north of York Factory. Thence it runs westward, skirting the north end of Reindeer Lake, and then bending to the north-west, crosses Great Slave Lake, and touches the southern extremity of Great Bear Lake. From this point it resumes a westward course and crosses the Yukon River a considerable distance to the north of the confluence of the Pelly and Lewes, turning south again almost on the east line of Alaska. We need not, however, further follow its course, as owing to peculiar climatic conditions on the West Coast, it ceases there to be any criterion as to the conditions of agriculture.

The character of much of the western interior country is such, that its exploration and survey is comparatively easy, and it will be observed that here the larger unknown regions are to be found only far to the northward, leaving in the more rugged and inhospitable eastern region vast islands of unexplored country in much more southern latitudes.

It may be said, in fact, that comparatively little of the region capable, so far as climate goes, of producing wheat is now altogether unknown; but it may be added, that increasing as the world now is in population, its people cannot much longer expect to find wheat-growing lands unoccupied in large blocks. The time is within measurable distance when lands with a fertile soil though more or less rigorous climate, in which only barley, oats, hemp, flax and other hardy crops can be matured, will be in demand, and we are far from having acquired even a good general knowledge of these lands in Canada.

For many of the unexplored regions marked upon this map, however, we can in reason appeal only to their possible or presumable mineral wealth as an incentive to their exploration, and if some of them should prove wholly or in great part barren when such explora-

tion shall have been carried out, it will not be without utility to acquire even this negative information, and write upon them in characters as large as need be, "No thoroughfare."

I will now ask your further attention for a few moments while I run over and make some remarks in detail on the various unexplored areas as indicated on the map. It must first, however, be explained in what manner the unexplored areas referred to have been outlined. All lines, such as those of rivers, chains of lakes or other travelled routes, along which reasonably satisfactory explorations have been made and of which fairly accurate route-maps are in existence, are given an approximate average width of about fifty miles, or twenty-five miles on each side of the explorer's or surveyor's track. The known lines are thus arbitrarily assumed to be wide belts of explored country, and that which is referred to as unexplored, comprises merely the intervening tracts. By this mode of definition, the unexplored regions are reduced to minimum dimensions. Neither are any comparatively small tracts of country lying between explored routes included in my enumeration, in which the least area mentioned is one of 7,500 square miles; nor are the Arctic islands, lying to the north of the continent, referred to. Because of the empirical mode in which the unexplored areas have thus been delineated, it has not been attempted to estimate with more than approximate accuracy the number of square miles contained in each, my purpose being merely to render apparent the great dimensions of these areas.

In enumerating these areas, I shall not refer to the various explorations and lines of survey by which they are defined and separated one from another, as this would involve mention of nearly all the explorers who have traversed the northern part of the continent. I shall, however, note such excursions as have been made into or across the regions which are characterized as unexplored.

Beginning, then, in the extreme north-west of the Dominion, we find these areas to be as follows:—

1. Area between the eastern boundary of Alaska, the Porcupine River and the Arctic coast, 9,500 square miles, or somewhat smaller than Belgium. This area lies entirely within the Arctic circle.

2. Area west of the Lewes and Yukon rivers and extending to the boundary of Alaska, 32,000 square miles, or somewhat larger than Ireland. This country includes the head-waters of the White and probably of the Tananà rivers, and, being comparatively low and sheltered from the sea by one of the highest mountain ranges on the continent, the St. Elias Alps, doubtless possesses some remarkable peculiarities of climate.

3. Area between the Lewes, Pelly and Stikine rivers and to the east of the Coast Ranges, 27,000 square miles, or nearly as large as Scotland. This has been penetrated only by a few "prospectors" from whom, and from Indians, the courses of rivers shown on my maps published in connection with the Yukon Expedition Report are derived. It lies on the direct line of the metalliferous belt of the Cordillera, and its low lands are capable of producing hardy crops.

4. Area between the Pelly and Mackenzie Rivers, 100,000 square miles, or about twice the size of England. This belongs partly to the Yukon basin and partly to that of the Mackenzie, and includes nearly 600 miles in length of the main Rocky Mountain Range. Many years ago, Mr. A. K. Isbister penetrated the northern part of this area for some distance on the line of the Peel River,* but, owing to the manner in which he had to travel, but little accuracy can be attributed to his sketch of that river. Abbé Petitot also made a short journey into its northern part from the Mackenzie River side, but with these exceptions, no published information exists respecting it.

5. Area between Great Bear Lake and the Arctic coast, 50,000 square miles, or about equal to England in size. Nearly all to the north of the Arctic circle.

6. Area between Great Bear Lake, the Mackenzie and the western part of Great Slave Lake, 35,000 square miles, or larger than Portugal. With respect to this region and that last mentioned, it must be explained that I have felt some doubt whether they should be characterized as unexplored on the basis previously explained as that which is generally applied. Between 1857 and 1865, Mr. R. Macfarlane, of the

*Some account of Peel River, North America, by A. K. Isbister, Journ. Roy. Geog. Soc., vol. xv., 1845, p. 332.

Hudson Bay Company, carried out an intelligent and valuable examination of part of the region north of Great Bear Lake, some results of which have lately been published,* and in both of these areas, between 1864 and 1871, the indefatigable missionary, Abbé Petitot, made numerous journeys, of which he subsequently published an account.† As Petitot's instruments consisted merely of a compass, and a watch which he rated by the meridian passage of the sun, it must be assumed that his mapping of the country does not possess any great accuracy. His work, however, considering the difficulties under which it was performed, is deserving of all praise, and his several descriptions of the character of the country traversed are most valuable. It does not appear from his account of these regions that they are likely to prove of great utility to civilized man, except as fur preserves, or possibly from the minerals which they may contain. He writes: "Ce pays est composé de contrées silencieuses comme le tombeau, des plaines vastes comme des départements, des steppes glacées plus affreux que ceux de la Sibérie, de forêts chétives, rabougries comme on n'en voit que dans le voisinage des glaciers du Nord."

7. Area between Stikine and Liard rivers to the north and Skeena and Peace rivers to the south, 81,000 square miles, or more than twice as large as Newfoundland. This includes a portion of the western Cordillera, and, between the Liard and Peace rivers, a large tract of the interior plateau region of the continent, parts of which, there is reason to believe, consist of good agricultural land. Its western extremity was crossed in 1866 and 1867 by the exploratory survey of the Western Union or Collins' Telegraph Company, then engaged in an attempt to connect the North American and European telegraph systems through Asia. No details of this part of their exploration have, however, been published, and if we may judge from other parts of their line, since checked, the survey made was of too rough a character to possess much geographical value.

8. Area between Peace, Athabasca and Loon rivers, 7,500 square miles, or about half as large as Switzerland.

*Canadian Record of Science, Jan., 1890.

†Bulletin de la Société de Géographie, Tom x, 1875.

9. Area south-east of Athabasca Lake, 35,000 square miles. This again may be compared in extent to Portugal.

10. Area east of the Coppermine River and west of Bathurst Inlet, 7,500 square miles. This again may be compared to half the area of Switzerland.

11. Area between the Arctic coast and Back's River, 31,000 square miles or about equal to Ireland.

12. Area surrounded by Back's River, Great Slave Lake, Athabasca Lake, Hatchet and Reindeer lakes, Churchill River, and the west coast of Hudson Bay, 178,000 square miles. Much larger than Great Britain and Ireland, and somewhat larger than Sweden. The lakes and rivers shown in this great region depend entirely on the result of the three journeys made by Hearne in 1769-1772.* Hearne really wandered through parts of this region in company with Indians whom he was unable to control, his ultimate object (which he at length accomplished) being to reach the Coppermine River, in order to ascertain for the Hudson Bay Company, whether it was possible to utilize the native copper found there. Not even roughly approximate accuracy can be assigned to his geographical work. Referring to the position of the mouth of the Coppermine, he writes:—"The latitude may be depended upon to within 20 miles at the utmost." In reality it afterwards proved to be 200 miles too far north. This country includes the great "barren grounds" of the continent, and is the principal winter resort of the musk ox as well as of great herds of caribou. Hearne's general characterization of it is not very encouraging, but certainly we shall know more about it. He writes:—"The land throughout the whole track of country is scarcely anything but one solid mass of rocks and stones, and in most parts very hilly, particularly to the westward, among the woods." The extreme north-eastern extremity of this region was also crossed by Lieut. Schwatka in the course of his remarkable journey to King-William Land, but his geographical results possess little value.†

*A Journey from Prince of Wales Fort, in Hudson Bay, to the Northern Ocean, 1796.

†Schwatka's Search by H. W. Gilder.

13. Area between Severn and Attawapishkat rivers and the coast of Hudson Bay, 22,000 square miles, or larger than Nova Scotia. Several lakes and rivers are shown upon the maps in this region in practically identical form since Arrowsmith's map of 1850, but I have been unable to ascertain the origin of the information.

14. Area between Trout Lake, Lac Seul and the Albany River, 15,000 square miles, or about half the size of Scotland.

15. Area to the south and east of James Bay, 35,000 square miles, which also may be compared to the area of Portugal. This region is the nearest of those which still remain unexplored to large centres of population. It is probable that much of it consists of low land which may afford merchantable timber.

16. Area comprising almost the entire interior of the Labrador peninsula or North-east Territory, 289,000 square miles. This is more than equal to twice the area of Great Britain and Ireland, with an added area equal to that of Newfoundland. Several lines of exploration and survey have been carried for a certain distance into the interior of this great peninsula, among which may be mentioned those of Professor Hind, Mr. A. P. Low and Mr. R. F. Holme.* The limits of the unexplored area have been drawn so as to exclude all these. The area regarded as still unexplored has, however, it is true, been traversed in several directions at different times by officers of the Hudson Bay Company, particularly on routes leading from the vicinity of Mingan on the Gulf of St. Lawrence to the head of Hamilton Inlet, and thence to Ungava Bay. These routes have also, according to Mr. Holme, been travelled by a missionary, Père Lacasse; but the only published information which I have been able to find is contained in a book written by J. M'Lean,† and in a brief account of a journey by Rev. E. J. Peck.‡ Mr. M'Lean made several journeys and established trading posts between Ungava and Hamilton Inlet in the years 1838-1841, while Mr. Peck

*Explorations in Labrador, 1863, Annual Report Geol. Surv. Can., 1887-88, Part J. Proc. Royal Geog. Soc., 1888. Ott. Nat. Vol. IV.

†Notes of a twenty-five years' service in the Hudson's Bay Territory. London, 1849.

‡Church Missionary Intelligencer, June 1886. Proc. Roy. Geog. Soc., 1887, p. 192.

crossed from Little Whale River, on Hudson Bay, to Ungava in 1884. Something may be gathered as to the general nature of the country along certain lines, from the accounts given by these gentlemen, but there is little of a really satisfactory character, while neither has made any attempt to fix positions or delineate the features of the region on the map. In all probability this entire region consists of a rocky plateau or hilly tract of rounded archæan rocks, highest on the north-east side and to the south, and sloping gradually down to low land towards Ungava Bay. It is known to be more or less wooded, and in some places with timber of fair growth, but if it should be possessed of any real value, this may probably lie in its metalliferous deposits. In this tract of country particularly there is reason to hope that ores like those of Tilt Cove, in Newfoundland, or those of Sudbury, in Ontario, may occur.

To sum up briefly, in conclusion, what has been said as to the larger unexplored areas of Canada, it may be stated that while the entire area of the Dominion is computed at 3,470,257 square miles about 954,000 square miles of the continent, alone, exclusive of the inhospitable detached Arctic portions, is for all practical purposes entirely unknown. In this estimate the area of the unexplored country is reduced to a minimum by the mode of definition employed. Probably we should be much nearer the mark in assuming it as about one million square miles, or between one-third and one-fourth of the whole. Till this great aggregate of unknown territory shall have been subjected to examination, or at least till it has been broken up and traversed in many directions by exploratory and survey lines, we must all feel that it stands as a certain reproach to our want of enterprise and of a justifiable curiosity. In order, however, to properly ascertain and make known the natural resources of the great tracts lying beyond the borders of civilization, such explorations and surveys as are undertaken must be of a truly scientific character. The explorer or surveyor must possess some knowledge of geology and botany, as well as such scientific training as may enable him to make intelligent and accurate observations of any natural features or phenomena with which he may come in contact. He must not consider that his duty consists merely in the perfunctory measuring of lines and the de-

lineation of rivers, lakes and mountains. An explorer or surveyor properly equipped for his work need never return empty handed. Should he be obliged to report that some particular district possesses no economic value whatever, besides that of serving as a receiver of rain and a reservoir to feed certain river-systems, his notes should contain scientific observations on geology, botany, climatology and similar subjects which may alone be sufficient to justify the expenditure incurred.

—————:0:—————

EDITORIAL ANNOUNCEMENT.

We have great pleasure in announcing that, through the courtesy of Dr. MacCabe, the Principal of the Ottawa Normal School, the commodious class-rooms of that institution have been placed at the disposal of the Ottawa Field-Naturalists' Club for our course of soirees and popular lectures, as well as the use of a separate room for library purposes. This change will be appreciated by all who take an interest in the Club, since the large attendance at the past season's lectures renders increased accommodation a necessity. In view of this great assistance in carrying on the Club work, the Council has resolved that the students of the Normal School, as many as so desire, shall be heartily welcome to attend any of the lectures of the course, and shall also be admitted to the privileges of membership in so far as reduced rates for the summer excursions may apply.

The first general excursion of the season will take place on the 31st of May. It has been decided to visit a locality slightly nearer than King's Mountain, the distance to which has been found rather too great by some of our members. For this reason Butternut Grove, near Old Chelsea, has been chosen. Tickets: Members, 50 cents; non-members, 60 cents.

Sub-excursions as usual will leave the Post-office at 2 o'clock every Saturday afternoon until further notice.

DIRCA, L. (Leather wood. Moose-wood.)

1922. *D. PALUSTRIS*, L.

Rich woods. Ap.—4. (B) The small yellow tubular flowers, 3 or 4 in number, produced early in spring from buds enclosed in dark brown hairy scales. Leaves oval, short-petioled, pale green. Bark fibrous and very tough, much used in the woods instead of twine.

ELÆAGNACEÆ. Oleaster Family.

SHEPHERDIA, Nutt.

1924. *S. CANADENSIS*, Nutt.

Rocky woods. May—1. (B) A straggling dioecious shrub with yellow flowers opening before the leaves. The leaves and young shoots covered with brown peltate and white stellate hairs.

SANTALACEÆ. Sandal-wood Family.

COMANDRA, Nutt. Bastard Toad-Flax.

1928. *C. UMBELLATA*, Nutt.

Dry rocky woods. Rockcliffe. Hull. King's Mountain. May—4. (B) A low herb with pale green oblong leaves and a terminal corymbose cluster of white flowers. Parasitic on the roots of shrubs. I have traced the connection of the roots with those of *Prunus Virginiana* and *Viburnum pubescens* to which they were attached by an enlarged cone-shaped disk.

EUPHORBIACEÆ. Spurge Family.

EUPHORBIA, L.

1935. *E. MACULATA*, L.

Sandy fields. Common. July—2. (B) Annual.

1939. *E. Helioscopia*, L. (Sun Spurge.)

Introduced. Roadsides and gardens. July—3. (B) The centres of the flower-clusters yellow. Pods smooth. Annual.

1940. *E. Cyparissias*, L.

Perennial. A garden escape. July—1. Stems densely clustered. Stem-leaves linear crowded.

1941. *E. Peplus*, L. (Horned Garden Spurge.)

Introduced. Border of field, Green's Creek. Parliament Hill.
Aug.—2. Annual. Horns of the 4-lobed involucrem long.
Lobes of the pod 2-wing-crested on the back.

ACALYPHA, L. Three-seeded Mercury.

1945. *A. VIRGINICA*, L.

Low ground in shade. July—4. (B) An inconspicuous weedy
plant with green flowers and long-petioled leaves.

URTICACEÆ. Nettle Family.

ULMUS, L. Elm.

1946. *U. FULVA*, Mx. (Red Elm. Slippery Elm.)

Rocky woods. Ap.—4. (B) Flowers almost sessile. Branches
wide-spreading, with the leaves towards the tips of the branch-
lets. Buds and branchlets downy.

1947. *U. AMERICANA*, L. (White Elm. Swamp Elm.)

Low woods. Ap.—4. (B) Our most beautiful forest tree.
Flowers on drooping pedicels. Buds and branchlets glabrous.

1948. *U. RACEMOSA*, Thomas. (Rock Elm. Corky White Elm.)

Rocky woods. May—1. (B) A small tree in this district;
but very large in Western Ontario. Easily distinguished by the
corky ridges on the branches and the racemed flowers.

These three are the only elms we have in Canada, notwithstanding
the various local names.

CELTIS, L. Nettle Tree.

1949. *C. OCCIDENTALIS*, L. (Sugar-berry. Hackberry.)

River banks. Rare. Billings Bridge. Malloch's Bay. Bri-
tannia. May—1.

A rather small forest tree with the appearance of an Elm. Leaves
sharply serrate, reticulated, ovate-lanceolate taper-pointed oblique
at base and asymmetrical. Flowers green, axillary, peduncled.
The fertile flowers solitary or in pairs; the staminate flowers
fasciated along the base of the branchlets.

HUMULUS, L. Hop.

1950. *H. LUPULUS*, L. Wild Hop.

Not indigenous in this locality. River side. Hull. Billings
Bridge. June—4.

CANNABIS, L. Hemp.1951. *C. Sativa*, L. (Hemp.)

Introduced into Canada as a fibre-plant. Very common in waste places. July—1. (B)

URTICA, L. Nettle.1954. *U. GRACILIS*, Ait. (Common Nettle.)

Low ground. July—1. A tall slender species sometimes growing 10 feet in height. Stinging hairs few. (B)

LAPORTEA, Gaudich. Wool Nettle.1959. *L. CANADENSIS*, Gaudich.

Low woods. Common. July—1. A graceful plant with large pale, alternate, serrate leaves and conspicuous diceious flowers. Whole plant covered with rigid stinging hairs.

PILEA, Lindl. Clearweed.1960. *P. PUMILA*. Gray. (Richweed.)

Low cool woods and around springs. July—1. (B) A small, smooth and pellucid annual, without stinging hairs.

BOEHMERIA, Jacq. False Nettle.1961. *B. CYLINDRICA*, Willd.

Low woods and thickets. July—1. A taller plant than the last with more of the appearance of a nettle; but stringless. (B)

JUGLANDACEÆ. Walnut Family.**CARYA, Nutt. Hickory.**1964. *C. ALBA*, Nutt. (Shell-bark Hickory.)

River side. Rare. A few trees at Casselman and at Deschenes Rapids. June.

1967. *C. AMARA*, Nutt. (Bitter-nut Hickory.)

Rocky woods. Hull. Billings Bridge. June.

JUGLANS, L. Walnut.1968. *J. CINEREA*, L. Butternut.

Rocky woods. Common. June—1. One of the grandest of our forest trees. (B)

MYRICACEÆ. Sweet-gale Family.**MYRICA, L. Wax Myrtle.**1970. *M. GALE*, L. (Sweet Gale.)

In Peat-bogs, along the borders of lakes. Common in its proper habitat. The diocious flowers precede the leaves. Whole plant strongly aromatic. May—2.

1973. *M. ASPLENIFOLIA*, E. & H. (Sweet Fern.)

Comptonia asplenifolia, Ait. Gray's Man. 458.

Sandy and clayey woods. Ironsides. Aylmer. Ap.—4. Local. A pretty aromatic shrub, 1—2 feet high, with fern-like linear-lanceolate leaves six inches in length, which are pinnatifid with many rounded lobes.

CUPULIFERÆ. The Oak Family.

BETUL^A, L. Birch.

1974. *B. LENTA*, L. (Cherry Birch. "Black Birch.")

B. excelsa of Aiton.

Rich woods. May—1. (B) A large forest tree with thick bark, which is smooth and dark brown, like that of the cherry, when the tree is young. Fruiting catkins oblong-cylindrical, over an inch in length, the scales short with divergent lobes.

1975. *B. LUTEA*, Michx. f. (Yellow Birch. Gray Birch.)

B. excelsa of Pursh.

Low rich woods. May—1. Bark of trunk yellowish or silvery-gray, hanging in thin filmy layers. Fruiting catkins oblong-ovoid, under an inch in length, the scales thinner than in No. 1974, twice as large with narrower, barely spreading, lobes.

1977. *B. PAPYRIFERA*, Mx. (Paper Birch, Canoe Birch.)

B. papyracea, Ait. Gray's Man. 459.

Woods and river banks. May—1. (B) Leaves ovate.

1979. *B. PUBILA*, L. (Low Birch. Swamp Birch.)

Peat bog. Mer Bleue. Rare. May—4. A small shrub, with erect branches, not glandular; young branches and roundish leaves soft-downy when young.

ALNUS, Gærtn. Alder.

1985. *A. INCANA*, Willd. (Common Swamp Alder.)

Borders of streams and swamps. Ap.—2. (B) Usually our first plant to flower. This and *Acer dasycarpum* always preceding all others. The catkins which (of both sorts) were formed the previous summer, flowering long before the leaves expand.

1986. *ALNUS VIRIDIS*, DC. (Green Alder.)
 Along the rocky banks of the Gatiueau. Flowers appearing after
 the leaves
- CARPINUS**, L. (Hornbeam)
1987. *C. CAROLINIANA*, Walter. (Blue Beech.)
C. Americana, Michx.
 Low woods, May—3. A small tree with very smooth gray bark.
- OSTRYA**, Scop. (Iron-wood)
1988. *O. VIRGINICA*, Willd. (Iron-wood. Hop-Hornbeam.)
 Rich woods, May—3. A small but very beautiful tree when grow-
 ing in the open, somewhat resembling the last, but with rough
 bark. (B.)
- CORYLUS**, L. (Hazel-nut.)
- 1989 *C. ROSTRATA*, Ait. (Beaked Hazel-nut.)
 Thickets and open woods, May—1. (B.)
- QUERCUS**, L. Oak.
1994. *Q. MACROCARPA*, Michx. (Mossy-cup Oak. Over-cup Oak.)
 A fine tree, extremely variable in all its parts. The various forms
 occurring here seem much nearer to the so-called *Var. olive-*
formis than to the type. All the Ottawa "White Oaks" belong
 to this species.
1998. *Q. RUBRA*, L. (Red Oak)
 A magnificent tree, with smooth gray bark and spreading branches.
 Cup saucer-shaped or flat, of fine closely appressed scales. This
 is apparently the only "Red Oak" we have at Ottawa.
- FAGUS**, Tourn. Beech.
- 2003 *F. FERRUGINEA*, Ait. (American Beech.)
 A fine forest tree found in rich woods. The bell-shaped flowers are
 borne in drooping clusters, and are very beautiful.
- SALICACEÆ.—The Willow Family.**
- SALIX**, Tourn. Willow, Osier.
2005. *S. alba*, L. var. *cerulea*, Smith (European Willow.)
 Introduced. This Prof. Macoun tells me is the large European
 willow which is cultivated as a shade tree in the French portions
 of the city. The different varieties are described in Gray's
 Manual, sixth edition, p. 481.

2010. *S. BALSAMIFERA*, Barratt. (Pear-leaved Willow.)*S. pyrifolia*, Anders.

Peat bogs and mountain sides. Rare. Mer Bleue, by the Gas Spring. King's Mountain, west slope (*J.F.*) Patterson's Creek, (*J. M. Macoun*.) Young leaves thin, of a rich reddish colour, afterwards pale green above and glaucous beneath, long-petioled, rigid. Capsules glabrous.

2012. *S. CANDIDA*, Willd. (Hoary Willow. Red-flowered Willow.)

A beautiful bush with silvery leaves found in peat bogs. Leaves lanceolate to linear lanceolate, margins revolute, downy above and densely so below. Styles and anthers crimson. Young shoots and capsules densely tomentose.

2015. *S. CORDATA*, Muhl. (Heart-leaved Willow.)

A very variable species. Leaves on young vigorous shoots, rounded or cordate at base, on flowering shoots tapering; green both sides, soon becoming smooth. Stipules reniform or ovate, serrate, usually large. Sterile catkins with a few bracts at base, fertile leafy-peduncled, rather slender, 2-3 inches long. Capsules long-pedicelled smooth, (*B.*) Vicinity of Ottawa (*J. Macoun*) The Little Chaudière and along the Gatineau (*J..F.*)

— var. *ANGUSTATA*, Gray. (Narrow-leaved Willow.)

“ This variety includes those forms with long narrow leaves, which, were it not for the fruit, would be considered quite distinct from *S. cordata*. (*J. Macoun*.) Islands above Chaudière, (*B. Billings*.)

2016. *S. DISCOLOR*, Muhl. (Glaucous Willow)

Our most abundant and earliest willow. A large bush, leaves smooth, glaucous beneath. Flowers large and showy, appearing before the leaves. (*B.*)

— var. *ERIOCEPHALA*, Anders.

Catkins more densely-flowered and more silky. St. Louis Dam. Ironsides. Billings Bridge.

2024. *S. HUMILIS*, Marshall. Prairie Willow.

A low shrub, varying much in the size and shape of the leaves. Leaves oblanceolate, distinctly petioled, downy above, beneath glaucous, rough-veined and softly tomentose, the margin revolute,

Catkins ovoid, closely sessile, appearing before the leaves, curved.
Dry woods. Hog's back, and on the Island in the Mer Bleue, (*J.F.*)

2027. *S. LONGIFOLIA*, Muhl. (Long-leaved Willow.)

A pretty, low, shrub, growing along river banks on rocks, on sand, or in mud. July—1. Not common. Leaves long and narrow, tapering to each end, nearly sessile, sometimes very silky. Catkins appearing late, singly or in small clusters, at the tips of the slender branchlets.

2028 *S. LUCIDA*, Willd. (Shining Willow.)

One of our most ornamental species, forming a large close bush, with polished yellow twigs, and large dark green glossy leaves. The showy flowers appear late in spring, on short leafy branchlets. Common in ditches and swamps. (B.)

2029. *S. MYRTILLOIDES*, L. (Myrtle-like Willow. Bog Willow.)

A low shrub found in peat-bogs with entire coriaceous leaves, glaucous beneath. Capsules reddish green. Mer Bleue, near the gas spring. June—1.

2030. *S. NIGRA*, Marsh. (Black Willow.)

A tree or shrub. Leaves long and narrowing from near the base to the usually curved tip, closely serrate. Catkins long and slender, borne on short lateral leafy branchlets in summer. June—3.

2039 *S. PETIOLARIS*, Smith. (Gray Willow.)

Sandy river banks, common. Leaves narrowly lanceolate, taper-pointed, finely and evenly serrate; only slightly silky when young; stipules linear or semi-cordate. Catkins sessile, or in fruit slightly peduncled. Capsules silvery-silky.

2040. *S. PURPUREA*, L. (Purple Osier-Willow.)

Introduced from Europe. A loose straggling shrub, with long, erect purplish branchlets. Leaves oblanceolate, very smooth, glaucous. Billings Bridge, (*H. M. Ami.**)

1041. *S. ROSTRATA*, Rich. (Livid Willow.)

Our commonest willow. A large, loose shrub. Leaves dull green and downy above, heavily veined and soft-hairy beneath; obovate, irregularly serrate. Catkins appearing with the leaves. Capsules tapering to a very long slender beak; scales pale, rose-tipped, linear, thinly villous. (B.)

2049. *S. VIMINALIS*, L. (Osier Willow.)

Introduced. New Edinburgh.

POPULUS L. Poplar.

2053. *P. TREMULOIDES*, Michx. (American Aspen.)

A small tree with white bark. One of the first trees to expand its flowers in the spring. The young leaves glabrous, and of a delicate yellowish green. Ap.—3. (B.)

2054. *P. GRANDIDENTATA*, Michx. (Large-toothed Aspen.)

A rather larger tree than the last, with smooth green bark and having the young leaves densely covered with white silky hairs, afterwards almost smooth, roundish-ovate, with large and irregular teeth. May—1. (B.)

2055. *P. BALSAMIFERA*, L. (Balsam Poplar. Balm of Gilead.)

A large, handsome tree, bearing heart-shaped leaves, and large buds covered with an aromatic resin. Petioles round, capsules 2-valved. Ap.—4. (B.) Of the var. *caudicans*, Gray, Dr. Gray (Manual 6th Edn., 1890, p. 487,) says, "*Leaves broader and more or less heart-shaped; petiole commonly hairy* Common in cultivation, but rare or unknown in a wild state;" But Prof. Macoun says (Macoun Cat. VI, p. 45), that this variety seems to be the prevailing form in Ontario.

2056. *P. MONILIFERA*, Aiton. (Cottonwood.)

A grand tree growing on islands or by river-sides, sometimes over 100 feet high, easily distinguished from the last by the elongated, flattened petioles, and the necklace-like fruiting catkins of 3-4-valved, capsules. May—2.

— *P. dilatata*, Ait. (Lombardy Poplar.)

Introduced. A tall stiff tree of very rapid growth, largely cultivated in some parts for "ornament."

— *P. alba*, L. (Silver Abele. White Poplar.)

Introduced. A handsome tree, but troublesome from its habit of spreading from the roots. The far more beautiful *P. Bolleana*, from Eastern Europe, has not this habit, but is also, for a poplar, exceptionally difficult to propagate from cuttings.

CERATOPHYLLACEÆ.—Hornwort Family.

CERATOPHYLLUM, L. Hornwort.

2061. *C. DEMERSUM*, L.

Abundant in slow waters. Growing entirely under water. Leaves whorled, sessile, cut into thrice-forked threadlike rigid divisions. Flowers monoecious, axillary and sessile.

CONIFERÆ.—The Pine Family.

THUYA, Tourn. Arbor Vitæ.

2062. *T. OCCIDENTALIS*, L. (White Cedar.)

Swamps and rocky banks. (B.)

JUNIPERUS, L. Juniper.

2067. *J. VIRGINIANA*, L. (Red Cedar. Pencil Cedar.)

A small tree in this locality. On both sides of the Ottawa river, but not abundant. May—3.

2068. *J. COMMUNIS*, L. (Common Juniper.)

A low spreading elegant shrub. Dry and sandy fields. May—3.

2069. *J. SABINA*, L. var. *PROCUMBENS*, Pursh. (Creeping Savin.)

A dark green prostrate shrub. Rocky banks at the Chaudière, on both sides of the river.

TAXUS, L. Yew.

2071. *T. BACCATA*, L. var. *CANADENSIS*, Gray. (American Yew. Ground Hemlock.)

T. Canadensis, Willd.

A low, straggling bush, growing in wet woods. May—4. (B.)

PINUS, L. Pine.

2072. *P. STROBUS*, L. (White Pine. Weymouth Pine.)

A magnificent tree and Canada's pride. Leaves 5 in a fascicle.

2076. *P. RESINOSA*, Aiton. (Red Pine. "Norway Pine")

A beautiful tree at all stages of growth. Leaves 2 in a fascicle, 5-6 inches long. June—2.

2081. *P. BANKSIANA*, Lambert. (Jack Pine. Scrub Pine.)

A small tree of little value. Leaves 2 in a fascicle, 1½ to 2 inches long. Cones conical, usually curved, smooth and very hard, persistent on the branches for several years. Two trees only have

been observed near Ottawa, one found on King's Mountain, Chelsea, P.Q., by the late Mrs. J. G. Bourinot, and the other at Eastman's Springs. June—1.

PICEA, Link. Spruce.

2082. *P. NIGRA*, Link. (Black Spruce.)

Abies nigra, Poir.

A small tree found in swamps and mountain woods. Branchlets pubescent, foliage purplish glaucous; cones small, ovate, in this locality less than an inch in length, persistent, growing on the branchlets, generally recurved, and frequently in clusters, purple when young. June—2.

— var. *RUBRA*, Engelm. (Red Spruce.)

"Differs from the type, in having darker and larger leaves; larger, bright red-brown cones, which (are borne nearer the tips of the branchlets, and) are more readily deciduous after maturity." (*Engelmann.*) In peat bogs. Casselman, (*J.F.*) Eastman's Springs, (*J. Macoun.*)

2083. *P. ALBA*, Link. (White Spruce.)

Abies alba, Poir.

A most beautiful forest tree, sometimes forming a steeple-like cone over 100 feet in height. Branchlets glabrous; leaves slenderer than in 2082, of a much brighter green, or in a variety occurring at Rockcliffe, of a beautiful glaucous white, almost equalling the celebrated Colorado Blue Spruce (*Picea pungens*,) of the West.

Cones cylindrical, from 1-2 inches in length, pendulous from the tips of small branchlets, deciduous, green when young, pale brown when mature.

TSUGA, Carr. Hemlock.

2086. *T. CANADENSIS*, Carr. (Hemlock.)

Abies Canadensis, Michx.

A magnificent tree, whether viewed as the hoary giant which has withstood the winter blasts of centuries, or the young tree which has not yet formed a trunk, when in spring as the young foliage is pushing forth from the tips of the pendulous branchlets, and numberless slender twigs, it can only be likened to a living fountain, every spray of which is tipped with golden green. Foliage dark green above, silvery beneath.

ABIES, Juss. Balsam Fir.

2090. *A. BALSAMEA*, Miller. (Canada Balsam Fir.)

A slender tree, found in swampy woods. Cones large, oval-cylindrical, 2-4 inches long, borne erect on the upper side of spreading branches, frequently in dense masses at the tops of the trees. Leaves sessile, flat, on vigorous apical shoots scattered and bottle-brush-like as in *Picea*; but 2-ranked on the horizontal branches. Foliage very aromatic.

LARIX, Mill. Larch.

2094. *L. AMERICANA*, Michx. (Tamarack. Black Larch.)

A slender, graceful tree with valuable timber, growing in peat bogs. Strangely called "Juniper" in the Maritime Provinces. June—1.

ENDOGENS.

HYDROCHARIDACEÆ.—Frog's-bit Family.

ELODEA, Michx. Water-weed.

2108. *E. CANADENSIS*, Michx.

Anacharis Canadensis, Planchon.

Abundant in all slow waters. The remarkable flowers of this and the next are well worth examining by all botanists.

VALLISNERIA, L. Eel-grass.

2209. *V. SPIRALIS*, L. (Water Celery.)

Abundant in lakes and rivers.

ORCHIDACEÆ.—Orchid Family.

MICROSTYLIS, Nutt.

2210. *M. MONOPHYLLOS*, Lindl.

Peat-bogs. Rare. Dow's Swamp. Mer Bleuc. Hull. La Pêche.

Raceme long and slender, the pedicels short. June—3.

2211. *M. OPHIOGLOSSOIDES*, Nutt.

In similar places as 2210. Rare. Dow's Swamp. Eastman's Springs.

Aylmer. July—2. Raceme conglomerate at summit of scape.

LIPARIS, Richard. Twayblade.

2213. *L. LÆSELII*, Richard.

Peat-bogs, hummocks in swamps, and particularly on stumps and floating logs in the Rideau Canal, not uncommon. A small, greenish flowered orchid, bearing 2 leaves, and a single scape from a solid bulb. June—2.

CALYPSO, Salisb.

2214. *C. BOREALIS*, Salisb.

On mossy hummocks in shady woods. Rare and of very uncertain appearance. Billings Bridge, abundant in 1878, not since found (*J.F.*) Beechwood, 1888. High Falls, above Buckingham, Q. 1892 (*R. B. Whyte.*) May—3

APLECTRUM, Nutt. Putty-root.

2215. *A. HYEMALE*, Nutt. (Adam and Eve.)

Rich wood. Beechwood. Very rare. (*Lt.-Col. White**) June—3.

CORALLORHIZA, R. Br. Coral-root.

2216. *C. INNATA*, R. Br.

Shady swamps and woods. Rather rare. Dow's Swamp. Hull. Mer Bleuc. May—4. Whole plant yellow.

2218. *C. MULTIFLORA*, Nutt.

Rich woods. Beechwood. Clark's Wood. Chelsea. Kingsmere. Rare. July—2. Plant purple, lip white, spotted.

2220. *C. STRIATA*, Lindl. (*Macrae's Coral-root.*)

C. Macraei, Gray.

Rich wood. Very rare. Found once at Beechwood by Mrs. Chamberlin, and once since at Kingsmere. A most beautiful plant, bearing about 20 large, bell-shaped flowers on a stout stem; whole plant white, striped with deep crimson. July—1.

SPIRANTHES, Richard. Ladies' Tresses.

2224. *S. ROMANZOFFIANA*, Chamisso.

Wet Meadow. East Templeton (*Wm Scott.*) Only found in the above locality, where it is in great profusion. Beak of stigma 2-horned, short. July—3.

2225. *S. CERNUA*, Rich.

Peat-bog. Lake Flora, Hull. Very rare. Spike slenderer than in 2224; leaves longer and narrower. Beak of stigma long and very slender. Sep.—1.

2226. *S. GRACILIS*, Bigelow.

Hummock at edge of swamp. Blue-berry Point, Aylmer. Very rare. July—2. Spike very slender and twisted, leaves ovate, lying on the ground.

GOODYERA, R. Br. Rattlesnake Plantain.

2227. *G. REPENS*, R. Br.

Cool woods. Not uncommon. July—3. Scape short, 4-8 inches. Flowers white, in a one-sided tapering spike.

2228. *G. PUBESCENS*, R. Br. (Larger Rattlesnake Plantain.)

Rich woods. Hull. Ironsides. Kingsmere July—4 Rarer than 2227. The flowers are of a purplish white, in a shorter, more obtuse, crowded spike, not one-sided. Scape higher. Leaves larger, less white-reticulated.

ARETHUSA, L.

2230. *A. BULBOSA*, L. Arethusa.

Peat-bogs. Rare, but occasionally found in large numbers within restricted localities. Mer Bleuc. July—1. A beautiful plant bearing one large erect rose purple flower, usually without a leaf from a solid bulb. (In one locality with pink flowers like *Pogonia ophioglossoides*.)

CALOPOGON, R.Br.

2231. *C. PULCHELLUS*, R. Br. (Beautiful Bearded-Orchis.)

Peat-bogs. In enormous profusion in the Mer-Bleuc and at Lake Flora, Hull. Dow's Swamp, rare. July—1. A lovely Orchid bearing 5 or 6 large pink-purple flowers, on a slender scape, with a single grass-like leaf. (B.)

POGONIA.

2232. *P. OPHIOGLOSSOIDES*, Ker. (Scented Pogonia.)

Peat-bogs. With the above and in the same profusion. A lovely plant with one (or 2) large flowers at the summit of a slender scape which bears a single lance-oblong leaf near the middle and a rather large bract at the base of the large pink flower.

The flowers of this and the last are most interesting and are well worth examining by the botanist.

ORCHIS, L. Orchis.

2235. *O. SPECTABILIS*, L. (Showy Orchis.)

Rich shady woods. Not uncommon. June—1. Root thick and

fleshy. Leaves 2, one pointed at apex, the other blunt. Flowers 4 or 5 pink-purple with a pure white (rarely purple) lip. (B.)

2238. *O. ROTUNDIFOLIA*, Gray. (Round-leaved Orchis.)

Habenaria rotundifolia, Rich.

Peat-bogs. Rare. Dow's Swamp. July—2. Root slender, creeping. Scape slender, bearing one large, almost round, leaf at the base, and a few whitish flowers at the summit, lip spotted with reddish purple.

HABENARIA, Willd. Rein Orchis.

2239. *H. TRIDENTATA*, Hook.

Peat-bog. Very rare. Two specimens were found at the same time, in a tiny bog at Black Lake, high up on King's Mountain, Chelsea, P.Q. July—2. Not since found although closely looked for in our many peat-bogs.

2240. *H. VIRESCENS*, Spreng.

Marsh, in shade. Thurso, Aug.—1 (Wm. Scott*.)

Leaves large and thin, oblong lanceolate, passing into the conspicuous bracts of the elongated raceme. Flowers very small, green. Sepals half the length of the slender spur.

2241. *H. BRACTEATA*, R. Br. (Bracteate Green Orchis.)

H. viridis, R. Br. var. *bracteata*, Reich.

Woods and meadows. Not uncommon. Twin-bulbs palmate; flowers green, bracts long and conspicuous. May—3.

2243. *H. HYPERBOREA*, R. Br.

Peat-bogs and swamps. June—1. Flowers green. (B)

2246. *H. DILATATA*, Gray. (Wild Hyacinth.)

Peat-bogs. Not common. June—2. Stem leafy, leaves narrow spike dense, elongated. Flowers white, scented. (B.)

2252. *H. HOOKERI*, T and G.

Damp and rocky woods. Hull. Beechwood. Chelsea. Common. June—2. Leaves orbicular; lying flat on the ground; flowers green, spur tapering to the tip.

—var. *OBLONGIFOLIA*, J. A. Paine.

With the above and perhaps hardly worthy of a varietal name. Leaves oblong.

2253. *H. ORBICULATA*, Torr. (Large Round-Leaved Orchis.)
Rich woods. Kingsmere. Rockcliffe. Beechwood. Rare. July—1.
Leaves large lying flat on the ground, silvery beneath. Raceme large, lax; flowers greenish white, spur long, enlarged at the tip.
2255. *H. BLEPHARIGLOTTIS*, Torr. (White Fringed-Orchis.)
Peat-bog. Mer-Bleuc, July—3. Flowers pure white. Rootstock small for the genus, not much swollen.
2258. *H. PSYCODES*, Ray. (Small Fringed-Orchis.)
Peat-bogs and Swamps. Common. July—3. Raceme crowded, elongate-cylindrical, flowers pink-purple, fragrant. (B.)
2259. *H. FIMBRIATA*, R Br (Large Fringed-Orchis.)
Bogs and Swamps. Rare. Eastman's Springs, Kingsmere (*J.F.*) Blanche River, Templeton (*H. M. Ami.*) July—1. Whole plant larger than 2258 and flowering two weeks earlier. Flowers fewer in a looser spike, lilac-purple with a white eye. Buds orbicular.

CYPRIPEDIUM, L. Lady's Slipper.

2260. *C. ARIETINUM*, R. Br. (Ram's-head Orchis.)
Dow's Swamp. Very local. May—4. Flowers purple and white. Easily recognized by the remarkable resemblance of the flowers to a ram's head in profile.
2261. *C. PARVIFLORUM*, Salisb. (Smaller Yellow Lady's Slipper.)
Peat-bogs. Not uncommon. May—4. Flowers bright yellow and deep purple.
2262. *C. PUBESCENS*, Swartz. (Larger Yellow Lady's Slipper.)
Rocky woods. Local but abundant. Chaudière woods on both sides of the river. It is difficult to find good points of distinction between this and the last. Both are scented, both vary in the shape of the lip and the brightness of the yellow. On the whole *pubescens* has larger flowers, irrespective of the size and vigour of the plant, the sepals are paler in colour and it grows in drier locations. June—1. (B.)
2263. *C. SPECTABILE*, Salisb. (Showy Lady's Slipper.)
Peat-bogs. Common. July—1. This is probably our most beautiful wild flower, but is gradually disappearing from ruthless digging up of the roots. (B.)

2264. *C. ACAULE*, Ait. (Stemless Lady's Slipper.)

Peat-bogs. Local. Beechwood (*Dr. H. B. Small**). Lake Flora,
Hull (*J. F.*) Casselman (*Wm. Scott*). May—4.

IRIDACEÆ.—Iris Family.

IRIS, L. Flower-de-Luce. Fleur de Lis. Flag.

2269. *I. VERSICOLOR*, L. (Blue Flag.)

Lowground. Common. June—1. (B.)

2271. *I. TENAX*, Dougl.

Swampy wood on the banks of the Gatineau, Hull, P.Q. The plant so named by Dr. George Vasey, was one of two growing together, the leaves were slender and grass-like, less than $\frac{1}{4}$ inch wide, the flowers less than half the size of 2269 and of a deeper purple.

SISYRINCHIUM, L. Blue-Eyed Grass.

2275. *S. ANCEPS*, Cav.

Low ground. June—1. Scape 6-18 inches high, branched, bearing 2 or more peduncled spathes, bract less elongated. Seeds small, rough. (*Wm. Scott*)

2276. *S. ANGUSTIFOLIUM*, Mill. (Gray's New Manual, 1890.)

Low ground. June—1. The same as *S. mucronatum* Mx. and *S. Bermudiana*, L. var. *mucronatum*, Gray, of the old Manual.

LILIACEÆ.—The Lily Family.

SMILAX, L. Green-brier.

2283. *S. HERBACEA*, L. (Carrion-Flower.)

Moist woods and banks of streams. Common. June—2. Flowers green, fetid; Berries black, glaucous, in round clusters on very long peduncles. (B.)

ASPARAGUS, L.

2284. *A. OFFICINALIS*, L. Garden Asparagus.

An escape from cultivation. June—1.

POLYGONATUM, Adans. Solomon's Seal.

2285. *P. BIFLORUM*, Ell.

Rich woods. May—2. (B.)

STREPTOPUS, Mx. Twisted-Stalk.

2287 *S. AMPLEXIFOLIUS*, DC.

Swampy woods. Kingsmere. Casselman. Very rare. May—4.
Flowers greenish white. Leaves glabrous, glaucous beneath.
Stigma entire.

2288. *S. ROSEUS*, Mx.

Woods. May—2. Flowers rose-purple. Leaves green both sides
finely ciliate at the edges. Stigma 3-cleft. (B.)

SMILACINA, Desf. False Solomon's Seal.

2289. *S. STELLATA*, Desf.

Moist banks and thickets. May—4. Leaves 6 to 12 running up
close to the few-flowered raceme. (B.)

2291. *S. RACEMOSA*, Desf. (False Spikenard.)

Rich woods. Not common. Billings Bridge. Hull. Chelsea.
Beechwood. May—4. Flowers in a terminal panicle. (B.)

2293. *S. TRIFOLIA*, Desf.

Swamps. June—2. Leaves 2 or 3, glabrous. Raceme peduncled.

MAIANTHEMUM, Wiggers.

2294. *M. CANADENSE*, Desf. (Wild Lily of the Valley.)

Smilacina bifolia, var. *Canadensis*, Gray.

Moist woods. May—2.

ALLIUM, L. Onion. Garlic.

2300. *A. TRICOCCUM*, Ait. (Wild Leek.)

Rich open woods. Uncommon. Leaves large 8 inches long by 2
wide, dying down before the flowers open in July.

2303. *A. CANADENSE*, Kalm. (Wild Garlic.)

On a small island above Billings Bridge. May—3. Leaves narrowly
linear.

LILIUM, L. Lily.

2313. *L. PHILADELPHICUM*, L. (Wood Lily.)

Rocky woods. McKay's Woods. Hull. Aylmer. July—1. (B.)

ERYTHRONIUM, L. Dog's-tooth Violet.

2320. *E. AMERICANUM*, Smith (Yellow Adder's-tongue.)

Open woods. May—2. (B.)

UVULARIA, L. Bell-wort.

2334. *U. GRANDIFLORA*, Smith (Wood Daffodil.)

Rich woods. Common. May—1. (B.) Variable in size and
colour of the flowers.

OAKESIA, Watson.

2334. O. SESSILIFOLIA, L.

Uvularia sessilifolia, L.

Woods and banks. Common. May—3. (B)

CLINTONIA, Raf.

2341. C. BOREALIS, Raf.

Damp woods. June—1. (B).

MEDEOLA, L. Indian Cucumber-root.

2343. M. VIRGINICA, L.

Rich damp woods. June—1. (B).

TRILLIUM, L. Wake Robin Birthroot.

2344. T. ERECTUM, L. var. ATROPURPUREUM, Hook.

T. erectum, L. of Gray's Manual.

Low rich woods. May—1. (B)

—var. ALBUM, Pursh.

Occasionally found with the above of which it is only an albino form with greenish-white flowers.

2345. T. GRANDIFLORUM, Salisb. (Wake Robin.)

Rich woods. May—1. (B) Very variable.

2347. T. CERNUUM, L. (Nodding Trillium.)

Damp woods. Very local. Billings Bridge (*J. F.*) Casselman (*Wm. Scott*). May—1. Flower sweet-scented, recurved, on short pedicel.

2348. T. ERYTHROCARPUM, Mx. (Painted Trillium.)

Rich cool woods. Stewart's Bush. Beechwood. Casselman. May—2. (B). Petals striped with rose-purple at base, fruit an oval scarlet berry.

PONTEDERIACEÆ.—Pickerel-Weed Family.

PONTEDERIA, L. Pickerel-weed.

2355. P. CORDATA, L.

River sides, in shallow water. Along the banks of the Rideau River. July—4. (B).

HETERANTHERA, Ruiz and Pav.

2356. H. GRAMINEA, Vahl. (Water Star-grass.)

Schollera graminea, Willd.

In all slow-flowing waters. July—4.

JUNCACEÆ.—Rush Family.

JUNCUS, L. Rush.

2358. *J. EFFUSUS*, L. (Common Rush.)

Marshy ground. June—2. (B). Growing in large clumps, 3 feet high; panicle many flowered spreading, stamens 3.

2359. *J. FILIFORMIS*, L. (Slender Rush.)

River sides. Kettle Island. Hull. Britannia. July—2. (B). Stems very slender; panicle small, stamens 6.

2360. *J. BALTICUS*, Dethard, var. *LITTORALIS*, Engelm.

Sandy shore. Blue-berry Point, Aylmer. July—2. Flowers in a small loose panicle, dark brown, stems and leaves few and scattered, not forming clumps.

2372. *J. TENUIS*, Willd.

All low ground. June—2. (B). Growing in small tufts of erect stems about 1 foot high.

2374. *J. BUFONIUS*, L.

All low ground. July—2. (B). A small much branched slender annual, flowers greenish white.

2378. *J. PELOCARPUS*, E. Meyer.

On the banks of the Ottawa above Britannia. (*John Macoun**) Stems slender, erect, bearing 2 or 3 thread-like leaves and branching above into a compound spreading panicle of small flowers

2380. *J. ALPINUS*, Villars, var. *INSIGNIS*, Fries.

Muddy and gravelly places along the Canada Atlantic Ry. (*John Macoun**) River banks, Skead's Mills. (*Wm Scott*.) Stems erect from a creeping rootstock, leaves 1 or 2, slender

2383. *J. NODOSUS*, L. var. *a* *GENUINUS*, Engelm.

River and Lake margins, common. July—2. (B). Stem erect, slender, bearing 2 or 3 leaves from a creeping tuber-bearing rootstock. Heads few, reddish brown, 8-20 flowered, overtopped by the involucreal leaf.

2384. *J. CANADENSIS*, J. Gay, var. *a* *COARCTATUS*, Engelm.

Low ground. Sandy lake margins. Kingsmere. Aug.—3. Stem slender, bearing 2-3 leaves Panicle erect somewhat contracted, heads deep rich brown.

—var. *l. LONGICAUDATUS*, Engelm.

Stem short, rigid, panicle consisting of numerous greenish many flowered heads. Involucral leaf long and conspicuous. Mer-Bleue (*J.F.*) Casselman (*W. Scott*). Aug.—2.

This variety, Mr. F. V. Coville informs me, is now considered the type of the species.

LUZULA, DC. Wood-Rush.

2391. *L. PILOSA*, Willd. (Early Wood-Rush.)

L. vernalis, DC.

Sandy woods, Common. May—2. Pedicels 1-flowered in a loose umbel. Leaves hairy, lance-linear.

2392. *L. CAMPESTRIS*, Desv. var. *a. VULGARIS*, Hook.

Open woods. May—4. Flowers crowded, in ovoid spikes, some long-pedicelled others nearly sessile.

TYPHACEÆ.—Cat-tail Family.

TYPHA, Tourn.

2397. *T. LATIFOLIA*, L. (Cat-tail. Bulrush.)

Shallow water. June—3. (B).

2398. *T. ANGUSTIFOLIA*, L. (Slender Cat-tail.)

Pond to N. E. of Beechwood Cemetery. July 1, 1878. Two specimens only. Leaves $\frac{1}{4}$ inch wide, pistillate spike less than $\frac{1}{2}$ inch in diameter, separated from the staminate portion.

SPARGANIUM, L. Bur-reed.

2399. *S. EURYCARPUM*, Engelm.

River and lake sides. June—2. (B). Stem stout, erect, branching. Fruiting heads 2-6, large, 1 inch in diameter.

2400. *S. ANDROCLADUM*, Morong. (MS.)

S. simplex, Huds. var. *androcladum*, Engelm.

River sides. Common in the Nation river at Casselman, (*J. Macoun**). St. Louis Dam (*J.F.*)

2401. *S. SIMPLEX*, Huds. (Smaller Bur-reed).

Shallow water. Malloch's Bay. Casselman. Billings Bridge. June—2. Much smaller than the above, flowering generally within a few inches of the water. Stems slender, erect, simple, fertile heads 1-4, only $\frac{1}{2}$ inch across. Nutlets spindle-shaped.

ARACEÆ.—Arum Family.

ARISEMA, Martins. Indian Turnip.

2405. A. TRIPHYLLUM, Torr. (Jack in the Pulpit.)

Rich low woods. Common. May-3. (B.)

CALLA, L. Water Arum.

2408. C. PALUSTRIS, L.

Swamps and margins of ponds and rivers. Common. May-3. (B.)

ACORUS, L. Calamus.

2411. A. CALAMUS, L. (Sweet Flag.)

Marshes and river margins. Abundant. June-2 (B.)

LEMNACEÆ —Duckweed Family.

LEMNA, L. Duckweed.

2412. L. TRISULCA, L.

Submersed in water. Very common. A very pretty plant for an aquarium. Several fronds usually grow attached together by slender stalks, in apparently trifoliate leaves. Inflorescence very rare here. Rootlets green, twisted.

2413. L. MINOR, L. (Lesser Duckweed.)

Floating on all stagnant water. Fronds almost round, rather thick, producing a single rootlet beneath. Young fronds produced from a cleft in the side of the frond. This curious plant may usually be found in flower if carefully looked for in warm undisturbed nooks in the latter half of June. The inconspicuous flowers are pushed out from a cleft in the side of the frond and then turn upwards, when they may be detected by the colour of the anthers.

SPIRODELA.

2414. S. POLYRRHIZA, L. (Large Duckweed)

Lemna polyrrhiza, L.

Floating on all still waters. Easily distinguished from the above by the large fronds which are dark green above, purple beneath and bear several rootlets. I have never found this in flower.

WOLFFIA, Horkel.

2415. W. COLUMBIANA, Karsten.

Abundant in the St. Louis Dam, growing with *Lemna minor* and floating just beneath the surface film of the water. Fronds pale

green, loosely cellular, almost globular, about $\frac{1}{10}$ of an inch in diameter with a circular bordered opening beneath, no rootlets. This genus is interesting as containing the smallest known flowering plants.

ALISMACEÆ.—Water-Plantain Family.

ALISMA, L. Water Plantain.

2417. A. PLANTAGO, L. var. AMERICANUM, Gray.

Ditches and marshes. Common. July. (B.)

SAGITTARIA, L. Arrow-head.

2418 S. VARIABILIS, Engelm. (Arrow-leaf)

Margins of lakes and streams. A beautiful and most variable plant.

Here I believe is a fine field for useful original work. The very different forms seem to be largely due to environment. With a little care seeds from the most marked forms could be collected and grown under different circumstances and the results recorded. We have here, common, all the four varieties mentioned in Gray's Manual, 6th Edition.

—var. OBTUSA. Leaves large obtuse. Dioecious.

—var. LATIFOLIA. Leaves large, acute. Monoecious.

—var. ANGUSTIFOLIA. Leaves with linear diverging lobes.

—var. DIVERSIFOLIA. Leaves, some lanceolate others sagittate.

2420. S. HETEROPHYLLA, Pursh.

Muddy shallows. Common. Most of the leaves not at all sagittate or on one side only. Flowering stem weak, procumbent in fruit. We have all the 3 varieties mentioned in Gray's Manual.

—var. ELLIPTICA, Engelm. Leaves broad.

—var. RIGIDA, Engelm. Leaves narrowly lanceolate, rigid.

—var. ANGUSTIFOLIA, Engelm. Leaves nearly linear.

2421. S. GRAMINEA, Mx.

Gilmour's Piling Grounds, Hull. Leaves all submersed, grass-like.

NAIADACEÆ.—Pond-weed Family.

TRIGLOCHIN, L. Arrow-grass.

2425. T. MARITIMA, L.

T. maritimum, L. var. *clatum*, Gray.

Peat-bog. At the Gas-spring, Mer Bleue and Casselman. A

tall plant with rush-like leaves and slender racemes of small green flowers which have much the general appearance of the fruiting spikes of *Plantago*.

SCHEUCHZERIA, L.

2426. *S. PALUSTRIS*, L.

Peat-bog. Rare. Dominion Springs, Mer Bleue. June—2. A curious plant with creeping, jointed rootstocks, grassy leaves and simple zig-zag stems terminated by a loose raceme of 5 or 6 flowers.

POTAMOGETON, L. Pond-weed.

2428. *P. NATANS*, L.

Common in all waters. Floating leaves, all long-petioled, elliptical, coriaceous; submersed leaves (phyllodia) very narrow, grass-like. Spikes all emerged, cylindrical, densely flowered; fruits fleshy and swollen. Nutlet impressed on the sides.

—var. *PROLIXUS*, Koch.

This is only a form found in deep or flowing water, more slender in all its parts. I have never found it in fruit here.

2430. *P. PENNSYLVANICUS*, Cham

P. Claytonii, Tuck. *P. Nuttallii*, Ch. and Sch. (Morong.)

Very common. Stems compressed. Floating leaves nearly always produced in large numbers, opposite, 1—3½ inches long, 11—27 nerved, oblong, tapering into a short petiole. Easily recognized by the numerous 2-ranked, linear, 5-nerved, submersed leaves—the lateral nerves nearly marginal, the central space between the inner nerves coarsely cellular-reticulated and silvery.

2431. *P. VASEYI*, Robbins.

A slender delicate species, rare. In the Rideau Canal between Stewarton and the Exhibition Grounds, the very rare fruiting form with floating leaves may occasionally be found. Floating leaves obovate, 5-nerved, ¼ to ½ inch long, about the length of the filiform petioles. Spikes emerged, 3—9 flowered, interrupted. Submersed leaves thread-like, 1—1½ inches long.

2432. *P. SPIRILLUS*, Tuck.

Shallow water. Common in the Ottawa. Floating leaves generally freely produced, oval to lanceolate, from ½ to ¾ of an inch long, by

about $\frac{1}{4}$ inch wide on dilated petioles; submersed leaves narrowly linear, about 1 inch long. Submersed flowers one or two on very short peduncles. Emerged spikes $\frac{1}{2}$ to $\frac{1}{2}$ inch long, on peduncles of about the same length. Embryo coiled $1\frac{3}{4}$ times.

2435. *P. FLUITANS*, Roth.

P. louchites, Tuck.

Common in running streams. Floating leaves long-elliptical, 3–6 inches long, acute, long-petioled, 17–23-nerved. Submersed leaves very long, sometimes 12 inches by 1 wide, lanceolate and lance-linear, 7–15 nerved. Coarsely netted. Peduncles somewhat thickened upwards; spike cylindrical, fruit obliquely obovate, 3-keeled, the middle keel winged above. A form with remarkably long stipules and leaves is found at Hull. Whole plant frequently ruddy in colour. *P. rufescens*, Schrad, which has not yet been found here has lenticular fruit, short-petioled floating leaves, and the lower submersed leaves sessile.

2436. *P. AMPLIFOLIUS*, Tuck.

Not uncommon. The Ottawa River at Aylmer, Little Chaudière and East Templeton. Kingsmere and Meech's Lake. A large foliaceous and beautiful species; submersed leaves lanceolate or oval on short petioles with the tips recurved and undulate at the edges, sometimes 7 inches long by 2 wide. Peduncles thickened upwards. Fruit large obovate, 3-keeled with a broad stout beak. Nutlet not impressed on the sides; embryo slightly incurved.

2437. *P. HETEROPHYLLUS*, Schreb.

P. gramineus, L. var. *heterophyllus*, Fries

Common and very variable according to the place where it grows. Stem slender, compressed, much branched below; floating leaves mostly thin, variable, rounded or sloping at the base, but with a short blunt point, 10–18-nerved, usually 1–2 inches long by $\frac{1}{2}$ to $\frac{3}{4}$ inch wide; submersed leaves linear-lanceolate, 7-nerved on the stem; 3-nerved on the branches; stipules obtuse, loose. Spike $\frac{3}{4}$ –1 $\frac{1}{4}$ inches long, fruiting freely. When growing on mud, sometimes with only broad coriaceous leaves.

—var. *GRAMINIFOLIUS*, (Fries) Morong.

The flaccid submersed leaves are very long 2–5 inches by 1–3

lines wide and the floating leaves are very seldom produced. Hull, Aylmer, Meech's Lake.

—var. *LONGIPEDUNCULATUS*. (Merat) Morong.

Submersed leaves 1—2 inches long and 2—3 lines wide sharp pointed.

Internodes very long. Peduncles 3—6 inches long. Floating leaves ovate. Templeton. (W. Scott.) Meech's Lake, Kingsmere.

—var. *MAXIMUS*, Morong.

"All parts greatly elongated. Floating leaves often lanceolate and sharply pointed, 3—4 inches long and 6—14 lines wide. Submersed leaves 2—6½ inches long and 3—8 lines wide, 5—9 nerved." (Morong.) Specimens collected at Kettle Island were placed here by Mr. Morong.

2438. *P. LUCENS*, L.

Meech's Lake. This is the only actual record I have of this species.

Leaves shining green, all submersed, short-petioled, oval or lanceolate, mucronate. Fruit roundish, compressed with obtuse margins, slightly keeled.

2439. *P. ANGUSTIFOLIUS*, Berch and Presl.

P. Zizii, Mertens and Koch.

Meech's Lake. Templeton. This resembles *lucens* in the green shining leaves; but is slenderer and has emersed floating leaves with petioles a little shorter than the blade.

2441. *P. PERFOLIATUS*, L.

Green's Creek. (Dr. H. B. Small.*) Kettle Island. (J. F.)

McLaurin's Bay, East Templeton. (W. Scott.) The type has orbicular ovate or shortly lanceolate leaves and short peduncles. It is decidedly rare at Ottawa.

—var. *RICHARDSONII*, A. Bennett (MS).

P. perfoliatus, L. var. *lancoletus*, Robbins.

This is the common form at Ottawa; it has long lanceolate acuminate leaves, sometimes over 4 inches in length and the long peduncles are distinctly thickened upwards. (B.)

2442. *P. ZOSTERIFOLIUS*, Schum.

P. compressus, Fries.

Common. Stems flattened and winged. Leaves grass-like, abruptly pointed. (B.)

2444. *P. FOLIOSUS*, Raf.*P. pauciflorus*, Pursh.

Billings Bridge. (*J. Macoun*.*) Rideau Canal. Stem filiform, much branched. Leaves 1—2 inches long, narrowly linear, acute, obscurely 3-nerved, not glandular at base. Spikes capitate 1—4 flowered on short erect club-shaped peduncles; fruit roundish-lenticular, the back more or less crested.

2445. *P. PUSILLUS*, L.

Stem slender; leaves narrow, 1—3 nerved with translucent glands on each side at the base. Spikes 2—8 flowered on rather long peduncles, fruit obliquely elliptical, scarcely keeled, apex of embryo incurved and directed obliquely downwards. Very variable.

—var *PANORMITANUS*, Biv.

Rideau Canal, very local. The most conspicuous difference from the type is the presence of spatulate floating leaves. Rev. Thomas Morong writes as follows of some specimens submitted to him:—
“I have carefully compared these with plants sent me from Sicily as *P. pusillus*, L var. *panormitanus*, Biv., and can see no essential difference. In my specimens the submerged leaves are shorter, they are not ruddy at all, and none revolute. The description of the variety, however, corresponds: leaves longer (than the type), flaccid, the upper flowering ones opposite and spatulate, the whole surface of the leaf with a pretty chain-like areolation. I am sure that your plant meets this description, and when compared as to the floating leaves, the specimens agree. I should not, however, regard it as a distinct species, since it bears so many characters of *pusillus*. The ruddy tinge and revolute leaves may be owing to the season or accidental circumstances.”

2446. *P. MAJOR*, (Fries) Morong.*P. mucronatus*, Schrader, and *P. pusillus*, var *major*, Fries.

Not uncommon. Stem much less branching than *P. pusillus*, and more flattened, the leaves broader, often 5-nerved, and the flowering spikes interrupted.

2449. *P. PECTINATUS*, L.

Stems filiform, repeatedly branched so as to form brush-like mats in shallow water. Spikes interrupted, on long filiform peduncles

above the leaves. Very variable. Leaves narrowly linear, from fine setaceous to 3-nerved in one wide-leaved variety found at the Black Rapids.

2450. *P. ROBINSONI*, Oakes.

A stiff dark-green plant growing in deep water and very rarely fruiting. Leaves linear, in two ranks, recurved, spreading. Meech's Lake. (*J.F.*) Buckingham. (*J. Macoun.*)

ZANNICHELLIA, Horned Pond-Weed.

2452. *Z. PALUSTRIS*, L.

A slender branching plant. Common. Growing under water, with opposite linear thread-like leaves, bearing monoëcious flowers in the axils; nutlets, usually 4 together, elongated, beaked.

Najas, L. Naiad.

2455. *N. FLEXILIS*, Rostk. and Schmidt.

A dwarf leafy plant growing on the bottom of ponds and streams. Common. Leaves linear, minutely serrulate, sessile, dilated at the base, somewhat crowded into whorls. Flowers solitary, axillary, sessile.

CYPERACEÆ—Sedge Family.

CYPERUS, L. Galingale.

2457. *C. DIANDRUS*, Tor.

Low ground. Annual. Common. Spikelets flattened, dark brown.

2459. *C. ARISTATUS*, Rottb.

C. inflexus, Muhl.

On gravelly or muddy river banks. Common. (B.) Spikelets at first yellowish, afterwards rusty-brown. Scales tapering to a long recurved point. A small diffusely spreading annual. Flowering plants may frequently be found half an inch high.

2461. *C. ESCULENTUS*, Linn.

C. phymatodes, Muhl.

River bank. Local. In abundance below Parliament Hill; along Bingham's Creek, Hull, and at Gatineau Point. Culm 1—2½ feet high. Umbel compound, much shorter than the long involucre; spikelets numerous, light straw coloured, 12—30 flowered. Roots bearing small nut-like tubers.

2462. *C. STRIGOSUS*, L.

In gravel along the Rideau River. Rare. Somewhat like the above, the umbel less spreading, spikelets brighter coloured, 5—25 flowered. The culm swollen into a corm-like tuber at the base.

DULICHNUM, Pers.

2465. *D. SPATHACEUM*, Pers.

Marshes and banks of streams. Common. (B.) A perennial grassy plant with simple jointed stems, with leaves in 3 ranks and bearing the spikelets of green flowers in their axils.

HELEOCHARIS, R. Br. (*Eleocharis* of Gray's Manual) Spike-rush.2467. *H. OBTUSA*, Schultes.

H. ovata, R. Br.

Nation River at Casselman, and other places near Ottawa. (*J. Macoun.*) Annual, growing in tufts. Culms round, spikelet globose-ovoid, dull brown; scales very obtuse densely crowded in many ranks, tubercle flattened.

2468. *H. PALUSTRIS*, R. Br.

Wet meadows, in shallow water, etc. Common and very variable in size. The varieties have not been studied. Perennial with running rootstocks. Spikelet oblong lanceolate pointed, many-flowered.

2469. *H. COMPRESSA*, Sullivant.

Not uncommon. Growing in tufts. Culms flattened, spikelet ovate oblong 20—30 flowered. Achenes obovate pear-shaped, triangular, wrinkled; tubercle conical.

2417. *H. INTERMEDIA*, Schultes.

In mud along the shore of Leamy's Lake, near its outlet at Hull Cemetery, 1889. Moose Creek, 6 miles below Casselman. (*J. Macoun.*) Culms hair-like, wiry, tufted, from fibrous roots, spikelets oblong ovate. Loosely 10—20 flowered. A small species like *acicularis* but larger.

2473. *H. ACICULARIS*, R. Br.

Abundant in all muddy river banks. Culms hair-like forming close mats from running rootstocks. Spikelets more or less flattened.

SCIRPUS, L. Club rush.

2478. *S. PUNGENS*, Vahl.

Rather uncommon. Banks of the Rideau, and at Aylmer and



SUMMARY

— OF —

Canadian Mining Regulations.

NOTICE.

THE following is a summary of the Regulations with respect to the manner of recording claims for *Mineral Lands*, other than Coal Lands, and the conditions governing the purchase of the same.

Any person may explore vacant Dominion Lands not appropriated or reserved by Government for other purposes, and may search therein, either by surface or subterranean prospecting, for mineral deposits, with a view to obtaining a mining location for the same, but no mining location shall be granted until actual discovery has been made of the vein, lode or deposit of mineral or metal within the limits of the location of claim.

A location for mining, except for *Iron* or *Petroleum*, shall not be more than 1500 feet in length, nor more than 600 feet in breadth. A location for mining *Iron* or *Petroleum* shall not exceed 160 acres in area.

On discovering a mineral deposit any person may obtain a mining location, upon marking out his location on the ground, in accordance with the regulations in that behalf, and filing with the Agent of Dominion Lands for the district, within sixty days from discovery, an affidavit in form prescribed by Mining Regulations, and paying at the same time an office fee of five dollars, which will entitle the person so recording his claim to enter into possession of the location applied for.

At any time before the expiration of five years from the date of recording his claim, the claimant may, upon filing proof with a Local Agent that he has expended \$500.00 in actual mining operations on his claim; by paying to the Local Agent therefor \$5 per acre cash and a further sum of \$50 to cover the cost of survey, obtain a patent for said claim as provided in the said Mining Regulations.

Copies of the Regulations may be obtained upon application to the Department of the Interior.

A. M. BURGESS,

Deputy of the Minister of the Interior.

NO 1 3166

HENRY WATTERS,

Chemist and Druggist,

Corner of Sparks and Bank Streets,

OTTAWA.

**S. + JARVIS,
PHOTOGRAPHER**

PORTRAITS,

VIEWS,

COPYING.

FIRST-CLASS WORK.

141 SPARKS ST., - - OTTAWA.

C. P. WILLIMOTT & CO.

333 Wellington St., Ottawa.

Mineralogists & Lapidaries

Every variety of stone cut and polished. Large stock of cut stones to select from. Rock sections for microscope carefully prepared. Collections of named characteristic Canadian minerals from \$1 upwards. Give us a call if you want something new. Send for catalogue.

**W. T. MASON,
Book and Job Printer,**

48 & 50 Queen St.

OTTAWA.

WM. HOWE,

Importer of Artists' Materials and Artistic Interior Decorations. Manufacturer of White Lead, Paints & Colors.

Howe's Block, - - OTTAWA.

**M. M. PYKE,
MEN'S OUTFITTER,**

99 SPARKS ST.,
OTTAWA, - - - ONTARIO.

BOARDING and DAY SCHOOL

-FOR-

YOUNGLADIES.

(Established 1862.)

49 DALY AVENUE.

MISS A. M. HARMON, - - PRINCIPAL

**A. J. STEPHENS,
FINE SHOES,**

39 SPARKS ST.

Boots and Shoes Made to Measure.

J. & R. CRAIG, Tailors, 105 Sparks St., Ottawa.