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ANNALS  
OF THE  
BOTANICAL SOCIETY OF CANADA.

VOL. I. PART I.

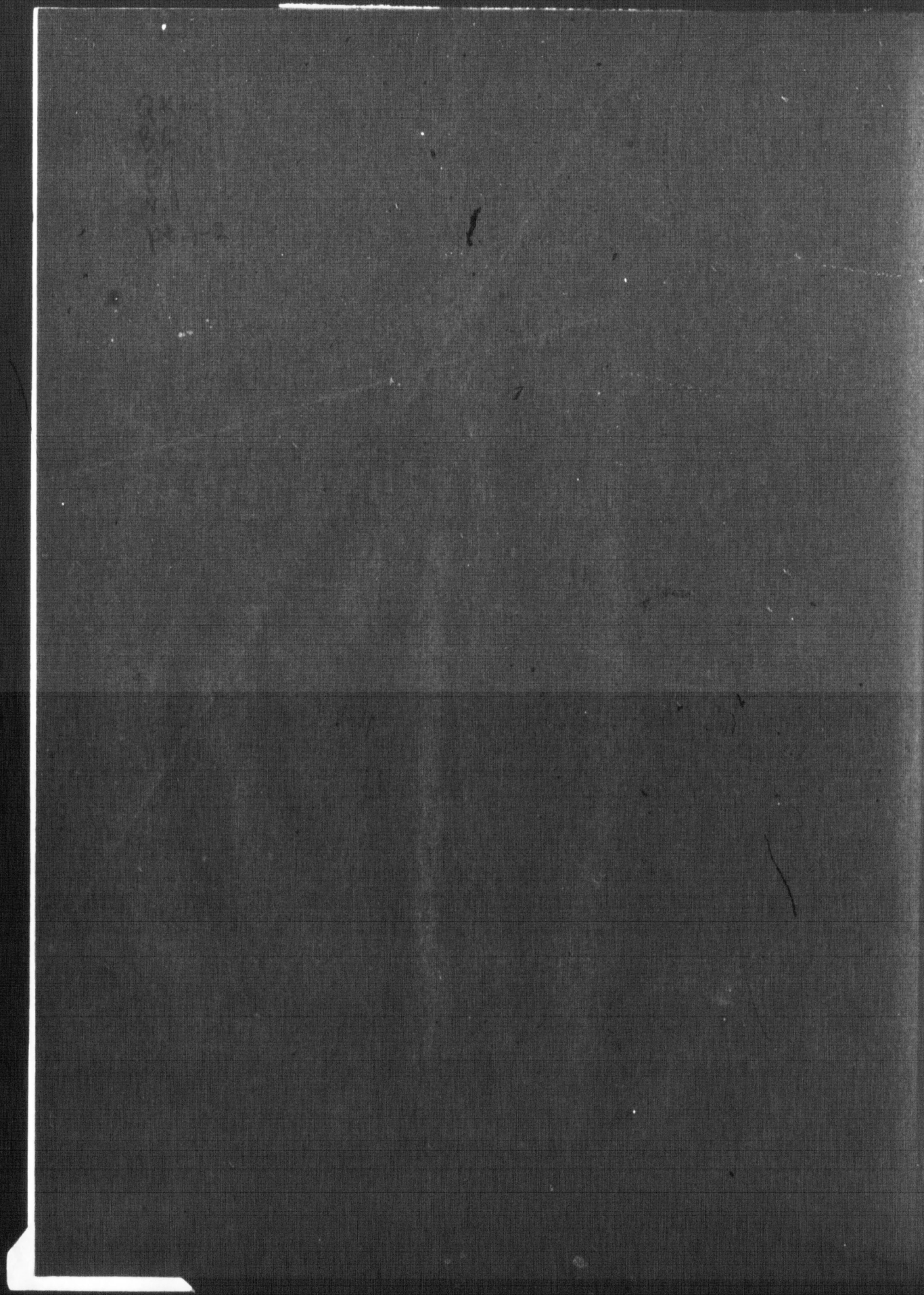
*From 7th December, 1860, to 8th March, 1861.*

Communications for the Society are to be addressed to the Secretary, PROFESSOR LAWSON,  
Kingston, C. W.

Remittances are to be sent to the Treasurer, ANDREW DRUMMOND, Esq., Banker, Kingston.

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*James M. Creighton, Book and Job Printer, Kingston, C. W.*



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# ANNALS OF THE BOTANICAL SOCIETY OF CANADA.

## ORIGIN OF THE SOCIETY.

Towards the latter end of November, 1860, a proposal was made to organize a Botanical Society. There being no such Institution in operation in Canada, it was thought that much benefit might result from its establishment. Accordingly an advertisement was inserted in the Newspapers, requesting the attendance of all persons favorable to the proposal at a Meeting to be held in the Chemistry Class Room, in the University of Queen's College, on Friday Evening, 7th Dec., 1860. In order to explain more fully the object of the Meeting, the following statement was inserted in the Newspapers, simultaneously with the advertisement referred to:—

Her natural resources have enabled Canada to take a conspicuous place among the British Colonies as a cultivator of natural science and useful art. Our Colony is as yet far behind in the race in regard to one department of useful knowledge, that which relates to her, indigenous vegetable productions. In Britain, Botany is a universal pursuit. Some persons follow it merely as a favorite amusement, which affords the most healthful combination of physical and mental exercise,—a stream of thought that may be most pleasantly followed, through the meadows and woods, in the rosy time of the year; others pursue it as a scientific study, which unfolds the mysteries of life, as they are displayed in the varied phenomena of growth and reproduction; while a large number are engrossed with it as a science, whose relations to the useful and ornamental arts enable man to render tributary to these the products and forces of nature. In countries like Canada, whose inhabitants are wholly occupied in industrial production and trade, Botany is not apt to be pursued for its own sake. As a scientific pursuit, it is chiefly inviting to persons of leisure and taste. But its relations to industry are so important that no civilized land can allow it to fall into neglect without suffering thereby in its material interests. In England, and France, and Belgium, and Prussia, it will not be believed that a great agricultural and timber-producing country, like Canada (young as it is), is pushing on its industry in ignorance of the very science by which that in-

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dustry ought to be guided. Much good botanical work is now being done in Australia, in various parts of India, in Ceylon, in the West Indies, at the Cape of Good Hope, and many other less important stations. It has been proposed that Canadian botanists should follow the examples set before them, and unite together to develop a knowledge of the Forest Flora, which is, in every sense, the richest blessing to man with which nature has gifted this great land. In accordance with the above proposal, a meeting is to be held in Queen's College, Kingston, on Friday Evening, the 7th December, at eight o'clock, to consider the propriety of originating a Botanical Society. The special objects of the new body, the mode in which it is proposed that these should be carried out, and various other matters of detail, will be brought forward for consideration and discussion in an address to be delivered by Professor Lawson. We cordially commend the project to the attention of our readers. It has been well considered, and, if carried out with energy, will be productive of benefit to the country, both in contributing to raise the fallen standard of botanical science among us, and as a means of directing public attention to neglected sources of industrial wealth. Professional and amateur botanists in Canada—few and far between—will hail, in the Botanical Society, a means of communication and interchange of information, and also a means of exchanging specimens and seeds, which will not only facilitate their labors in their respective localities, and give a new relish to the study, but will so enable them to work together, under a common plan, as to give a value to their researches that no desultory observations, however interesting and important in themselves, can ever attain. This is the manner in which investigations have been carried out most successfully in regard to the distribution of the Floras of other countries, and the only means by which certain results can be obtained where there are numerous observers. Some of the leading Botanists, both of this continent and of Europe, have already signified their approval of the scheme in their readiness to co-operate. May it meet with its due measure of success!

*First Meeting.*

FRIDAY EVENING, 7TH DECEMBER, 1860.

A meeting, called by public advertisement in the Newspapers, was held in the Chemistry Class Room of Queen's College, Kingston, on Friday evening, 7th December, to consider the propriety of organizing a Botanical Society. There was a large attendance of gentlemen, including the Very Rev. Principal Leitch, D. D., Queen's College, Mr. Drummond, Manager of the Montreal Bank, Professors Williamson, Weir, Mowat, Stewart, Yates, and Lawson, Mr. May, B. A., Queen's College School, Dr. Octavius Yates, Dr. Dupuis, Odessa, C. W., Mr. Thibodo, Mr. Skinner, Member Pharm. Society, Mr. Ferguson, Bellevue Terrace, Mr. Danson, F. C. S.,

Mr. Hobart, Mr. Duff, Princess Street, Mr. J. Machar, Jr., M. A., Mr. Andrew T. Drummond, Jr., B. A., Mr. Smith, Librarian of Queen's College, Mr. M. Flanagan, City Clerk of Kingston, and many other citizens, as well as graduates and students in the Faculties of Theology, Arts, and Medicine.

The Very Rev. Principal Leitch, D. D., of the University of Queen's College, was called to the Chair.

Letters of apology for unavoidable absence, but warmly expressing approval of the object of the meeting, were read from Professor Litchfield, M. D., Rockwood, Dr. Sullivan, Hotel Dieu, and Mr. Briggs. Professor Lavell was also unavoidably detained from the Meeting.

#### OPENING ADDRESS.

BY THE VERY REV. PRINCIPAL LEITCH, D. D., THE CHAIRMAN.

The Rev. Principal Leitch, Chairman, announced that the object of the meeting was to consider the propriety of originating a Botanical Society, having for its object the investigation of the Canadian Flora. Universities (he said) do not discharge all their functions by merely teaching the acknowledged truths of literature and science; it is a part of their duty to organize and instigate original inquiry in the different departments of knowledge. Systematic research must not only be directed, but, to a large extent, carried out by the personal labor of those who are connected with Universities. This is especially the case in a comparatively new country, where amateur laborers are few and scientific appliances not generally available. In a new country the prosecution of scientific research is needful, for various reasons; we have here commenced at the right point. Industrial production and commerce are all important to a new country; and botany, as now pursued, yields to no other science in its bearings on field industry and other useful arts of life. The country, too, is comparatively unexplored. The shores of the St. Lawrence, along which settlements have existed from an early period, have no doubt yielded up most of their botanical treasures to travellers and residents; but we have still an extensive back country that is comparatively unexplored. There is ground, therefore, for the establishment of a Botanical Society, for we have here the great stimulus of being able to add to existing knowledge. In old countries a botanist may long pursue his studies, not indeed without great benefit to science, but without having his labors rewarded by meeting with anything new, with plants not previously collected and described by his predecessors in the science. But here there is room for new discovery; the student may go forth to the woods, and hope, sooner or later, to set eyes upon a plant which no human eye has seen before. His name, it may be, will become associated with it, and thus a permanent record of his discovery will be inscribed in the book of science. All sciences have not such

advantages; some have not the same direct appeal to commerce; some may be as well pursued in other countries as in Canada, and thus do not present the same attraction to the Canadian resident, who desires to extend the sphere of knowledge. An Astronomical Society, for example, would not have the peculiar advantages of a Botanical Society, in a country like this. Referring to the large attendance, and the interest manifested in the object of the meeting, the chairman alluded to the early history of the scientific societies in older countries. The Royal Society of London and other leading scientific institutions in Europe began at an early period, under humble auspices and with unambitious objects. They gradually increased as science progressed and a taste for it was diffused; and so it will be with the Botanical Society, if we do not at the first attempt too much. It may be said that now is scarcely the time to commence a Botanical Society, that the country is not yet far enough advanced, that botany is not sufficiently studied, to warrant the establishment of a Botanical Society. It is true that botany has been neglected in this country. While this is a reproach to Canada, it affords no reason why a society should not be established. On the contrary, it is a strong reason why an attempt should be made to form one. There is a patriotic feeling rising up in Canada, which is especially strong in the youth of the province, and every well-wisher of Canada must be delighted to see it. Here then is an opportunity, by the establishment of this Society, to wipe off a reproach that has long hung over the country, by prosecuting a path of research that has been neglected. The proper method, then, is to begin early, to engage in the work, and the Society will progress, increasing not only our botanical knowledge, but fostering the taste for its study. Thus, as the science progresses among us, the Society will extend, so that we may hope in time to see the germ which we this evening cast into the soil grow up into a goodly tree, spreading its branches over the length and breadth of Canada, which is yet destined to be a great country.

REMARKS ON THE PRESENT STATE OF BOTANY IN CANADA, AND  
THE OBJECTS TO BE ATTAINED BY THE ESTABLISHMENT  
OF A BOTANICAL SOCIETY.

BY GEORGE LAWSON, PH.D., F. B. S. E., PROFESSOR OF CHEMISTRY AND NATURAL  
HISTORY IN THE UNIVERSITY OF QUEEN'S COLLEGE.

Dr. Lawson pointed out the peculiar sphere in which the botanist is called to labor, the range of his studies, and the means required for their pursuit. It is of great importance (he said) that at the outset the real object of our proposed Society should be understood. The establishment of a Botanical Garden, and other appliances, must be regarded as secondary to the great object of the Society, the prosecution of scientific botany. Botany is at a low ebb in Canada, at a lower ebb

than in most civilized or half-civilized countries on the face of the earth. At the close of the eighteenth century only five dissertations on botanical subjects had been published by the whole medical graduates of the great continent of America. Since then the indefatigable labors of such men as Michaux, Torrey, Harvey, Curtis, Boott, Engelmann, Tuckermann, Sullivant, Lesquereux, and especially of one whose name and fame rise above all the rest, Asa Gray, have brought our knowledge of the botany of the United States on a level with that of the best botanized countries of Europe. The Flora of Canada has also been elaborated since then by one who still presides over the destinies of botanical science, not in England alone, for his authority is recognized wherever the science is pursued. But, during a period of nearly thirty years, very little has been added to our published knowledge of Canadian botany. Information respecting our indigenous plants must still be sought in the work of Sir William Hooker, issued from the Colonial office in England in 1833. That work, founded as it necessarily was, on dried specimens carried home by passing travellers, afforded to the botanical world an admirable example of how much could be made out of slender material when in good hands. Unimpeachable as a work of science, unsurpassed in the whole range of botanical literature in the accuracy and beauty of its illustrations, the *Flora Boreali-Americana* afforded the means of developing still more fully a knowledge of the Canadian Flora. The North American Flora of Torrey and Gray, and the Manual of the Botany of the Northern States, offered additional temptations to the pursuit; but advances have not been made commensurate with the advantages that were offered: we have still, therefore, the singular anomaly of a country distinguished by its liberal patronage to science, dependent for its information respecting its native plants on the descriptions of specimens culled by early travellers. What was thirty years ago, and is now, of the highest value, can only in a partial manner meet the wants of the country in these days, when new manufactures and new forms of industry, seeking new products to work upon, are daily springing up around us. We desire to place the science of Botany on a more satisfactory footing in Canada than that which it now holds; we desire to increase the existing stock of knowledge; we desire to diffuse a taste for the study, so as to add to the number of laborers now in the field; and we desire to place on record new observations and discoveries, as they arise. The Botanical Society is designed as a means of carrying out purposes such as these. Extensive circulation was given sometime ago, by Canadian newspapers, to a report that Sir Wm. Hooker was on his way to Canada with a staff of assistants, to explore the botany of the country. I have the best authority for stating that that report was without foundation. It probably originated in certain proposals that were made to the Colonial office regarding the publication of a series of popular Manuals of Colonial Botany; but no expedition was ever contemplated by Sir Wm. Hooker, or any one else, at the instance of the Government. On the contrary, recent com-

munications from the botanical advisers of the Home Government indicate that Canada must follow the salutary example of other old established British Colonies, and conduct for herself investigations into the nature and distribution of her indigenous productions. We already possess in Canada several important scientific societies in active operation. While the Canadian Institute is of a comprehensive character, embracing all branches of science, literature and philosophy, the special department of geology is amply cultivated by the Natural History Society of Montreal, which has also, however, made valuable contributions to zoology and botany. In addition to such institutions as these, we have, of still more special character, the Government Geological Survey, which has been instrumental in carrying out investigations of the greatest importance to the country, whether their results be viewed as intellectual achievements or as contributions to material industry. It is proposed that our Society shall have for its object the advancement of Botanical Science in all its departments—Structural, Physiological, Systematic and Geographical; and the application of Botany to the useful and ornamental arts of life. The means by which this object may be accomplished are various, and will come before us for discussion from time to time. In the meantime, it is proposed that there shall be monthly evening meetings in Kingston during the winter for the reading of papers, receiving botanical intelligence, examining specimens, and discussing matters of scientific interest in relation to the science; also that there shall be field meetings during the summer in distant localities in Canada, as well as in the other British Provinces of North America, and occasionally also in the adjoining States, whereby our members may have an opportunity of investigating the botany of districts that have been imperfectly examined. By the above, and similar means, much important information may be brought together. Such facts and results, new to science, as are laid before the Society, from time to time, will afford materials for a periodical publication, whereby our stores may be rendered available to the public in Canada, and to botanists in other parts of the world. In addition to such means, the Society may greatly promote its objects by correspondence with botanists in other countries, and especially with those who are located beside the extensive public herbaria, botanical libraries, and gardens, in various parts of the United States and Europe. By correspondence with such persons, many doubtful points in nomenclature may be set at rest, while the existence of information relating to Canadian Botany may be ascertained, that might otherwise remain unknown. Botanists distinguished in certain branches of the science may be called upon to furnish reports on their special subjects, for which materials may be brought together by the members. Such aid will be of the greatest value to the Society, and I have therefore gratification in informing you that communications have already been received from some of the most active botanists in the United States, England, Scotland and Prussia, promising cordial co-operation. So soon as



preliminary operations enable us to proceed to the discussion of scientific business, you will also have an opportunity of ascertaining that we already have observers throughout the length and breadth of Canada, as well as in the other North American Provinces, from the Red River in the far West to the Island of Prince Edward in the East. In common with the botanists of other countries, we must necessarily take cognizance of those discoveries in structural and physiological botany which are daily challenging a careful examination. But our position in a comparatively new country points out to us a special path of research which it will be our duty to follow—that which has for its object the investigation of the species botany of Canada, the geographical and local distribution of the plants. The indigenous plants, whose products are now used or are capable of being applied to the useful arts, will deserve a large share of attention, and no doubt regard will also be had to those that are suited to our climate, but have not yet been introduced. Strewed around our path in the woods and on the shores of our lakes are many plants capable of yielding food and physic, dyeing and tanning materials, oils, fibres for spinning and paper-making, &c. Even in the midst of the City of Kingston, growing on vacant lots, and in court yards, there are drug-plants enough to stock a Liverpool warehouse. Such will no doubt be brought into use when better known, and thus an increase will be effected in the production of the country. Two things are necessary for the successful prosecution of such researches—a good botanical library and a good herbarium. During the past year botanical works of great value have been added to the library of Queen's College, and these, together with others in private hands, which will be accessible to members of the Society, embrace almost all the works that have a direct bearing on the Canadian flora. There is thus laid in Kingston the basis of a botanical library, which it will be the object of this Society to foster, by additions obtained by purchase or exchange with other scientific bodies, provided a suitable arrangement can be made with the University authorities. With respect to a herbarium, or collection of dried plants, this is justly regarded by every Botanical Society as absolutely necessary to enable members to refer specimens correctly to their species. It will therefore be satisfactory to know that arrangements are now in progress, whereby the herbarium, presently attached to the Natural History Chair of Queen's College, will be re-arranged in a convenient form, so as to become available for this purpose. The Herbarium embraces a fair representation of the Floras of Europe, Asia, Africa and Australia, and is especially rich in American species; it has been named with great care, under favorable circumstances, many of the specimens, in difficult and obscure families, having passed through the hands of such botanists as Balfour, Greville, Gray, Babington, Heldreich, Hooker, Lindley, Bruch and Schimper, Syme, Wilson, Berkeley, Moore, Mitten, Tuckermann, Carrington, Watson, Lowe, Lindsay, Harvey, Leighton, and other authorities in nomenclature. In addition to such means as the above, there is now an abundant supply

of excellent Microscopes in Queen's College, with all needful apparatus for the prosecution of minute researches and microscopical analysis. It will be observed that we propose to occupy a new field of research, to cut a new sod that has hitherto been walked over by Canadians in comparative neglect. And, as before cultivation can take place, a clearance must be made, so I have endeavored to answer some of the objections that might be started to the formation of such a Society, and to point out the nature of the ground which it proposes to occupy. While leaving to other Societies the discussion of the more general questions of science, and to special Societies their peculiar topics, we propose to employ the Botanical Society as an instrument for the collection of facts and the working out of details which are of immediate interest to the botanist alone, but of the greatest importance in leading to correct results in general science. Scientific societies on a broader basis have too often degenerated into popular institutions, calculated rather for the amusement of the many than for the encouragement and aid of the few who are engaged in the prosecution of original discovery. We shall be guarded against such a result, in a great measure, by the special object of our Institution, but it will be needful, also, while we attempt to spread a taste for Botany, and to diffuse correct information as to its objects, its discoveries, and its useful applications, that we should seek rather to bring our members and the public into scientific modes of thought and expression, than to allow our Society to yield up its scientific character to suit the popular taste. There is much reason to believe that the want of an organization of this kind, whose duty it is to collect and record facts and discoveries, has been the means of losing to science materials of great value. There have been casual residents in Canada, at different times, who have made collections of greater or less extent, and who have, in some cases, carried out special investigations in Botany, without leaving any printed record of their labors. Some of these may still be rescued from oblivion; but there are also other observations and discoveries, made by present residents in the country, which we may confidently hope will be made available to the Society's purposes. Professor Williamson's long residence in Kingston has enabled him to make an extensive series of observations on our local flora, which are of the greatest interest, and other Professors of Queen's College have followed his example. Some of our graduates and students have also, of late years, made collections of greater or less extent, during their vacation residence in different parts of the country. The neighborhood of Kingston, and the adjoining islands, have been investigated by Mr. Andrew T. Drummond, B. A., who obtained a prize for his valuable collection, in the Natural History Class, two years ago. Dr. Dupuis has collected the plants of the rear of Frontenac and Ernestown, while Newboro', Perth, the Ottawa country, have each their collectors. Dr. Giles has, I believe, been devoting special attention to Lichens. Mr. Schultz has had an opportunity, during the past season, of botanizing the Red River Settlement, and I have received notices of

collections, formed by our students in other distant localities, that may prove of great interest. Circumstances such as these give us reason to hope that our efforts to raise up a Botanical Society will be attended with success, and that its labors will be beneficial in leading to a more extended knowledge of the indigenous productions of Canada. The objects sought by the establishment of a Botanical Society in this country are of great importance, both in a scientific and economical point of view. The field is broad, and the soil is rich. The extent to which we can cultivate it will depend entirely upon the number of the laborers, and the zeal and industry which they display. Let us not be disappointed, therefore, with our first results. Let us lay a foundation and persevere in the work, and workers will gather around us as they have done before in the Botanical Societies of other countries. To organizations of this kind, more than to any other means, are we indebted for the advanced state of botanical science at this day; and in a country such as this, it is especially needful to have a wide-spread organization in order to elicit satisfactory results. In an attempt to organize a Society such as this, we may confidently appeal to many classes of the community. The theologian and moralist see in the vegetable kingdom a display of the power and wisdom and goodness of our Creator, and beautiful types of spiritual teaching; the medical man recognizes in it the source of his most potent drugs; the sanitary reformer knows that the simpler forms of vegetation are often the cause, and more frequently the index, of widely spread diseases; the lawyer finds in the microscopical structure of vegetable products a ready means of detecting frauds, adulterations and poisonings; the commercial man recognizes the value of a science having such bearings, and directly devoted to the extension of the sphere of industry; the spinner and paper-maker must here obtain their knowledge of the mechanical condition of vegetable fibres; the farmer, the gardener, the orchardist, the vine-grower, the brewer, the dyer, the tanner, and the lumberman, must all apply to botany for an explanation of matters that daily come before them in their various avocations. As an utilitarian institution then, our Society is worthy, and will no doubt receive, warm support; but it is to be hoped that many zealous laborers will enter the field from a higher motive—a desire to promote the cause of science.

#### NOTES AND SUGGESTIONS RELATIVE TO THE ESTABLISHMENT OF A BOTANICAL GARDEN.

By J. P. LITCHFIELD, M. D., PROFESSOR OF MEDICAL JURISPRUDENCE IN THE UNIVERSITY OF QUEEN'S COLLEGE, AND PHYSICIAN-SUPERINTENDENT OF THE CRIMINAL AND FEMALE ASYLUMS FOR LUNATICS, ROCKWOOD.

Dr. Litchfield has pleasure in complying with the request to make a note of any suggestions that occur to him in regard to the formation of a Botanical Soci-

ety in Kingston. Dr. L. aided in the formation of the Royal Botanic Society of London, and will do all in his power to aid a similar Society here. Canada is interested in diffusing a knowledge of her botanical productions, and equally so in acquiring productions from other countries suited to her soil and climate. The University of Queen's College is interested in the formation of a Botanical Society and Garden, Botany being taught in the College. The piece of land in front of Queen's College has a fine aspect and excellent drainage. It is well situated as a site for glass hot-houses. If the College land is found insufficient in quantity for a botanical garden, other lands might be obtained for extending the garden. The new garden of the London Horticultural Society will be small in extent, but promises to be all the more perfect in its arrangements, partly perhaps in consequence of its circumscribed area. The gardens of the Apothecaries' Society at Chelsea, and of the Botanic Society in Regent's Park, London, are of comparatively small extent. A garden of small size, with space for subsequent extension, involves less outlay, and is more easy of accomplishment. Half an acre of hot-house on the new and economical plan invented by Sir Joseph Paxton could be conveniently and cheaply placed on the ground referred to in front of the main building of Queen's College. I send sketches of the plan. The cost would be small, the frames being made by machinery of Canadian wood, and the glass procured from Birmingham, St. Helens, or Newcastle. The glass houses are portable, as well as cheap, when constructed upon this plan. A terrace walk being constructed to run parallel to the broad balcony in front of the College building, and beneath this terrace a Paxton or Ormson glass house, good space would be afforded for delicate or exotic productions during the Canadian winter, and admirable exhibition buildings during the summer and autumn. From the balcony, in fine weather and during exhibitions, addresses and announcements might be made to members and visitors on the terrace beneath. In the College class-rooms lectures might be delivered, and scientific meetings and conversaziones held. The balcony would serve the purpose of a music stand when music is deemed desirable. To establish a Botanical Garden as well as a Botanical Society in connection with the College it would be necessary, first, to obtain the sanction and assistance of the College authorities; second, the cordial concurrence and co-operation of the public, and more especially of those who take an interest in horticultural pursuits. The equivalent to the College would be that the Botanical Garden would render its organization more complete, and would furnish the Professors of Botany and Materia Medica with specimens to illustrate their lectures and teachings. The interest excited in a scientific subject taught in the College would add to the number of pupils in the classes. The public would find an equivalent in having, in the very centre of the city, and of easy access, a Botanical Garden furnished with all that is needed for horticultural and florticultural displays—a place of high intellectual resort, to which they may hereafter proudly point as one of the

first institutions formed in Canada for the advancement of botanical science. The Electoral Division Society for promoting horticulture, agriculture, &c., and the City of Kingston Horticultural Society, which this year united to render their exhibitions more complete, would doubtless come frankly forward to aid a society whose objects are in a great measure identical with their own. These two societies collected in the locality in 1860, with the addition of a Government grant for the furtherance of the objects, a sum of nearly \$1500. One half this amount would be sufficient, on the simple and economical plan of Sir Joseph Paxton, for the construction of a glass house 100 feet long with 12 feet lights. I quote these figures to show that the object is not unattainable if there is a desire to accomplish it. The proposed Botanical Society, would materially strengthen itself by opening communication and exchanging courtesies with older societies in other parts of the world. Contributions to the garden might be procured from London and Paris, Edinburgh, Glasgow, and other places. Such men as Professor Lindley, Sir W. J. Hooker, Dr. Balfour, and others connected with Botanical Societies and Gardens, should be invited to take an interest by being nominated Associates of the Society. \* \* \* After all, however, the success of the proposed Botanical Society must depend upon the intelligence, earnestness, and activity of its members. Botany is a science that may be taught in a popular as well as scientific form, to the young as well as to the old, and to one sex as well as to the other. The botanical garden has charms which can be appreciated by all. The country around is rich in specimens of interest to the botanizing student, and the formation and labors of the Society may alike tend to develop latent talent, improve our knowledge of the North American Flora, and extend the area of scientific knowledge and research.

The Rev. Principal Leitch reviewed the leading points brought forward in the addresses, and referred briefly to some of the more important advantages that might accrue to the country from an institution such as the one that had been proposed, alluding especially to the inducements which it would give to botanical research. Dr. Lawson, he said, when enumerating the grounds for the establishment of a Botanical Society, omitted the weightiest of all, viz., that we can count upon his services. Without his large and valuable experience in the management of such societies, I fear we would have little heart to carry out the scheme. He for a long period acted as the Secretary of the Edinburgh Botanical Society—one of the most active in the world; and from his accurate knowledge of the details of management, and his well merited distinction in botanical science, he is qualified in no ordinary measure for organizing such a society as the one we contemplate. The labor will fall chiefly upon his shoulders, but we must pledge ourselves to lend him every assistance in our power. He concluded by moving the following resolution, viz: **THAT THIS MEETING RESOLVE TO FORM A BOTANICAL SOCIETY.** The motion was second-

ed by Professor Williamson, and, having been put to the meeting, was unanimously agreed to.

The Rev. Professor Mowat read to the Meeting a draft of Laws which the promoters of the Society had framed for the consideration of the meeting, whereupon the chairman called for any additional suggestions.

Dr. Dupuis moved that the draft submitted by Professor Mowat be approved of and adopted as the Laws of the Botanical Society. The motion was seconded by Dr. H. Yates and unanimously agreed to.

Professor Lawson, seconded by Professor Williamson, moved the appointment of a Committee to suggest Office Bearers for election at next meeting, which was agreed to. Members of Committee: Principal Leitch, Professors Mowat, Williamson, Stewart and Lawson,—Prof. Lawson, Convener.

Professor Yates, seconded by Mr. Darrach, moved the appointment of a Committee to prepare Rules for regulating the exchange of specimens among the members, distribution of seeds, &c., which was adopted. Members of Committee: Principal Leitch, Professors Yates, Williamson and Lawson, Mr. Duff,—Professor Yates, Convener.

Professor Williamson moved the appointment of a Committee to consider the propriety of printing a Catalogue of Canadian Plants, and to suggest a plan for the same, the object of the catalogue being to facilitate the exchange of specimens, and obtain the returns of local floras. Professor Williamson pointed out the great disadvantages under which students and collectors labor at the present time, there being no convenient modern list of Canadian plants; and he drew attention to the uses to which such a list might be applied. He concluded by alluding to the various works that might be used for determining species, the most convenient of which is Gray's Manual of the Botany of the Northern States, which, of course, does not cite stations in Canada for the various plants. Professor Williamson's motion was seconded by Mr. O'Reilly, and agreed to. Members of Committee: Professors Williamson, Weir, Lawson, and Dr. Dupuis,—Professor Williamson, Convener.

The Rev. Professor Weir, after a few remarks on the importance of such a Society, and the cheering manner in which the proposal to establish it had been received by so large a meeting, moved the appointment of a Committee to nominate foreign botanists and others suitable for election as honorary and corresponding members, in terms of the Laws; the Committee's Report to be given in against next meeting of the Society. The motion was seconded by Professor Williamson, and agreed to. Members of Committee: Professors Weir, Williamson, Mowat and Lawson,—Prof. Weir, Convener.

All business of detail which it was proposed to take up at this meeting being concluded, the Chairman called upon those gentlemen who were desirous of becoming members of the Society to give formal expression to their adherence by signing

the Laws, whereupon the following gentlemen adhibited their names, and were declared to constitute the original Fellows of the Society, viz:—

William Leitch, D. D., Principal of Queen's College, Andrew Drummond, Manager, Montreal Bank, James Williamson, L. L. D., Prof., Dr. John Stewart, Prof., George Weir, M. A., Prof., Horatio Yates, M. D., Prof., J. B. Mowat, M. A., Prof., J. P. Litchfield, M. D., Prof., M. Lavell, M. D., Prof., George Lawson, Ph. D., Prof., M. Sullivan, M. D., Hotel Dieu, Thomas R. Dupuis, M. D., Odessa, C. W., Octavius Yates, M. D., David Hamilton, John F. Farrell, Cayuga, A. T. Drummond, Jr., B. A., H. Skinner, Mem. Pharm. Soc., Joseph Danson, F. C. S., Wm. George Hinds, Banker, John A. Wilson, Alexander N. McQuarrie, Nova Scotia, Horace P. Yeomans, B. A., Odessa, C. W., John Newton, Portsmouth, C. W., M. Flanagan, City Clerk, Kingston, William Ferguson, Bellevue Terrace, W. B. Ferguson, J. F. Ferguson, John Duff, Princess Street, John Machar, Jr., M. A., Thomas Briggs, Jr., Williamsville, Anthony O'Reilly, William F. Taylor, J. A. McDonell, Provincial Penitentiary, J. A. Kemp, J. Chanonhouse, C. A. Irwin, A. H. Johnson, J. R. Cogan, J. Lothead, North Gower, Wm. B. Thibodo, Alex. McDonald, Charles Innes Cameron, A. E. Malloch, Brockville, Wilson J. Switzer, Camden, Alfred S. Oliver, Charles R. Martin, Thomas Sullivan, J. M. Fraser, B. A., London, C. W., Robert J. Holmes, A. McPherson, Lancaster, S. D. Pope, Lindsay, C. W., George J. Caie, Chatham, N. B., John D. Kellock, Perth, C. W., P. K. Branigan, William M. Thornton, Perth, C. W., Thomas F. McLean, Perth, C. W., John J. Grafton, Alexander T. C. Comer, John May, B. A., Queen's College School, Archibald Currie, B. A., John Gordon, Pictou, N. S., John McMillan, T. F. Harkness, R. Kincade, Duncan Morrison, Brockville, T. F. Chamberlain, Farmersville, Robert V. Rogers, St. James', William Darrach, Queen's College, John R. Ross, James Hope, G. S. Hobart, Medical Hall, E. G. Ferguson, R. Thibodo, B. W. Day, Dentist, J. F. Ingersoll, Fredericksburgh, Robert Blakely, Brockville, Thomas Chanonhouse, M. D., Shannonville, John Bigham, Orono, C. W., James McCammon, Jr., Alexander McLennan, B. A., Walter Ross, B. A., William Black, Port Hope, Robert Ramsay, Newmarket, John R. Smith, Neil Dunlop, David Kelly, Milford, Andrew Moore, T. B. Tracy, P. P. Gilmartin, Boston, U. S., James B. Mullan, Chatham, William P. Maiden, Belleville.

Dr. Stewart moved that the thanks of the Botanical Society be voted to the Rev. Principal Leitch, the Chairman, for conducting the business of the meeting, and leading the proceedings to so successful an issue. The motion was seconded by Prof. Lawson, and cordially agreed to.

After the meeting, the members retired to the laboratory, where tea was served, and some time was spent in examining specimens, microscopical preparations, and books of plates, such as Schnitzlein's *Iconographia*, Hooker's *Rhodendrons*, Seemann's *Botany of the Voyage of the Herald*, Harvey's *American Algæ*, &c.

## LAWS OF THE BOTANICAL SOCIETY OF CANADA.

## I.

## OBJECTS OF THE SOCIETY.

The Botanical Society shall have for its objects the advancement of Botanical Science in all its departments—Structural, Physiological, Systematic and Geographical; and the applications of Botany to the useful and ornamental arts. There shall be periodical meetings of the members, in Kingston, during winter, for the reading of papers, and field meetings during the summer, for personal investigation, in such localities in Canada and other American Provinces of Great Britain, as may be arranged from time to time. In addition to these means, the Society shall seek to promote its objects by correspondence; the mutual interchange of specimens among the members; experiments on the indigenous and domestic plants of Canada; the introduction and distribution of new plants and seeds adapted to the wants of the country; the encouragement of Arboriculture, Forest-Conservation, and the culture of Fibre, Dye, Oil, Food, and Medicinal Plants; together with the publication of papers, embodying the results arrived at, and the information brought together by the above means. The ultimate establishment of a Botanical and Experimental Garden shall be held in view as an important means of carrying out the Society's objects. In the meantime, such seeds and plants sent to the Society as are likely to become useful to the country, shall be experimented with, and reported upon by special committees of the members.

## II.

## FIVE CLASSES OF MEMBERS.

The Society shall consist of five classes of members, viz: 1. Honorary Members; 2. Fellows; 3. Lady Members; 4. Annual Subscribers; 5. Corresponding Members.

## III.

## HONORARY MEMBERS.

Honorary Members shall be nominated by the Council, and balloted for at the first General Meeting subsequent to that at which the Council's nomination has been announced; three negative balls to exclude an individual. Honorary Members shall, in all cases, be selected for their eminence in Botanical Science, and the number shall be limited to twenty-four; six of whom shall be resident in Britain, four



in Canada, four in other Colonial Possessions of the British Empire, four in the United States of America, and six in other Foreign countries.

## IV.

## FELLOWS.

A candidate for admission into the Society as a Fellow, must be recommended by at least two Fellows. The recommendation shall be presented to the Council, accompanied either by an original Memoir on a Botanical subject, containing the results of investigations by the author, or by specimens of plants discovered by him; and, should the recommendation so presented be sustained by the Council, the candidate's name shall be exhibited in the Society's meeting room for four weeks. A ballot shall take place at the first General Meeting after the expiry of that period, when a majority of affirmative balls shall determine the election. A Fellow shall, on admission, sign the Laws, and pay his first annual subscription of Two Dollars to the funds of the Society, whereupon he shall receive a Diploma, and shall be entitled to vote at all General Meetings of the Society; to receive specimens in exchange, seeds, and copies of the Society's publications, and to enjoy all other privileges of membership to the fullest extent, subject to such bye-laws as may from time to time, be enacted by the Council. Each Fellow shall have the further privilege of introducing one visitor to the ordinary meetings of the Society, at the close of the private business.

## V.

## LADY MEMBERS.

Ladies who comply with the requirements relating to the admission of Fellows, shall be termed Lady Members, shall receive a Diploma, and be entitled to the same privileges as Fellows.

## VI.

## ANNUAL SUBSCRIBERS.

Any person may become an annual subscriber on payment of the annual subscription of Two Dollars, without the formality of recommendation and ballot. An Annual Subscriber shall be entitled to participate in the annual distribution of seeds, to exchange specimens, to attend all ordinary meetings for scientific business, and generally to enjoy the same privileges as a Fellow; but shall not receive a diploma, nor be entitled to vote in the ballots for Fellows and office-bearers.

## VII.

## CORRESPONDING MEMBERS.

Corresponding members shall be elected on the special recommendation of the Council, who shall, from time to time, select candidates for that honor from among those Foreign Botanists and others who have contributed specimens to the Society, or Memoirs to be read at the Monthly Meetings, or who have claims otherwise on the Society's regard. From such no annual subscription or other payment shall be required.

## VIII.

## PAYMENT OF SUBSCRIPTIONS.

Fellows who omit, for a period of two years, to pay their subscription, shall have their names struck from the roll, with or without previous notice. Annual subscribers shall not be entitled to any of the privileges of membership until their subscription has been paid for the current year.

## IX.

## OFFICE BEARERS.

The Council shall consist of a President, two Vice-Presidents, twenty-one Councillors, a Secretary, Treasurer, four Curators, and a Librarian, who shall be annually elected by the Fellows at the General Meeting in December. The President, senior Vice-President, and four senior Councillors (or those at the top of the list), shall retire at each election, but all the others may be re-elected. At least one-half of the new office-bearers at each election shall be chosen from among the Fellows, and the other half may be selected from among the Annual Subscribers. It shall be the duty of the Council to act as a Committee of Management in the general direction of the Society's affairs, (subject to the approval of the Fellows).

## X.

## LOCAL SECRETARIES.

Local Secretaries shall be appointed at convenient stations, whose duty it shall be to furnish information to persons desirous of becoming members, and to the officers of Horticultural and Agricultural Societies, or other bodies, who may be disposed to co-operate with the Botanical Society in carrying out its important objects.

*Second Meeting.*

FRIDAY EVENING, 11TH JANUARY, 1861.

The Society met in the Chemistry Class Room of Queen's College,—the Very Rev. Principal Leitch, D. D., in the Chair. Notwithstanding the coldness of the Evening (the temperature being 20° below zero) there was a large attendance of Fellows and Subscribers, about 103 being present. Among those observed were, Professor Williamson, Dr. Trousdale, from Newboro', Mr. Flanagan, City Clerk, Professor Weir, Mr. Hinds, Banker, Dr. Brown, Waterloo, Prof. Mowat, Prof. Stewart, Prof. Dickson, Prof. Yates, Prof. Lawson, Mr. Creighton, Prof. Lavell, Mr. May, B. A., Dr. Octavius Yates, Mr. Machar, Jr., B. A., Mr. Macdonell, M. A., Mr. Thomas Gordon, Mr. A. T. Drummond, B. A., Mr. Grant, Cataraqui Cemetery, Mr. Alex. Cowan, Mr. Ferguson, Mr. J. M. Fraser, B. A., Mr. Agnew, B. A., Mr. Skinner, Mr. Schultz, Mr. Duff, and many other citizens, Members of the University of Queen's College, and others. Letters of apology for unavoidable absence from the meeting were read from Professor Litchfield, Rockwood, Mr. Baxter, Pittsburgh, Mr. Briggs, Williamsville, and Dr. Dupuis, Odessa. Letters, expressing a warm interest in the Society's proceedings were also read from numerous botanists in Canada and the United States, including Professor Asa Gray, of Harvard University, Professor Hincks, Toronto University, Sir William Logan, Principal Dawson, McGill College, Professor Blackie, University of Nashville, Mr. Laing, Hamilton, C. W., and Mr. Macoun, Belleville.

The Minutes of last Meeting were read and approved of, and the Laws therein recorded were finally adopted as the Laws of the Botanical Society of Canada.

The following names were added to the list of Fellows and Subscribers, viz:—Mrs. Weir, Heathfield; Mrs. Lawson, Kingston; Rev. T. H. M. Bartlett, Chaplain to H. M. Forces, Kingston; Hon. John A. Macdonald, Attorney General West, Quebec; Hon. Alexander Campbell, M. L. C., Kingston; John R. Dickson, M. D., Professor of Surgery, Queen's College; Orlando S. Strange, M. D., ex-Mayor of Kingston; Marshal J. Brown, M. D., Waterloo; J. J. Burrowes, Barrister, County Crown Attorney, and Law Lecturer to Queen's College, Kingston; Peter E. Hubon, M. D., Worcester, Mass.; Wm. Mostyn, M. D., Almonte, C. W.; Thomas W. Robison, M. D., Kingston; George S. Rose, M. D., Smith's Falls; James D. Trousdale, Newboro'-on-the-Rideau; Alex. Cowan, King Street, Kingston; John Creighton, City Book Store, Kingston; Alpine Grant, Superintendent Cataraqui Cemetery Co., Waterloo; T. B. Harper, Ordnance Department, Kingston; George Laing, Landscape Gardener, Hamilton, C. W.; John Macoun, Belleville; E. H. Parker, Market Square, Kingston; John Bell, L'Original, C. W.; John Agnew, B. A., Kingston; W. Sullivan, Kingston; John C. Schultz, Fort Garry, Red River Settlement;

George Baxter, Kingston; R. H. Perryn, Kingston; John Watkins, King Street, Kingston; Arch. J. Macdonell, Barrister, Recorder of Kingston; Benjamin C. Davy, Barrister, &c., Napanee; Henry Cunningham, Kingston; F. J. George, Princess Street, Kingston; Edward Berry, Kingston; S. Muckleston, Kingston; H. W. Day, M. D., Trenton, C. W.; Thomas Gordon, Head Master of Johnson Street School, Kingston; Robert Corry, Perth, C. W.; F. F. McNab, B. A., Head Master of the Grammar School, Kemptville; John Goodwill, Queen's College; George J. L. Spencer, Napanee.

The Committee appointed at last meeting to suggest a list of botanists suitable for election as honorary and corresponding members, presented their Report, in accordance with which the following honorary and corresponding members were elected, viz.:

#### HONORARY MEMBERS.

##### CANADIAN (LIMITED TO FOUR).

J. W. Dawson, L. L. D., Principal of McGill College, Montreal  
 William Hincks, F. L. S., F. B. S. E., Professor of Natural History, Toronto University.  
 Sir W. E. Logan, F. R. S., Director of the Geological Survey of Canada.

##### BRITISH (LIMITED TO SIX).

J. H. Balfour, A. M., M. D., F. R. S., L. & E., F. B. S. E., Professor of Medicine and Botany in the Edinburgh University.  
 R. K. Greville, L. L. D., F. B. S. E., Edinburgh.  
 Sir Wm. J. Hooker, K. H., D. C. L., Oxon, L. L. D., F. R. S., L. & E., Hon. M. B. S. E., Director of the Royal Gardens, Kew.  
 John Lindley, M. D., F. R. S., F. L. S., Hon. M. B. S. E.  
 J. T. Syme, F. L. S., F. B. S. E., Lecturer on Botany, London.  
 W. Lauder Lindsay, M. D., F. L. S., F. B. S. E.

##### COLONIAL (LIMITED TO FOUR).

Dr. Muller, Government Botanist, Melbourne.  
 G. H. K. Thwaites, Botanic Garden, Peradenia, Ceylon.

##### AMERICAN, U. S., (LIMITED TO FOUR).

George Blackie, A. M., M. D., F. B. S. E., Prof. University of Nashville.  
 Asa Gray, M. D., Prof. Harvard University.  
 John Torrey, M. D., Prof. State Assayer, New York.

## FOREIGN (LIMITED TO SIX).

- Nath. N. Blytt, Prof., Christiania, Norway.  
 Prof. Alph. DeCandolle, Geneva.  
 Fred. Traugott Kutzinger, M. D., Prof., Nordhausen.  
 M. N. Pringsheim, Roy. Pr. Ac., Berlin.  
 Dr. Ludovic R. Tulasne, Paris.

## CORRESPONDING MEMBERS.

- James Alexander, Isaac Anderson, and James Anderson, Edinburgh, F. Appavoo, Madras, Dr. Baikie, Africa, T. Barclay, Cupar, Prof. Bentley, London, Rev. M. J. Berkeley, King's Cliffe, A. O. Black, London, M. Bourgeau, Kew, F. Y. Brocas, London, A. O. Brodie, Ceylon, A. Bryson, Edinburgh, W. H. Campbell, Demarara, Dr. Carrington, Yeddon, A. Carruthers, British Museum, P. Clark, Glasgow, Dr. Cleghorn, Dr. Collingwood, Liverpool, A. Croall, Montrose, J. B. Davies, Edinburgh Museum, Dr. A. Dickson, Edinburgh, Dr. Duncanson, Alloa, Rev. Dr. Ephraim Epstein, Monastir, W. W. Evans, P. N. Fraser, Elias Fries, Rev. G. Gordon, A. M., L. L. D., Birnie, W. Gorrie, Prof. Greene, W. Grigor, Otago, J. N. Haage, Erfurt, Dr. Hector, Dr. Heddle, Dr. H. Hoffman, C. Howie, W. Irvine, London, A. T. Jaffrey, Aug. Jolis, Cherbourg, W. Keddle, A. Kerr, Michigan, Moh. Ali Katib, M. D., Dr. Kirk, Zambesi, G. S. Lawson, Leo Lesquereux, Columbus, Ohio, Dr. J. Macadam, Melbourne, Dr. S. Macadam, Edinburgh, Dr. McBain, A. Mackenzie, Corfu, D. P. Maclagan, Berwick-on-Tweed, Rev. H. Macmillan, James McNab, P. Matthew, Gourdie, P. B. Mead, S. J. Meintjes, A. G. Melville, C. Montagne, D. Moore, T. Moore, A. Moore, Sidney, C. Muller, Berlin, A. Murray, Dr. M. Mustapha, W. M. Ogilvie, Prof. Oliver, E. Otto, W. Pamplin, Dr. Pappe, Cape Town, Dr. Parlatore, Florence, Dr. Priestley, J. Sadler, M. J. Schleiden, B. Seeman, Pacific Islands, W. Sharswood, M. Ali Soubki, M. D., Mrs. Col. Spottiswoode, Benares, R. Spruce, Brazil, R. C. Stapley, Stirling, L. Aug. Stapley, Fyzabad, N. Stewart, J. Stratton, Cambridge, E. Tuckermann, J. G. Veitch, Japan, Dr. Waddell, Paris.

The Committee appointed for that purpose at last meeting, presented a list of Office Bearers, in accordance with which, the following gentlemen were elected Office Bearers for the present session:

*President.*

Very REV. WILLIAM LEITCH, D. D., Principal of the University of Queen's College.

*Vice-Presidents.*

REV. JAS. WILLIAMSON, L. L. D., Professor of Mathematics and Natural Philosophy.  
 FIFE FOWLER, M. D., L. R. C. S. E., Professor of Materia Medica and Therapeutics.

*Council.*

J. P. LITCHFIELD, M. D., Prof. of Medical Jurisprudence, and Physician Superintendent of the Asylums, Rockwood.

HORATIO YATES, M. D., Prof. of the Principles and Practice of Medicine.

MICHAEL FLANAGAN, City Clerk, Kingston.

WM. FERGUSON, Bellevue Terrace.

J. J. BURROWES, Barrister, County Crown Attorney, and Law Lecturer.

H. SKINNER, Mem. Pharm. Soc., Princess Street.

GEORGE BAXTER, Pittsburgh.

J. R. DICKSON, M. D., Professor of Surgery.

MARSHAL J. BROWN, M. D., Waterloo.

THOMAS BRIGGS, JR., Williamsville.

EDWARD BERRY, Barrister.

M. LAYELL, M. D., Professor of Midwifery.

GEORGE WEIR, A. M., Professor of Classics.

WM. GEORGE HINDS, Cashier, Bank of Upper Canada.

JOHN DUFF, Princess Street.

OCTAVIUS YATES, M. D., King Street.

M. SULLIVAN, M. D., Hotel Dieu.

J. TROUSDALE, M. D., Newboro'-on-the-Rideau.

AUG. THIBODO, Johnson Street.

J. CREIGHTON, King Street.

J. B. MOWAT, M. A., Professor of Hebrew and Biblical Criticism.

*Secretary.*

GEORGE LAWSON, PH D., F. B. S. E., Professor of Chemistry and Natural History.

*Treasurer.*

ANDREW DRUMMOND, Manager, Montreal Bank.

*Curators.*

A. T. DRUMMOND, JR., B. A.

J. McCAMMON.

ANTHONY O'REILLY.

WILLIAM B. FERGUSON, JR.

*Librarian.*

R. V. ROGERS, St. James' Church.

The following donations to the Society's Library were announced:—From Dr. W. Lauder Lindsay, F. L. S., Physician-Superintendent of Murray's Royal Asylum, Perth, Monograph of the genus *Abrothallus*, De Not. et Tulasne emend. (with plates); on the Spermagones and Pycnides of Lichens, from Proceedings of the Royal Society of Edinburgh; Experiments on the Dyeing Properties of Lichens; on the Structure of *Lecidea lugubris*, Sommf., with plates; Botanical Notes of a Visit to Schleswig-Holstein; Summary of a Lecture on Substitutes for Paper Material, and an article on the same subject from the Scottish Review; List of Dr. Lindsay's published Contributions to Botanical Science. From Herr Johann Nicolaus Haage, Erfurt, Prussia, his Nursery and Seed Lists, with engraving of *Andropogon formosum*, a new conservatory plant; also colored drawings of two new ornamental annuals, varieties of *Clintonia pulchella*, viz., var. *azurea grandiflora*, and var. *atropurpurea*.

There were laid on the table some new botanical works, including Berkeley's Fungology; the Annals of Natural History for November; the Phytologist, and the Pharmaceutical Journal for December; the Gardeners' Chronicle of 15th and 22nd Dec., containing Mr. Veitch's Reports on the Botany of Japan; also the Edinburgh Courant of 27th Dec., containing a Report of the December Meeting of the Botanical Society of Edinburgh, embracing valuable information from Dr. Cleghorn on Tea and Cinchona culture in India.

Mr. O'Reilly exhibited *Polypori*. Dr. Trousdale placed on the table specimens of *Lycoperdon pyriforme* and *Sarracenia purpurea*, collected at Newboro' by Mrs. Trousdale. Several microscopical photographs of botanical subjects were also shown, nature prints of ferns, sea weeds, &c.

Before proceeding to the regular public business of the meeting, viz., the reading of scientific papers, the Chairman delivered a brief introductory address, in which he congratulated the members on the success that had attended their efforts to establish a Botanical Society. Instead of passing a long minority, as scientific societies often have to do, our Society has risen at once into importance, showing that it was wanted by the country generally. All the circumstances connected with its origin are of the most encouraging kind; we have promises of cordial support and co-operation from all parts of Canada, and already the number of active paying members amounts to nearly 140. Besides these, we have added to our list a number of honorary members, and many other persons have expressed a warm interest in the Society's welfare, so that continued accessions will no doubt be made. The Rev. Principal then referred to the advantages presented in Kingston for the pursuit of science and literature in various departments, to the satisfactory footing upon which the Astronomical Observatory had been placed by the citizens of Kingston, the proposal to extend the sphere of Queen's College by the establishment of a Law Faculty, and other circumstances. He concluded by stating that no doubt,

in time to come, many now present would rejoice that they had assisted in laying the foundation of the Botanical Society of Canada.

The following papers were read:—

### ON THE CORNUS FLORIDA OF THE U. S.

BY PROFESSOR GEORGE S. BLACKIE, M. D., NASHVILLE, TENNESSEE.

Common throughout all our forests, conspicuous in Spring time by its festoons of large white blossoms, and equally so during the Fall months from its clusters of scarlet berries, a handsome little tree, usually about fifteen to twenty feet high, is the *Cornus florida*, L. of the U. S. I have brought this plant before your notice for no particular reason, but that it this morning attracted my attention as I walked in the neighborhood of my home, and I conceive that much service may be done to the existing state of the botanical knowledge of our country, should each member of the Society take up, meeting after meeting, some individual plant, no matter how common, and state all that he knows of that plant, whether such information be gleaned from his own studies or those of others. On my first visit to the United States, one of the first objects which attracted my attention on travelling down the Mississippi, from the snows of Canada to the balmy spring of Louisiana, was this plant, and its extreme beauty, contrasted with the gloominess of the scenery from which I had just emerged, made so strong an impression on me that I have ever since looked on it, with a peculiar interest.

*Cornus florida* is probably the most generally distributed species of its genus in this country. In this genus, which is a member of the family of *Cornaceæ*, there are about twenty species, of which America has, north of Mexico, eleven, two are peculiar to Mexico, three are found in Nepal, two in Japan, two are found in both Asia and Europe, and one is found in the north of both hemispheres. They are all shrubs, with entire, deciduous leaves, covered with adpressed hairs, the calyx four-toothed, minute, adhering to the ovary; the petals few, distinct, oblong, inserted with the calyx into an epigynous disk, drupes baccate; flowers in cymes. In this State (Tenn.) we have at least five species, viz., *C. paniculata*, *C. stricta*, *C. asperifolia*, *C. sericea*, and the subject of my present paper. In addition to these, in the north there are found the species *C. Canadensis*, *C. circinata*, *C. alba*, *C. alternifolia*, and *C. sanguinea*. The bark of all these has very bitter and tonic properties. Some of them have underground stems, dying annually down; others again have fine permanent stems, the wood of which is exceedingly hard, a fact which has given rise to the name, from *cornu*, a horn, the wood being believed to be as hard and durable as a horn. Hence the ancient Romans constructed spear shafts and other warlike implements from it, and Virgil alludes to it as *bona bello*



*cornus*. The wood of *C. florida* is not only remarkable for its hardness, but also for its extremely fine texture.

*Cornus florida*, the flowering Dogwood, is the most beautiful and showy plant of its genus. It is a round-headed, small tree, usually fifteen or twenty feet high, but often reaching a height of twenty-five or thirty feet, and a diameter of eight or nine inches. The new shoots are of a grayish green, covered with down; those of the previous year are purple, with slight rings, afterwards changing to gray and streaked with brown. The stem is rough, with short broken ridges, between which the bark is often divided into regular plates. The branches are numerous spreading, and disposed with regularity, sometimes opposite, sometimes arising by fours. The leaves are three inches long, opposite, oval, entire, acuminate, and at the base abruptly tapering to a short channelled foot-stalk. Smooth on their upper surface, their lower is whitish, with hairs along the midribs and veins, and a few scattered ones between; the upper surface having also numerous conspicuous ridges. The flowers are placed at the ends of the branches, supported by a club-shaped foot-stalk. They are extremely small, and aggregated together in numbers of twelve or more in a head surrounded by a showy involucre, three or four inches in length, and which is supposed by the non-scientific to be the flower. The flowers themselves are of a greenish yellow color, but the few large obovate leaves of the involucre are white, and sometimes tinged with violet. The outer extremity of each is notched as if from injury, and this notch is purple or rose-colored. The calyx is extremely small. The petals and stamens are each four in number. There is one pistil with a filiform style nearly as long as the corolla. The fruit is a group of oblong, oval, shining, bright scarlet berries, crowned with the remnant of the calyx. These appear placed in the fork of two branches, which arises from the fact that while the flowers are terminal, yet, ere the fruit is perfected, the two branchlets for the succeeding years' flowers are developed and grown on each side. These berries ripen here about July or August, and are eagerly devoured, despite their bitterness, by birds during the winter months. In Louisiana, the *C. florida* flowers in February, in our vicinity in April and May, and farther north in June and July. It is in bloom for a fortnight, during which time the Indian farmers say, Indian corn should be planted. The plant is of a slow growth, and has a hard, heavy, solid wood, of a close texture, and susceptible of a high polish. It is often called Boxwood, and used as a substitute for it in the manufacture of handles for chisels, hammers, and such tools, for the cogs of wheels, teeth of harrows, spoons, etc. Soon after the fruit commences to ripen, the leaves begin to change their color, turning to a purple and then to a rich crimson or purple above, and a light russet beneath, forming one of the most beautiful objects during the Fall months.

Chemical analysis shows that the barks of the root, stem and branches, which are bitter, astringent and aromatic, contain in different proportions the same sub-

stances as are found in *Cinchona*, except that there is more gum, mucilage, gallic acid, and extractive matter, and less resin, quinine and tannin. The principle obtained from it is called *Cornine*, and has all the properties of the Sulphate of Quinine, though not so strongly marked. The principle is also difficult to obtain in any quantity. The extract of Dogwood, while inferior and less astringent than the best *Cinchona*, is yet superior to the inferior kinds. This extract contains all the tonic properties, while the simple resin is merely a stimulant. Prof. Barton says, "that it may be asserted with entire safety, that as yet there has not been discovered within the limits of the United States any vegetable so effectually to answer the purpose of the Peruvian Bark in the management of intermittent fevers, as the *Cornus florida*." It may be looked on as our best native tonic. In some respects, however, it differs from quinine, as the powdered bark quickens the pulse, and sometimes produces violent pain in the bowels. On this account the preparations employed are the sulphate of cornine and the extract. Dr. O'Keefe, of Augusta, Georgia, has prepared a valuable alcoholic and watery extract of the bark, which seems to possess all its medicinal properties. (See Trans. of American Medical Association, Vol. II, p. 671.) This may be used in intermittent and remittent fevers, also in typhus and all febrile disorders. In cases of debility Dogwood is a valuable corroborant, for which purpose it may be combined with Columbo, Gentian, Chamomile, or Seneca root. Country people often use it as a decoction, or chew the twigs as a prophylactic against fevers. Drunkards sometimes employ a tincture of the berries to restore the tone of the stomach, and combat the pains of dyspepsia. Many have recommended a decoction of equal parts of Dogwood and Wild Cherry barks as a remedy in dyspepsia, and the debility in convalescence from fevers. The flowers have similar properties, and a warm infusion of them was often employed by the Indians in cases of chills and indigestion. They named the plant *Mon ha-can-ni-min-schi*. The powdered bark of the plant makes one of the best tooth powders with which I am acquainted, as it preserves the gums hard and sound, and at the same time renders the teeth extremely white. Rubbing the fresh twigs on the teeth also has this effect, and the Creoles of the West Indies, the pearly whiteness of whose teeth is universally acknowledged, use another species in this way.

There are yet other uses to which Dogwood has been put. A sort of inferior ink may be made with the bark, using it instead of galls. A warm decoction of the bark, with sassafras, is a valuable wash for foul ulcers; and in veterinary medicine a decoction of the bark has been used with great good effect in a malignant disease called yellow water, Canada distemper, etc., very fatal among horses.

Thus I have endeavored to place before you a sketch of one of the denizens of our Tennessee woods, and if my effort has been of any interest to you, it will give me pleasure to repeat it should you on another occasion call on me.

Prof. Williamson, in remarking upon the above paper, stated to the meeting that he had not observed the *Cornus florida* in the immediate neighborhood of Kingston, but he had seen it the Niagara district.

Prof. Lawson exhibited specimens of the plant from various parts of the United States, and alluded to its wide range, but apparently *southern* tendency. It is no doubt correctly regarded as a Canadian species; but it is absent from Prof. Barnston's list of the Holmes Herbarium, Montreal, from Mr. Billings' lists of Prescott plants, and other accessible local lists, as well as from the various collections made in the neighborhood of Kingston. It is not difficult to trace the distribution of so showy a plant, and it is to be hoped that Prof. Blackie's remarks will lead to the publication of Canadian localities.

#### ON THE BOTANY OF THE RED RIVER SETTLEMENT AND THE OLD RED RIVER TRAIL.

By JOHN C. SCHULTZ, F. B. S. C.

The Red River Settlement has of late years attracted much attention in Canada on account of its isolated position and the many and vague reports that were in circulation regarding it, some describing it as a land of milk and honey, others as a cold barren waste. But little was known of the real resources of the country till the years 1857 and 1858, when the attention of our Government was directed to it, and they ordered two Expeditions to be fitted out, one under the charge of Mr. Hind, and the other under Mr. Dawson. These gentlemen, on their return, after an absence of eighteen months, submitted their Reports, accompanied by maps and a geological description of the country traversed. These were published and widely distributed, and many of you no doubt have seen them. Therefore any account that I give of the settlement will be as short as possible. It is situated on the Red River, near its entrance into Lake Winnepeg, occupying both banks of the Red River and the Assiniboine, which empties into the Red River at the Hudson's Bay Company's post Fort Garry, the centre of the settlement. The settlement extends from the mouth of Red River up about forty miles, and on the Assiniboine River about twenty miles. The distance of the settlement from St. Paul is said to be six hundred miles, and from Lake Superior about three hundred. The population is estimated (rather high I think) at 10,000, including the roving population, who live altogether by hunting. The climate resembles that of Montreal in the length and continued cold of the winters, and the rapid vegetation in the spring after the snow is off the ground. All the cereals are raised in abundance, the average produce to the acre exceeding that of Canada. Garden vegetables are also grown in abundance. Indian corn, however, is not so successful, being nipped by the early frosts.

While residing last summer at Fort Garry (the Hudson Bay Co.'s post in the settlement) I had an opportunity of collecting specimens of plants, some of which are now exhibited to the Society. From want of the necessary material they were rather imperfectly prepared, but may perhaps serve to give a general idea of the botany of the immediate vicinity of the Fort. On referring to the list it will be observed that here, as in other prairie land, the richest family is the Compositæ, many species of which are found. At the Fort we have not only the ordinary Prairie Composites, but a great abundance of such plants as *Artemisia Absinthium*, especially on the drier and higher parts. Next in frequency come the Cruciferae, which generally follow man; these are abundant in the immediate vicinity of the Fort. There are many species of Rosaceae and Leguminosae, truly indigenous; Umbelliferae are not unfrequent, and we have interesting representatives of Ranunculaceae, Xanthoxylaceae, Violaceae, Balsaminaceae, Caprifoliaceae, Rubiaceae, Ranunculaceae, &c. The timber trees near the Fort are small groves of aspen and balsam poplar, and on the banks of the rivers oak, ash, elm, maple, aspen, and balsam poplar.

As I had also an opportunity of collecting some specimens in the vicinity of the Trail, in coming from Fort Garry to St. Paul, I propose to give a description as short as possible of the character of the country coming down, so that it may be an assistance to those wishing to examine the specimens.

From the Red River Settlement to Canada there are three routes, more or less in use. The oldest and the one now least used is known as the old Red River Trail. This, leaving the settlement, passes up on the west side of Red River to Pembina (a small settlement of half breeds immediately on the international boundary line), and distant sixty-five miles from Fort Garry. Crossing the Red River, the Trail takes a nearly south-west course, crossing all the eastern tributaries of the Red River, the larger of which are the Pine, Red Lake, Wild Rice, and Otter Tail Rivers, and ends at Otter Tail City, the first settlement on the American side. From here there is a bridged road to Crow Wing, seventy-five miles, and from thence to the city of St. Paul, a stage road of one hundred and fifty miles. Thence the traveller passes by steamboat and railroad to Canada.

The second route is our Canadian route, which, I am sorry to say, is not so practicable as might be wished. This is a canoe route, passable about five or six months in the year, and always attended with a good deal of difficulty. This route is made by descending the Red River to Lake Winnipeg, ascending the Winnipeg River to Lake of the Woods, and from thence passing through the chain of rivers and lakes, and over the numerous portages or carrying places, to Fort William on Lake Superior. From Fort William there is a communication with Canada by the mail steamer *Ploughboy*, which leaves monthly during navigation for Collingwood.

The third, known as the new route, is the one now most travelled, and the one

through which the Hudson Bay Company bring their furs. It was opened up for travel last year by parties in St. Paul, who took a small steamer over to the head waters of the Red River, in pieces, on sleighs, the winter before, and put her together there, then cutting a road through from St. Paul to the head of navigation on Red River, they connected the boat with St. Paul by stages. By this route you leave the settlement in the little steamer referred to, ascend the river about three hundred miles to Georgetown, the head of navigation, and take the stages there for St. Paul. By this route it is possible to travel from the Red River settlement to Canada in twelve days, which is a great improvement on the ordinary time of twenty-five to thirty days by the other routes.

Now was getting rather late in the season for the Lake Superior route, and the water of the Red River being too low to admit of the little steamer making the trips, I was compelled either to come down by the old Trail or postpone my journey till next spring. However, as my companion, Mr. Buckingham, was determined to come, we began preparing for the trip, first with two hardy Indian ponies, which are the only horses fit for travel of this kind, a common Red River cart to carry our clothes, blankets, and provisions, a few cooking arrangements, four blankets, two buffalo robes, a gun, cart-cover, and provisions, which last consisted of twenty pounds of pemmican, thirty pounds biscuit, butter, sugar, and tea. These were packed in small parcels, for convenience in crossing rivers, as in some cases the rivers were too deep to ford, and we had to raft the baggage in a kind of rude boat, made by stretching the canvass cart-cover around the body of the cart, and drawing this over with lines.

Before going on I may here describe the usual routine of travel on such trips. It is always a rule to start early in the morning, and we generally arose at about five, and while one caught the horses and saddled them, the other would have made a fire and cooked the breakfast, which consisted generally of a nondescript dish of Mr. Buckingham's (who was appointed cook to the expedition); made with pemmican, biscuit, and butter. This, with a kettleful of tea, as hot and strong as tea and water would make it, was eaten with a relish known only to those living in the open air and taking active exercise. Breakfast over, things were packed, and we started generally at sunrise, and travelled till about noon, when we would stop at some good pasturage and allow the horses to eat for a couple of hours, and cook dinner; then, starting again, travel till near night, or till we could find at one place the three essentials—water, wood, and grass. These we would find sometimes at five or six o'clock, or sometimes have to push on till eight or nine o'clock. When a suitable place was found the horses were let go, a fire made, and supper cooked. After supper, wood was cut and a fire built to last all night. If possible the horses were then brought in close to the camp and hopped—that is, had their fore legs tied together to prevent them wandering far; the cart was then wheeled close to

the fire, and, spreading the robes and blankets beneath it, we rolled ourselves in them, feet to the fire, and soon fell into a sleep, the soundness of which was in proportion to the fatigues of the day, the softness of the ground beneath, and the musical powers of the wolves, who occasionally gave us a serenade.

We left the settlement on the 16th October, the long Indian summer, as it is called, having just then commenced. Crossing the Assiniboine River at Fort Garry, we followed the river up on the west side till we arrived at Pembina, a small settlement immediately on the American side of the boundary line. The country here, like that at the settlement and between, is a perfectly flat treeless plain and well adapted for agriculture, the only drawback being the scarcity of wood, which is only found in narrow strips on the banks of the river, and already most of it has been used for fuel.

Crossing the Red River here, we travelled through a low, swampy country, dotted with small groves of aspen, and, along the banks of small streams, scrubby oaks. Here we began to find game in great abundance, prairie chicken, ducks, and the little ground squirrel, and occasionally fox, badger, elk, and the little prairie wolf, which generally annoyed us a good deal at night. In this part of the journey the rivers were very bad to cross, being deep, and the bottoms of soft mud, into which the horses would stick till assisted out. This continued for about fifty miles; till, arriving at Snake Hill River, we found the river bed sandy, and the land high and dry, consisting of long, narrow, sandy ridges, bordered on each side by marsh. These ridges, a singular feature in that part of the route, were generally only a few hundred yards wide, and extended five or ten miles, almost invariably in a north and south direction.

At Sand Hill, the next river, we found the country, though still sandy, very hilly and very bare of vegetation of all kinds. This gradually merged into a level prairie again, with abundant vegetation. The next river, and the largest was Red Lake River. This was crossed with a great deal of difficulty, on account of the rapidity of the current and the narrow width of the sand bar which formed the ford. However, by putting extra weight on the cart, to prevent it being swept off the bar, and both of us holding the horses' heads against the current, we finally got over. But here a change awaited us. After passing through the strip of oak, ash, and tamarack, that fills the wide bottoms of this river, and obtaining a view of the open country, as far as the eye could reach nothing could be seen but a scorched and blackened mass. The fire left by some careless hunter had spread and burned everything. This was a serious thing to us, as we knew that the fire had extended till stopped by the next river. However, after holding a council, we determined to push on that day, in hopes of getting grass before night. Night came, and no grass, and at ten o'clock the horses began to show signs of giving out, so we camped where the fire had spared a few rushes.

Next day, at noon, we arrived at Wild Rice River (so named from the abundant growth of tall grasses), and this had stopped the fire. Crossing this river, we travelled through a country with more timber than the last, and the surface of the prairie covered with boulders for many miles. At the next river—Buffalo River—the country became again very hilly, the hills inclosing innumerable beautiful little fresh water lakes, bordered as usual with oak. This continued to Detroit Lake, where the country became very rocky and densely wooded with oak, ash, beech, maple, poplar, and here, for the first time, we saw pine and spruce. At this lake we met a party of Ojibway Indians, with whom we exchanged courtesies, they giving us some fish, and receiving in return tea, sugar and tobacco. After remaining with us till ten o'clock, carrying on a rather unsatisfactory conversation by signs and illustrations in the sand, eating all that we could give them and stealing our tin cups and hatchets, they finally went off to their lodge. They were here catching fish for their winter's provisions with gill nets, and seemed to be taking them very rapidly. This lake, like all the lakes in this region, abounds in many kinds of fish, among which are whitefish, pickerel, perch, pike, and a little fish called goldeyes.

Leaving this lake, the Trail passes through many miles of dense woods, consisting chiefly of oak, and other hard woods. In these woods, and southward, is found the Ginseng (*Aralia quinquefolia*). Crossing Otter Tail River, Rush Lake, and some small streams, we finally arrived at civilization again, in the shape of a collection of a dozen of houses, named in Minnesota maps Otter Tail City, and inhabited by travellers who purchase the furs of the Chippeways. After taking dinner here at a two-roomed hotel, for which we paid two dollars, we left the city, and crossed Leaf Mountain, the height of land or apex of the two great water sheds of the Red River and Mississippi valleys. Here, as on the rest of the route, the prevailing timber was pine and spruce, with occasional tamarac swamps. The Trail here follows down the course of Leaf River till it empties into the Crow Wing River. Here the Trail ended, and, crossing this river in a scow, we had now a bridged road, forty-five miles, to the little town of Crow Wing, where we arrived on the second of November, completing a trip of something over four hundred miles in fifteen days. At this place we left our horses, and took stages, 150 miles, to the city of St. Paul, and from thence by Mississippi boat and railroad to Canada.

I may mention here that in St. Paul I noticed several barrels of Ginseng root, which had been collected by Indians and others, and was intended for export from New York or elsewhere to China. This American Ginseng is the *Aralia quinquefolia*, a different species, it is believed, from the Chinese one, but nevertheless highly esteemed in that country. It is said to be used there as a medicine in cases of debility, but its medicinal properties are not so highly esteemed in this country. Its uses in China must be very extensive, as, independent of the Ginseng obtained in China, and the enormous quantities exported from America, imports are regis-

tered at Shanghai of the enormous quantity of 55,000 cattles, from the 11th Nov., 1858, to 30th June, 1859. This root is found in abundance in the western part of Minnesota, principally in the woods on oak ridges, and there are persons who make large sums by collecting it, and selling at St. Paul for one dollar per lb.; by sending it to New York, they get a much higher price. Now, as this root is so valuable, and as the climate and soil in some parts of Canada resemble that of Minnesota, I wish merely to mention the possibility of cultivating it in Canada. Hitherto the market has been supplied by indigenous growth, and the consequent disappearance of the plant in many parts of Canada and the States suggests the propriety of adopting measures by which its production may be increased by artificial means.

The following is a list of the specimens collected, with their localities. Most of the species were determined or confirmed by Professor Lawson.

## RANUNCULACEÆ.

- Anemone Pennsylvanica*, L. Fort Garry, Red River Settlement.  
*A. Virginiana*, L. Wild Rice to Red Lake River.  
*Delphinium Ajacis*, L. Wild Rice to Red Lake River.  
*Actæa spicata*, L. Wild Rice to Red Lake River.

## PAPAVERACEÆ.

- Papaver somniferum*, L. Wild Rice to Red Lake River.

## CRUCIFERÆ.

- Erysimum cheiranthoides*, L. Fort Garry.  
*Sisymbrium canescens*, Nutt. Fort Garry.  
*Sinapis alba*, L. Fort Garry.  
*Camelina sativa*, Crantz. Wild Rice to Red Lake River.  
*Capsella bursa-pastoris*, L. Fort Garry.  
*Thlaspi arvense*, L. Fort Garry.

## CAPPARIDACEÆ.

- Polanisia graveolens*, Raf. Wild Rice to Red Lake River.

## VIOLACEÆ.

- Viola tricolor*, L. Fort Garry.

## CARYOPHYLLACEÆ.

- Agrostemma Githago*, L. Fort Garry.

## GERANIACEÆ.

- Geranium Carolinianum*, L. Snake Hill River to Pembina.  
*G. Robertianum*, L. Snake Hill River to Pembina.

## TILIACEÆ.

- Tilia Americana*, L. Red Lake River.

## BALSAMINACEÆ.

- Impatiens fulva*, Nutt. Snake Hill River to Pembina. Red Lake River.



XANTHOXYLACEÆ.

*Xanthoxylum Americanum*, Willd. Snake Hill River to Pembina.

ANACARDIACEÆ.

*Rhus glabra*, L. Snake Hill River to Pembina.

VITACEÆ.

*Ampelopsis quinquefolia*, Michx. Snake Hill River to Pembina.

*Vitis cordifolia*, var. *riparia*, Michx. Snake Hill River to Pembina.

CELASTRACEÆ.

*Celastrus scandens*, L. Wild Rice to Red Lake River.

LEGUMINOSÆ.

*Amorpha canescens*, Nutt. Wild Rice to Red Lake River.

*Psoralea esculenta*, Pursh. Fort Garry.

*P. argophylla*, Pursh. Fort Garry. Wild Rice to Red Lake River.

*Lathyrus ochroleucus*, Hook. Wild Rice to Red Lake River.

*Glycyrrhiza lepidota*, Nutt. Wild Rice to Red Lake River.

ROSACEÆ.

*Potentilla Norvegica*, L. Fort Garry.

*P. anserina*, L. Fort Garry.

*Rosa blanda*, Aiton. Fort Garry. Wild Rice to Red Lake River.

*Spiræa salicifolia*, L. Wild Rice to Red Lake River.

*Geum album*, Gmelin. Leaf and Crow Wing Rivers.

*Rubus strigosus*, Michx. Leaf and Crow Wing Rivers.

*Prunus serotina*, Ehrh. Otter Tail Lake and River.

*Fragaria Virginiana*, Ehrh. Wild Rice to Red Lake River. Leaf and Crow Wing River.

*Rubus triflorus*, Richardson. Leaf and Crow Wing River.

ONAGRACEÆ.

*Oenothera biennis*, L. Fort Garry. Wild Rice to Red Lake River. Otter Tail Lake and River.

*Epilobium palustre*, L. Snake Hill River to Pembina.

UMBELLIFERÆ.

*Daucus Carota*, L. Wild Rice to Red Lake River.

*Sanicula Marilandica*, L. Leaf and Crow Wing River.

*Zizia aurea*, Koch? Snake Hill River to Pembina.

*Z. integerrima*, D C. Leaf and Crow Wing River.

ARALIACEÆ.

*Aralia racemosa*, L. Red Lake River.

CORNACEÆ.

*Cornus sericea*, L. Wild Rice to Red Lake River.

## CAPRIFOLIACEÆ.

*Symphoricarpus occidentalis*, R. Br. Wild Rice to Red Lake River.

*S. vulgaris*, Michx. Fort Garry.

*Viburnum acerifolium*, L. Wild Rice to Red Lake River.

*Viburnum scutatum* L. Wild Rice to Red Lake River.

## COMPOSITÆ.

*Solidago Canadensis*, L. Fort Garry,

*Artemisia biennis*, Willd. Fort Garry.

*A. Absinthium*, L. Fort Garry.

*Achillea Millefolium*, L. Fort Garry.

*Lactuca scariosa*, Willd. Wild Rice River to Red Lake River.

*Xanthium echinatum*, Murr. Fort Garry.

*X. Strumarium*. L. Fort Garry. These two forms of *Xanthium* are doubtfully referred. The species of this genus appear to want revision.

## LABIATÆ.

*Mentha Canadensis*, L. Fort Garry. Snake Hill River to Pembina.

## RUBIACEÆ.

*Galium boreale*, L. Snake Hill River to Pembina. Wild Rice to Red Lake River.  
Leaf and Crow Wing River.

## GENTIANACEÆ.

*Gentiana crinita*, Frœl. Fort Garry. Leaf and Crow Wing River.

*G. Amarella*, L. Fort Garry.

## POLYGONACEÆ.

*Polygonum aviculare*, L. Fort Garry. Snake Hill River to Pembina.

## CUPULIFERÆ.

*Corylus Americana*, Walt. Snake Hill River to Pembina.

## URTICACEÆ.

*Humulus Lupulus*, L. Snake Hill River to Pembina.

## CHENOPODIACEÆ.

*Chenopodium album*, L. Fort Garry.

## SALICACEÆ.

*Populus balsamifera*, L. Red Lake River.

## PLANTAGINACEÆ.

*Plantago major*, L. Fort Garry.

## CONIFERÆ.

*Abies nigra*, Poir. Otter Tail Lake and River.

*A. alba*, Michx. Leaf and Crow Wing River.

## ARACEÆ.

*Arisæma triphyllum*, Torr. Snake Hill River to Pembina.

## ORCHIDACEÆ.

*Cypripedium spectabile*, Swartz. Fort Garry.

## LILIACEÆ.

*Smilacina stellata*, Desf. Wild Rice to Red Lake River.

*S. racemosa*, Desf. Wild Rice to Red Lake River.

*S. gigantea*, Dietrich. Snake Hill River to Pembina.

*Lilium Philadelphicum*, L. Fort Garry.

## CYPERACEÆ.

*Cyperus filiculmis*, Vahl. Fort Garry.

## GRAMINEÆ.

*Bromus ciliatus*, L.

## EQUISETACEÆ.

*Equisetum limosum*, Gray. Otter Tail Lake and River. Greedily eaten by horses.

## FILICES.

*Pteris aquilina*, L. Snake Hill River to Pembina. Red Lake River. Wild Rice to Red Lake River. Otter Tail Lake and River.

## CONTRIBUTIONS TO THE LOCAL FLORA OF KINGSTON.

BY A. T. DRUMMOND, JR., B. A.

During the summers of 1859 and 1860 I made several excursions in the rear of this city, to collect botanical specimens. Occasional visits were also made, for the same purpose, to the neighboring islands. The appended list of plants, obtained during these excursions, as a local Flora must certainly be regarded as very incomplete, since several of our most important natural orders, as for example, Umbelliferæ, Gramineæ, Musci, &c., are entirely unrepresented; yet, taken as it is, it serves to show how many specimens may, with little difficulty, be collected even within such a small area as the neighborhood of our town. Among Phanerogamous plants, the natural orders Ranunculaceæ, Rosaceæ, Compositæ, Coniferæ and Gramineæ, are well represented in this vicinity; among Cryptogams, Lichens, Mosses and Fungi are to be found in considerable variety, although, with the exception of the Fern tribe, I have not, comparatively, paid any attention to this class of plants, as will be seen by referring to the list. The prevailing growth of timber is Maple, Pine and Oak.

As may be inferred from the proximity of this portion of Canada to the State of New York, and the consequent similarity of the climates of both districts, the plants which occur in this locality are likewise, for the most part, to be found within the limits of that State. It may, in fact, be said of the whole of Canada that nearly all the plants which compose its Flora occur in the Northern States of Amer-

ica, since the northern boundary of the United States, varying as it does through upwards of five degrees of latitude, nearly embraces Canada proper on the east and west.

In this township, and in general throughout the southern portion of the County of Frontenac, the land is rather undulating. The soil in our neighborhood seems, for the most part, to be a stiff loam on a clay subsoil, with a limestone base. Sand, however, occurs in tolerable abundance on the south-west side of Wolfe Island, at Waterloo, and a few other localities. In many places there is but a small depth of soil above the limestone, and timber trees in consequence do not attain the size which they would under more favorable circumstances. The dearth of soil is also very apparent in those localities, as for instance, Cedar Island, where the base is granite. What soil there is, however, is generally very rich, so that shrubs and herbs grow luxuriantly, whilst the face of the granite where even these cannot flourish, from a want of earth, is clothed with lichens and mosses.

Although specimens, whether of herbs, shrubs or trees, may be obtained in whatever direction you may search for them, there are yet particular localities in which they can be procured in greater variety and better condition than in others. As such, Dr. Sampson's farm west of Portsmouth, the Penitentiary Bush in the rear of the same village, Cedar Island, and the vicinity of Haldimand Cove, or Navy Bay, may be recommended. Aquatic plants occur in considerable abundance at and above Bell's Island. Such Cryptogmas as Lichens and Mosses can be obtained on Cedar Island, at Kingston Mills, &c. Lichens will also be found in greater or less abundance on almost every stick of cordwood that is brought into the city. Fungi, too, are frequently procurable on wood, for they are always to be looked for on decaying vegetable as well as animal matter. There is thus, in fact, within the reach of all, specimens enough to form a large herbarium, and whose generic and specific names, together with the localities and dates in full, would fill a volume of no inconsiderable size. And it is to be hoped that, when there are so many facilities afforded for obtaining specimens, not a few will be found who will take sufficient interest in Canadian Botany to make contributions to its Flora.\*

#### PHANEROGAMEÆ OR FLOWERING PLANTS.—EXOGENÆ.

##### RANUNCULACEÆ.

- Hepatica triloba*, Chaix. Penitentiary Bush. May 8th, 1859.  
*Ranunculus abortivus*, L. Union Street. May 8th, 1859.  
*R. acris*, L. Cataraqi Creek. June 25th, 1859.  
*Caltha palustris*, L. Cataraqi Cemetery, Waterloo. May 6th, 1860.  
*Aquilegia Canadensis*, L. Haldimand Cove. May 20th, 1859.

\* The accompanying is not merely an enumeration of plants observed in the neighborhood, but is a list of beautifully prepared specimens, for which the author obtained a first prize in the Natural History Class of Queen's College.—G. L.

## BERBERIDACEÆ.

*Podophyllum peltatum*, L. Penitentiary Bush. June 1st, 1859.

## NYMPHÆACEÆ.

*Nymphaea odorata*, Ait. South side of Bell's Island. August 1st, 1859.

*Nuphar advena*, Ait. South side of Bell's Island. August 1st, 1859.

## SARRACENIACEÆ.

*Sarracenia purpurea*, L. *S. heterophylla*, Eaton. Lemoine's Farm. June 29th, 1860.

## FUMARIACEÆ.

*Dicentra Cucullaria*, D C. Penitentiary Bush. May 8th, 1859.

*Orydalis glauca*, Pursh. Winter Green Island. June 6th, 1859.

## CRUCIFERÆ.

*Dentaria diphylla*, L. Penitentiary Bush. May 8th, 1859.

*Turritis stricta*, Graham. Haldimand Cove. June 11th, 1860.

*Sinapis arvensis*, L. Cultivated grounds. June 25th, 1859.

*Capsella bursa-pastoris*, Moench. Waste places. May 8th, 1859.

## VIOLACEÆ.

*Viola pubescens*, Ait. Penitentiary Bush. May 8th, 1859.

*V. blanda*, Willd. Kingston Mills. May 8th, 1860.

## HYPERICACEÆ.

*Hypericum perforatum*, L. Cataraqui Cemetery. June 30th, 1860.

## CARYOPHYLLACEÆ.

*Silene noctiflora*, L. *S. nocturna*, Bigelow. Cultivated grounds. July 1st, 1860.

*Agrostemma Githago*, L. *Lychnis Githago*, Lam. Wheat field of John Duff. Aug. 20th, 1859.

*Alsine Michauxii*, Fenzl. *Arenaria stricta*, Michx. Cedar Island. July 5th, 1859.

*Stellaria media*, Smith. Cultivated grounds. July 28th, 1859.

## PORTULACACEÆ.

*Portulaca oleracea*, L. Cultivated grounds. July 1st, 1860.

## MALVACEÆ.

*Malva rotundifolia*, L. Cultivated grounds. July 27, 1859.

## TILIACEÆ.

*Tilia Americana*, L., var. *pubescens*. *T. pubescens*, Ait, and *T. laxiflora*, Michx. Penitentiary Bush. Sept. 5th, 1859.

## OXALIDACEÆ.

*Oxalis stricta*, L. Cultivated grounds. July 1st, 1860.

## GERANIACEÆ.

*Geranium maculatum*, L. Haldimand Cove. June 6th, 1859.

*G. Robertianum*, L. Portsmouth. July 7th, 1859.

*G. Carolinianum*, L. Winter Green Island. June 10th, 1859.

## BALSAMINACEÆ.

*Impatiens fulva*, Nutt. Point Frederick. Sept. 1st, 1859.

## VITACEÆ.

*Vitis cordifolia*, Michx. Garden Island. July 6th, 1859.

## ACERACEÆ.

*Acer rubrum*, L. Penitentiary Bush. Sept. 5th, 1859.

*A. saccharinum*, Wang. Penitentiary Bush. Sept. 5th, 1859.

## STAPHYLEACEÆ.

*Staphylea trifolia*, L. Cedar Island. June 5th, 1859.

## LEGUMINOSÆ.

*Trifolium pratense*, L. Wolfe Island. June 25th, 1859.

*T. repens*, L. Cultivated grounds. July 27th, 1859.

*Medicago lupulina*, L. Cataraqi Creek. July 7th, 1859.

*Robinia viscosa*, Vent. Near Kingston Mills. June 7th, 1859.

*Vicia sativa*, L. Field of wheat, John Duff. Sept. 16th, 1859.

*V. Cracca*, L. Cataraqi Cemetery. July 10th, 1859.

*Lathyrus ochroleucus*, Hook. Near Kingston Mills. June 6th, 1859.

*L. palustris*, L. Dr. Sampson's Farm. Sept. 6th, 1859.

## ROSACEÆ.

*Spiræa salicifolia*, L. Cedar Island. June 16th, 1859.

*Agrimonia Eupatoria*, L. Kingston. Aug. 1859.

*Fragaria vesca*, L. Penitentiary Bush. May 10th, 1859.

*Rubus odoratus*, L. Cedar Island. July 5th, 1859.

*R. Canadensis*, L. *R. trivialis*, Pursh, Bigelow, &c. Haldimand Cove. May, 1860.

*Rosa blanda*, Ait. Haldimand Cove. June 11th, 1859.

*Cratægus tomentosa*, L. Near Railway Station. June 6th, 1859.

*Potentilla Canadensis*, L. *P. sarmentosa*, Muhl. Kingston Park. May 16th, 1859.

*Rubus strigosus*, Michx. Cedar Island. June 1st, 1850.

## ONAGRACEÆ.

*Epilobium angustifolium*, L. Kingston Mills. July, 1859.

## GROSSULARIDCEÆ.

*Ribes Cynosbati*, L. Penitentiary Bush. May 8th, 1859.

## CAPRIFOLIACEÆ.

*Lonicera parviflora*, Lam., var. *Douglasii*. *L. Douglasii*, D C. Cedar Island. June 1st, 1859.

*Lonicera hirsuta*, Eaton. Wolfe Island. June 25, 1859.

*Diervilla trifida*, Moench *D. Canadensis*, Muhl. Cedar Island. June 5th, 1859.

## CINCHONACEÆ.

*Mitchella repens*, L. River Shore, Pittsburgh. July 7, 1859.

## COMPOSITÆ.

- Inula Helenium*, L. Pittsburgh. August 15th, 1859.  
*Achillea Millefolium*, L. Common. Sept. 1859.  
*Leucanthemum vulgare*, Lam. (*Chrysanthemum Leucanthemum*, L.) Dr. Sampson's Farm. July 7th, 1859.  
*Tanacetum vulgare*, L. Kingston. Sept. 9th, 1859.  
*Gnaphalium polycephalum*, Michx. Cedar Island. August 16th, 1859.  
*Cirsium lanceolatum*, Scop. Barriefield. July 23rd, 1859.  
*C. arvense*, Scop. Barriefield. July 23rd, 1859.  
*Lappa major*, Gærtn. (*Arctium Lappa*, L.) Waste places. August 25th, 1859.  
*Nabalus albus*, Hook. Dr. Sampson's farm. Sept. 5th, 1859.  
*Taraxacum Dens-leonis*, Desf. Common. May 2nd, 1859.

## LOBELIACEÆ.

- Lobelia inflata*, L. Penitentiary Bush. Sept. 10th, 1859.

The whole plant is highly narcotic; it is used as a medicine in various complaints, but particularly in nervous diseases.

## CAMPANULACEÆ.

- Campanula rotundifolia*, L. Cedar Island. July 6th, 1859.

## ERICACEÆ.

- Gaultheria procumbens*, L. Winter Green Island. July 25th, 1859.

## MONOTROPACEÆ.

- Monotropa uniflora*, L. Cataraqi Cemetery. Sept. 8th, 1859.

## PLANTAGINACEÆ.

- Plantago major*, L. Moist places. August 5th, 1860.

## PRIMULACEÆ.

- Lysimachia ciliata*, L. Cataraqi Cemetery. July 30th, 1860.

## SCROPHULARIACEÆ.

- Verbascum Thapsus*, L. Barriefield. July 23rd, 1859.  
*Scrophularia nodosa*, L. (*S. Marilandica*, L. *S. lanceolata*, Pursh.) Near Kingston Mills. August, 1860.

## LABIATÆ.

- Lycopus Europæus*, L. Moist Grounds at Queen's College. Sept. 8th, 1860.  
*Calamintha Clinipodium*, Benth. (*Clinipodium vulgare*, L.) Haldimand Cove. July 25th, 1859.  
*Monarda fistulosa*, L. Dr. Sampson's Farm. Sept. 5th, 1859.  
*Nepeta Cataria*, L. Barriefield. July 25th, 1859.  
*Prunella vulgaris*, L. Common amongst grass. July, 1860.  
*Scutellaria galericulata*, L. Cataraqi Creek. July 27th, 1860.  
*S. parvula*. Michx. (*S. ambigua*, Nutt.) Kingston. June, 1860.

## POLEMONIACEÆ.

*Phlox divaricata*, L. Penitentiary Bush. May 12th, 1859.

## CONVOLVULACEÆ.

*Ipomœa purpurea*, Lam. (*Convolvulus purpureus* L. *Pharbitis hispida*, Choisy.) A weed in gardens. August 27th, 1859.

## ASCLEPIADACEÆ.

*Asclepias Cornuti*, Decaisne. A. Syriaca L. Catarqui Cemetery. July 30th, 1860.

## OLEACEÆ.

*Fraxinus Americana*, L. (*F. acuminata* et *F. juglandifolia*, Lam. *F. epiptera*, Michx.) River bank, Pittsburgh. May, 1860.

## ARISTOLOCHIACEÆ.

*Asarum Canadense*, L. Penitentiary Bush. May 8th, 1859.

## CHENOPODIACEÆ.

*Chenopodium album*, L. A weed in gardens. July 28th, 1859.

*C. hybridum*, L. Dr. Sampson's farm. July 23rd, 1860.

## AMARANTACEÆ.

*Amarantus hybridus*, L. A weed in gardens. August, 1860.

## POLYGONACEÆ.

*Polygonum Convolvulus*, L. Cultivated places. August 11th, 1859.

*Rumex Acetosella*, L. Barriefield. July 7th, 1859.

## ELÆAGNACEÆ.

*Shepherdia Canadensis*, Nutt. Dr. Sampson's farm. July 23rd, 1860.

## SANTALACEÆ.

*Comandra umbellata*, Nutt. Dr. Sampson's farm. July 23rd, 1860.

## EUPHORBIACEÆ.

*Euphorbia Helioscopia*, L. A weed in gardens. August 23rd, 1859.

*E. humistrata*, Engelm. A weed in gardens. August 23rd, 1859.

## JUGLANDACEÆ.

*Carya alba*, Nutt. Kingston. May, 1859.

The fruit of this tree is the well known Hickory Nut of commerce. Its wood is rather tough and elastic, making good adze, hammer, axe and pickaxe handles. It is also sometimes employed in shipbuilding. For heating purposes it is about the most valuable wood in Canada. It is also the heaviest of all our woods, its specific gravity being about 0.93.

## CUPULIFERÆ.

*Quercus coccinea*, Wang. Penitentiary Bush. May, 1859.

*Q. alba*, L. Penitentiary Bush. May, 1859.

The timber of this tree forms an important article of export from this country to Britain and the West Indies. Of all the eighteen species of oak to be found upon our North American Continent, the timber afforded by *Q. alba* approaches nearest



in quality to that of the English oak. Although used for a great variety of purposes, it is especially valuable in ship building and the construction of machinery. The bark is employed in tanning and as a medicine.

*Fagus ferruginea*, Ait. (*F. ferruginea et sylvestris*, Michx). Penitentiary Bush. May, 1859.

A common tree throughout Canada, furnishing edible three cornered nuts, known as beech nuts. Its wood from its fineness of grain, and the ease with which it can be worked, is in much request for the manufacture of all kinds of furniture, carpenter's tools, ornamental wood-work, and for the construction of machinery.

*Carpinus Americana*, Michx. Penitentiary Bush. Sept. 1859.

## CONIFERÆ.

*Pinus resinosa*, Ait. (*P. rubra*, Michx. F). Haldimand Cove. March, 1859.

This pine affords a very strong, durable timber, much valued in naval architecture. It contains a considerable quantity of turpentine.

*Pinus Strobus*, L. Haldimand Cove. March, 1859.

One of the most valuable of Canadian Timber trees. Its tall, straight trunk, which is frequently 150 feet high, is much sought after for the masts of ships, whilst the timber generally is used in the construction of bridges, houses, &c. It forms an important article of export from Canada to the United States and Britain.

*Thuja occidentalis*, L. River bank, Pittsburgh. August, 1859.

The wood obtained from this tree is light, but very durable, and is on this account valuable for posts.

*Juniperus communis*, L. Haldimand Cove. April, 1859.

*J. Virginiana*, L. Cedar Island. July, 1859.

An odorous, reddish, very compact and durable wood is afforded by this tree. The heart wood is used by lead-pencil manufacturers.

*Taxus baccata*, L., var. *Canadensis*. [*T. Canadensis* Willd.] Dr. Sampson's farm. July, 1860.

## ENDOGENÆ.

## ARACEÆ.

*Arisæma triphyllum*, Torr. [*Arum triphyllum* L. *Arum atropurpureum*, Ait]. Penitentiary Bush. May 8th, 1859.

## TYPHACEÆ.

*Typha latifolia*, L. Pond at Queen's College. July 25th, 1859.

## ALISMACEÆ.

*Alisma Plantago*, L., var. *Americanum*. [*A. triviale* and *A. parviflora*, Pursh]. Pond at Queen's College. August 16th, 1860.

*Sagittaria variabilis*, Engelm. In a pond on Dr. Sampson's farm. July 23rd, 1860.

## IRIDACEÆ.

*Iris versicolor*, L. Catarqui Creek. July 7th, 1859.

The fleshy, perennial rootstock of this plant is used medicinally as an emetic and purgative. The effect produced is much more powerful if it is taken when in the fresh than of in the dried state.

*Sisyrinchium Bermudiense*, Pluk, L., var. *mucronatum*, [S. *mucronatum*, Michx].  
Wolfe Island. June 25th, 1859.

## SMILACEÆ.

*Trillium grandiflorum*, Salisb. Garden Island. May 24th, 1859.

## LILIACEÆ.

*Polygonatum biflorum*, Ell. [Convallaria biflora, Walt. C. pubescens, Willd. Polygonatum pubescens, angustifolium et multiflorum, Pursh].  
Wolfe Island. June 25th, 1859.

*Smilacina racemosa*, Desf. [S. ciliata, Desf.] Wolfe Island. June 25th, 1859.

*S. bifolia*, Ker., var. *Canadensis*. Wolfe Island. June 25th, 1859.

*Lilium Philadelphicum*, L. Wolfe Island. June 25th, 1859.

*Erythronium Americanum*, Smith. Cedar Island. May 5th, 1860.

## CRYPTOGAMIA.

## EQUISETACEÆ.

*Equisetum limosum*, L. [E. uliginosum, Muhl.] Marsh near Railway Station.  
April 20th, 1859.

## LYCOPODIACEÆ.

*Lycopodium annotinum*, L. Haldimand Cove. May 1st, 1860.

*Selaginella rupestris*, Spring. [Lycopodium rupestre, L.] Haldimand Cove. July 23rd, 1858.

## FILICES.

*Polypodium vulgare*, L. Haldimand Cove. March 24th, 1859.

*Pteris aquilina*, L. var. *caudata*. [P. *caudata* L.] Haldimand Cove. July, 1859.

*Athyrium Filix-femina*, R. Brown. Catarqui Cemetery. July 30th, 1860.

*Cystopteris bulbifera*, Bernh. [Aspidium bulbiferum, Swartz. A. *atomarium*, Muhl.]  
Wolfe Island. June 25th, 1859.

*Aspidium marginale*, Swartz. Cedar Island. July 25th, 1859.

*A. acrostichoides*, Swartz. Catarqui Creek. July 7th, 1859.

*Onoclea sensibilis*, L. Catarqui Creek. August 20th, 1860.

*Osmunda Claytoniana*, L. [O. *interrupta*, Michx. &c.] Near Kingston Mills. June 6th, 1859.

*Botrychium lunarioides*, Swartz. [Botrypus *lunarioides*, Michx. Botrychium *fumarioides*, et *matricarioides*, Willd.] Kingston. June, 1860.

*Third Meeting.*FRIDAY EVENING, 15<sup>TH</sup> FEBRUARY, 1861.

The Society met in the Convocation Hall of Queen's College, on Friday evening, 15th February. Dr. Fowler, V.P., afterwards Rev. Principal Leitch, P., in the chair. About 200 members and visitors were present. Minutes of Council were read, from which it appeared that arrangements had been made for printing the Society's "Annals," and that the first part of the "Annals" would be ready for delivery to members in April.

The following Members and Subscribers were formally admitted, viz: Mrs Dr. George, William street; Mrs Kirkpatrick, King street; Miss Bridger, Queen street; Miss Crooks, Hamilton, C. W.; Miss Kirkpatrick, King street; Miss Mulkins, Hawthorn Cottage; Mrs. Isabella Mackenzie, Mrs. Colin Miller, Rev. James George, D.D., Professor of Logic and Mental and Moral Philosophy, Queen's College; Rev. J. A. Allan, Alwington House; Judge Logie, Hamilton; Thomas Kirkpatrick, Q. C.; Archibald H. Campbell, Commercial Bank, Kingston; Colonel Robert Jackson, Kingston; G. F. De R. Jackson, Kingston; John Paton, Kingston; John Kerr, Manager of the Kingston Gas Works; Jeremiah Meagher, Union street, Kingston; W. George Draper, M.A., Barrister, Lecturer in the Law Faculty of Queen's College; John Carruthers, Earl street; James McCaul, B.A., Grammar School, Bath, C.W.; James C. Smith, Librarian of Queen's College; G. M. Kinghorn, Wellington street; G. B. Kirkpatrick, Comer's Mills.; Donald Ross, Queen's College; Colin Miller, Kingston; John McCoy, Napanee; John Fraser, Earl street; Hugh Fraser, Bellevue Terrace; John W. Slaven, Milford C.W.; Allan A. Y. Ramsay, Newmarket, C.W.

The following gentlemen were elected Corresponding Members, viz: Kenneth McIver, Koussanee Tea Plantation, near Almorah, Kumaon, India; Robert Bell, Assistant Geologist of the Government Geological Survey of Canada, Montreal; Guerin Meneville, Lamotte, Beuvron, France.

The following donations to the Society's Library were announced: From Dr. Dawson, Principal of McGill College Montreal, Hon. M.B.S. Ca., the following works by the donor: Acadian Geology, or the Geological Structure and Mineral Resources of Nova Scotia; Fossil Plants, from the Devonian Rocks of Canada; The Vegetable Structures in Coal; Notes on the Post Pliocene Deposits of the St. Lawrence Valley; Catalogue of the Holmes' Herbarium, McGill College, by Dr. Barnston. From J. J. Burrowes, Esq., Law Lecturer, University of Queen's College: Pursh's Flora of North America, 2 vols. 8 vo. From Mr. Holmes, Kingston: Botanical Sketches of the Twenty-four Classes of Linnæus, 50 plates; Exotic Cultivated Ferns, with Hints as to their Culture, and a Synopsis of Genera and Species, by Thomas

Moore, F. L. S., Cor. M. B. S. Ca. ; The Linenan Artificial System of Botany, Illustrated and Explained, by Dr. Thomas Castle, F. L. S. From P. B. Mead, Cor. M. B. S. Ca., Editor of the New York Horticulturist: January Number of the Horticulturist and Journal of Rural Art and Taste. From Dr. Fowler, Professor of Materia Medica, Queen's College, V. P. Bot. Soc. Ca.: Don's Botanical Dictionary, 4 vols. 4to.

The following donations of Seeds were announced for distribution to Members: From Messrs. Vilmorin, Andrieux & Co., Paris, Seeds of the new upright Tomato, and of the new Double Zinnias. From Thomas Briggs, Jr., Esq., Seeds of the Hubbard Squash, the Mammoth Squash, and of improved China Asters. From Professor Lawson, Seeds of Dianthus Heddewigii, Linum grandiflorum rubrum, Cannabis gigantea, Hort., Lilium giganteum, and various other vegetable and flower seeds.

The Treasurer stated that John Carruthers, Esq., had presented to the Society a donation of twenty-five dollars.

Prof. Horatio Yates, M. D., presented the Report of the Committee appointed to draw up Rules for the distribution of Seeds, &c., in accordance with which the following Rules were adopted, viz:

#### RULES FOR THE DISTRIBUTION OF SEEDS.

1. The annual distribution of seeds shall commence on the first day of March, in each year, before which time Members are requested to send in their donations of seeds, and lists of such cuttings and grafts as they can supply.

2. A List of the Seeds to be distributed shall be prepared and printed, and circulated to Members with the March billet, so that each Member may mark off those he desires, and return the marked list to the Secretary.

3. Members who have sent in contributions of Seeds, or who have undertaken to furnish cuttings or grafts at the proper season, shall be first supplied, *preference being given to those who desire the fewest kinds.*

4. Those Members who have not contributed to the general stock, shall then be supplied, beginning in the same way with those lists that contain the *fewest* marks.

5. Where there are more demands for a kind than can be supplied, the preference shall be determined by ballot.

6. The object of the Society in distributing seeds and plants is not to supply individual wants, but to acquire knowledge respecting the adaptability of plants to our climate, and the value of novelties in an economic point of view. It is expected, therefore, that Members, as well as the officers of Horticultural Societies, who may be furnished with seeds, will report to the Society the results of their cultivation, whether the same be successful or otherwise.

The following papers were read:

## ON THE SILK-WORM AND OTHER FIBRE-YIELDING INSECTS, AND THE GROWTH OF THEIR FOOD PLANTS IN CANADA.

BY MRS. DR. LAWSON.

Much attention is attached to the production of animal and vegetable fibres suited for spinning and the manufacture of cloth. The climate and soil of Canada are admirably adapted for the growth of hemp, flax, and other valuable fibre plants. The cultivation of grain and other crops which now form the staple agricultural products must be regarded as the primary sources of wealth in this country; still the production of fibres is also a branch of industry of great importance when we consider that it opens up occupation for women and young persons who do not find employment in ordinary labor. The whole subject of fibre production is deserving of consideration. I have always felt a great interest in those insects which produce silk, and so would anyone who had watched their labors. Believing that there is a wide field for female employment in Canada, I contribute these remarks especially as indicating a source of industry for women. The majority of the population of Upper Canada are composed of English, Irish, and Scotch. We all know that a certain class of women in their native country work in the fields, they cultivate hemp and flax, they hoe potatoes, and weed in the fields, and do other out-door work; but in Canada they too often lose their independence, and, as a consequence, suffer much misery. Seeing that we must have the luxury of silk dresses, I think we should try and do what lies in our power to cultivate silk in Canada. It may not be in our day and generation that we shall see our wishes wholly realised, but we may see a beginning made, and a prospect of others enjoying the benefit. I do not offer anything new or original to the Botanical Society; I merely make these suggestions in the hope that naturalists of the Society in their rambles will not pass over any fibre-producing insects they may meet with. The day may not be far hence when this Society may have the honor to pronounce to the world that they also have discovered an insect almost, if not quite equal to the mulberry silk worm. Attempts have been made at various times to introduce the silk culture to different countries, with often little success. Canada appears to me well suited for the cultivation of mulberry silk-worm. While the caterpillars are feeding they require a high temperature, which we here have in summer. It may be said silk-worm factories have hitherto been utter failures. In some instances this is true. The United States produced a small quantity of silk, and they have had great failures. I have tried the rearing of silk-worms on a small scale, and am convinced that profit and success would attend perseverance and economy. The silk-worm can be reared as well in the one apartment of the peasant as in the house of the rich or the most elaborate factory. The feeding and rearing

of silk-worms is in fact very simple. The difficult part is when the cocoons pass into the loomsters' hands to be woven into the different garments, ribbons, velvets, satins, stockings, nets, and blond. There is no secret in the rearing of the silk-worm, no complexity, no mystery, but far otherwise; it involves but few principles, and those of great simplicity. All that is required is a sufficient allowance of space for the insects, an abundance of fodder for their consumption, a constant supply of fresh air, and unremitting diligence in regard to cleanliness. This attention is needed only for the space of six weeks, which is the length of the silk harvest. Men's labor is not required; it is women's and children's work. Two persons (a woman and a girl) could attend the quantity of silk-worms that produce sixty pounds weight of cocoons, at twenty shillings a pound. Surely £60 for six weeks' work is a very good return.

The silk-worm's egg is the size of a pin's head. From each egg, in the month of June, a caterpillar emerges, a thin black speck, which immediately commences to feed, and each day we see a perceptible difference in size. The caterpillars devour an enormous quantity of fodder, and for nearly six weeks are continually feeding. When these little laborers have satisfied themselves they look for a suitable place in which to spin their cocoons. Having found a convenient corner, they envelope themselves in their silken shroud, there to remain until they are metamorphosed from the caterpillar to the moth with wings. The moth emerges from the cocoon, lays her eggs, and her allotted task is finished. In three weeks or a shorter time she dies. The eggs are preserved until the next season. In the case of the Cecropia silk-worm the caterpillar lies in the chrysalis state all winter.

There are many insects that produce silk, but some are inferior to others. The principal species are, the common silk-worm that feeds upon the white mulberry; the Ailante silk-worm that feeds upon *Ailanthus glandulosa*; and we have also the Cecropia, Polypheme, Luna, and Promethea moths, which make very large silk cocoons. These last are natives of North America. All are inferior to the common Chinese silk-worm, which feeds upon the mulberry. Now although this paper is expressly written for ladies, yet I have a favor to ask of the gentlemen of the horticultural societies, market gardeners, and nurserymen. It would be useless to hatch silk-worms' eggs, or the eggs of any other silk yielding insect without food for them to subsist upon; therefore I ask those gentlemen to aid in the cultivation of silk by planting the insect's food permanently in Canada. Horticultural societies might offer prizes for the largest white mulberry tree and *Ailanthus glandulosa*. Nurserymen could sell the young plants, and market gardeners could bring fresh leaves to market every day during the silk-worm's feeding season, which continues about six weeks. Silk-worms will subsist on lettuce leaves, but the silk produced on such food although similar in appearance to mulberry silk, (as will be seen from the specimens handed round,) is found to be quite useless for purposes of manufac-

ture. Two seedlings of the white mulberry reared in Kingston stood out all last winter with no covering except the snow, and grew luxuriantly during the summer. In the United States the mulberries are described as growing like willows. It would almost appear that the mulberry tree is an especial tree for the silk-worm, as no other insect feeds upon it, thereby ensuring the silk-worm its food. Another advantage the mulberry silk-worm has over other silk yielding insects, is that it stays in one place; you do not have to shut it up as we do other caterpillars; but there it quietly feeds on its mulberry leaves, and contentedly waits for the next supply; and when it has undergone its transformation into the moth, it perches itself on its cocoon, where it would stay if we did not take it off. They do not fly like other moths. There is no other silk-worm whose silk has so much lustre as the mulberry silk-worm.

The Cecropia Moth (*Atticus Cecropia*) appears to be common in Canada; specimens are frequently seen in the neighborhood of Kingston. Mr. Jaeger says this beautiful moth is found all the way from the Canadas down to the Mexican Gulf, as well as in all the Western States, and it appears in Canada between June and August, when the female deposits her white kidney-shaped eggs upon the apple, cherry or wild plum tree, the leaves of which constitute the food of the caterpillars, which are hatched out of the egg by the warmth of the atmosphere, which remains on the tree, feeding on its leaves, for two months, when it descends, and may be often seen creeping on paths and side-walks, searching for currant or barberry bushes, upon which it likes to build its cocoon. It lies in the cocoon and chrysalis state until the following summer. The series of specimens now on the table will show the aspect of the insect in its various stages. One hundred years ago the Rev. Samuel Pullien, of London, was the first to unwind the cocoon of the cecropia moth. I tried the same experiment last year, but did not very well succeed; with the mulberry silk-worm it is an easy matter. Although the cecropia cocoon may not readily unwind it might be valuable for spinning. All the waste cocoons of the common silk-worm are spun, and the material from it goes under the name of spun-silk. Spun-silk tartan is one of the fabrics made from the spoilt cocoons. The same could be made out of the cecropia cocoon, provided it would take on the dye. A pair of stockings made from the silk of the cecropia washed like a piece of linen.

The Ailante Silk-worm is at present attracting much attention in Europe, in consequence of the efforts of M. Guerin Meneville, who addressed a note to the Emperor in March, 1859, on its introduction into France. This new kind of silk-worm lives in the open air on a very hardy plant, the ailante or Japan varnish tree, and is described in the Morning Chronicle as producing two crops a year of a strong silky fibre, which has been employed for centuries past in China to make clothes for the great mass of the population. The chief object of M. Meneville's note was to request the Emperor to provide the means of making an experiment on

a large scale for the rearing of this silk-worm. The imperial authority was immediately granted, and the result, which is now published, surpasses all expectations. The new silk-worms were reared in several localities in France, and "it appears that more than three-fourths of the worms produced excellent cocoons, though the condition of the atmosphere was very unfavourable; and it is now fully ascertained that the new worm gives a profit of cent. per cent., and often much more, whereas the mulberry silk-worm is reckoned very successful when it makes a return of 15 per cent. on the capital employed. The silk of the ailante worm differs essentially from that of the mulberry worm. It is of an inferior quality, well adapted for coarse fabrics, and cannot enter into competition with that employed in the rich tissues of Lyons. The varnish tree will grow on the most barren soil. The cocoons may be prepared by the peasantry themselves, whereas the ordinary silk requires much skill and care in dressing it. The new silk will form an excellent substitute for cotton, of which France annually imports 69,604,000 kilogrammes from the United States. M. Guerin Meneville proposes to call the new silk ailantine, or cynthiane, in order to distinguish it from the other kind in use. He is now studying the best means of promoting the production and manufacture of the new silk, which he positively declares will ere long supply the chief clothing of the people." Professor Lindley, in commenting upon the above results, states that the earliest information respecting this insect was derived from Mr. Rutherford Alcock, when acting as H. M. Consul at Shanghae. About the year 1848 that gentleman sent to the Horticultural Society of London numerous pupæ and samples of cocoons as well as of the raw and manufactured silk. The samples of wove silk are described as having much the appearance of nankeen, rather coarse and very strong, and not likely to be taken for silk by an ordinary observer. An interesting paper has appeared in No. 86 of "All the Year Round," in which it is stated that "The eggs of the ailanthus silk-worm hatch at a temperature of from 64° to 68° Fahrenheit. They must therefore be kept in a cool place until the ailanthus plants are well in leaf. When hatched the young caterpillars may be placed on the ailanthus leaves in a tray, or on young branches furnished with leaves, and whose extremities are stuck into a jar of water. After the first moult they may be transferred to the growing trees and left thus in the open air until the cocoons are fit to be gathered. M. Meneville advises the stems of the ailanthus plants to be cut down level with the ground, and only to use the suckers of the same year, which will start with great vigor. In the spring all last year's shoots must be pruned close, so that your ailanthus copse consists only of ligneous stumps and herbaceous branches, whose large and succulent leaves are more suitable for feeding the worms than those produced on the tops of small trees. The ailanthus may be planted in rows or in quincunx. It will grow even in stony soils, where little else that is useful, except the vine, will thrive, and that demands a far better climate with the best of aspects."



A few particulars respecting the plant on which the new silk-worm feeds may not be unacceptable. The genus *Ailanthus* consists of large trees, whose timber is used for various purposes in the countries in which they grow. *Ailanthus glandulosa* is a native of China and Japan. The French name is *Ailante*. In *Hortus Kewensis* we see that it was introduced into England by Father D'Incarville in the year 1751. It grows well in England, as well as in the United States, and is regarded as a valuable tree, as it is a quick grower and thrives on a poor soil. It has been recommended as a shade tree to be planted in the streets, or where shade is required. Trees of this and of the Mulberry planted in rows along the sidewalks in cities would answer three purposes—shade, food for silk-worms, and ornament. Groves and carriage drives so decorated would be pleasant and handsome-looking. Judging from the complaints of some horticultural writers as to its troublesome character, the *Ailanthus* would seem to grow too freely in the United States. See *Horticulturist*, N. Y., 2 ser., vol. v., page 379. In Gray's Manual it is described as having flowers, especially the staminate ones, which are redolent of anything but "airs of heaven." The bad odor, he observes, offers a serious objection to the planting of this ornamental tree near dwellings; but for the production of silk the trees are pollarded, or cut to stumps, and will not therefore produce flowers freely. When allowed to grow freely the *Ailanthus* attains a height of sixty feet. The bark, when wounded gives out a resinous juice, which hardens in a few days. The wood is hard and heavy, and is susceptible of a very fine polish. The late Dr. Neill of Edinburgh, in the account of his visit to Paris in 1817, says: In the Jardine de Plantes, next to the Seine gate, the cross-walk is shaded by rows of the *Ailanthus glandulosa*, here forming trees of considerable size. The *Ailanthus*, he remarked, seemed to have become a common ornamental tree at Paris. Again, the same writer observes that "at the back part of the garden there was a wall lined with the *Ailanthus glandulosa*, a Japan tree, which was growing vigorously, and remained quite green though standing in the hard gravel walks; while the Lime trees had been burnt up or nearly deprived of their foliage by heat or drought. It will grow in the coarsest and poorest soil, and sends its spreading roots abroad in search of moisture and nourishment. It is chiefly propagated by means of chips or cuttings of the roots, which are placed in shallow trenches, and grow readily." From these remarks we see that the tree has long been appreciated in France as an ornamental object, and now a rich harvest of silk will be reaped from it.

The importance of silk to our civilized world, not only in the present day, but in all ages, and the constant demand, still on the increase, have led naturalists to look out for insects that produce silk cocoons; and the last new discovery in France is that of the *Ailante*. We have thus at least three insects that could be reared in Canada for silk:—1. The *Cecropia*, a native of North America, and the food of which is already established, as it feeds upon the wild plum, the apple, and cherry

tree, and builds its cocoon upon currant bushes; 2. The Ailante, whose food is the *Ailanthus glandulosa* or Japan varnish tree, a very hardy tree, suited to our climate; and 3. The common silk-worm, which feeds on the white mulberry. Caterpillars and moths are very beautiful insects, and those we have had under consideration are particularly so. We have heard some people scream at a caterpillar and exclaim that they could not touch it. We grant you there are some things in nature that are not very loveable, but these moths we have been considering I think would satisfy the most fastidious, especially when we reflect upon the lines of the poet that:—

“ We all are creeping worms of earth.  
Some are silk-worms, great by birth;  
Glow-worms some, that shine by night;  
Slow-worms others, apt to bite;  
Some are muck-worms, slaves to wealth;  
Maw-worms some, that wrong the health;  
Some to the world no good willers,  
Canker-worms and caterpillars,  
Found about the earth we're crawling,  
And for a sorry life we're sprawling.  
Putrid stuff we suck which fills us,  
Death then sets his foot and kills us.”

KINGSTON, CA., 15TH FEB., 1861.

### ON THE HUBBARD SQUASH.

BY THOMAS BRIGGS, JR.

This Squash, of which two fine specimens were exhibited to the meeting, was described by Mr. Briggs as having a thick hard shell or skin, when fully ripe, of a dark dull green color, sometimes with stripes of light green or lead color thereon. The flesh is of a rich golden yellow, fine grained, compact and dry, flavor delicious, and of first quality. It is superior to the Boston marrow, and there is no squash of which I have any knowledge that equals it in sweetness, firmness of grain, or in keeping qualities. It is not a large squash; its usual weight is from six to eight pounds, sometimes as heavy as twelve to sixteen pounds with good cultivation. In shape (as will be seen by the samples accompanying this,) it is a little elongated, and has always a small tapering point at the top, slightly twisted and turned aside. One of the many good qualities of this squash is that it keeps well during the winter; it is

also one of the best to use during summer, and before it is ripe. To prepare it for the table it requires but a short time to cook, say about ten minutes; the green outside shell of course being first taken off. Like all squashes it requires a rich soil and good culture to have it succeed well, and should be planted alone, so as not to mix with other varieties. I might here mention that the Hubbard Squash was first introduced by Mr. Gregory into Marblehead, Mass., more than forty years ago, but, from some cause, has been but little known beyond that locality, until within the last three or four years; of late it has become the favourite squash with all who know it, and continues to maintain that high character it held when first introduced.

In order to preserve the Hubbard, as well as other squashes, for winter use, it is necessary to gather them when ripe in the autumn, and place them in a dry room or carriage house until the first frost, after which they should be removed into a dry cellar, and there placed upon shelves where neither *damp* nor *frost* will affect them; with such care the Hubbard Squash will be good for use until May or June.

Two fine specimens of the Hubbard Squash, exhibited to the meeting by Mr. Briggs, were referred to a Committee of ladies for a report on their qualities.

#### WHAT TO OBSERVE IN CANADIAN LICHENS.

By W. LAUDER LINDSAY, M. D., F. L. S., HON. MEM. BOT. SOC. CA.

An account was given of the importance of Lichens in the phenomena of nature and of their applications to the wants of man, in affording food, dyes and fodder. Specimens of many of the most valuable dye species were shown, including *Roccella tinctoria* from Greece; a series of *Umbilicariæ* named by Leighton in accordance with his Monograph; *Sticta pulmonaria* and dye prepared from it, from the woods around Kingston; an interesting collection of Lichens made in the United States by Mr. A. O. Brodie, of the Ceylon Civil Service; and Tuckermann's published series of American specimens. The points brought before the Society by Dr. Lindsay were the following:

1. There are no plants so variable in character as the lichens; none in which it is consequently so difficult to decide what are species and what are varieties. In order to a comprehensive knowledge of species, it is necessary to study individuals in every condition of growth and from every possible habitat. Hence the commonest species and varieties become of value—the more so if collected in countries comparatively unexplored botanically, for lichens are no exception to the rule that geographical differences are attended by corresponding differences in the characters of the same plants. Every Canadian collector of lichens—however common and well-known the latter may be—may therefore consider himself as contributing towards a more scientific and philosophical, because more comprehensive, knowledge of a very protean, but interesting, group of plants.

2. If the collector make a point of gathering specimens of everything he meets which belongs to the lichen family, he will run a good chance of including some novelties, perhaps new species or varieties. This is extremely probable in a country like Canada, seeing that it is seldom a miscellaneous collection of lichens is made in any part of Britain at all remote from the larger towns without the discovery of interesting novelties. New species are most likely to be met with among the very minute crustaceous lichens, which grow on rocks or trees, and which cannot be properly studied without the aid of the microscope; among species belonging, for instance, to such genera as *Lecidea*, *Lecanora*, *Graphis*, *Opegrapha*, *Calicium*. It is not to be expected that the tyro should make these microscopical examinations or discoveries for himself: he will probably require the assistance of some experienced microscopist or lichenologist.

3. The applications of lichens to the arts are daily becoming more numerous and important. New dye-lichens are being discovered in India and the East. Among specimens of the latter recently sent me from India, I have found species not hitherto known to be of any practical use. Again, recently the probability has been shown, on good grounds, that a lichen—the *Lecanora esculenta* of Pallas—was the Manna of the Bible.

4. The colorific capability of a lichen, so far as regards a red or purple dye of the nature of orchil or cudbear, may be readily discovered by simply macerating the lichen—chopped into small fragments or pulverised according to the nature of its thallus—in a weakish solution of common hartshorn or ammonia, (the quantity not much covering the lichen in a vial of any sort), allowing the mixture to stand a few days in a warmish part of the house, and shaking it frequently, so as to expose the mass to the action of the air. Colorific lichens of this class belong chiefly to the genera *Roccella*, *Umbilicaria*, *Parmelia* and *Lecanora*.

5. The colorific capability of a lichen, so far as regards other colors—chiefly brown and yellow—may be easily ascertained by simply boiling the lichen, chopped or pulverized as before, in a small quantity of water. Colorific lichens of this class belong chiefly to the genera *Parmelia*, *Sticta*, *Cetraria*, &c.

6. Whether a lichen contains, and, if so, how much, mucilage or starch may be ascertained by the same means as last mentioned, and allowing the mixture to cool, when it will gelatinise more or less, if it contain much mucilage. *Cetraria Islandica* and some of the *Umbilicarias* are illustrations.

7. Contributions may also be made to our knowledge of the economical applications of lichens by ascertaining whether any and what species are, or have been, used in Canada by the native Indians to yield food, dyes, &c., noting all the particulars of such uses.

8. Lichens are very easily collected and transported; they require no sort of preparation; they may be simply allowed to dry in the open air and packed as

convenient. Those growing on trees generally require the piece of bark on which they grow to be sliced off with a knife, and those on stones the piece of rock to be broken with a hammer. Both may be wrapped in paper like mineralogical specimens. In all cases the localities and dates of collection should be mentioned, and any further information as to uses, &c., which may be known to the collector.

#### TEA CULTURE IN INDIA.

Dr. Lawson read a letter from Mr. W. McIver, Kingston, accompanying specimens of Tea leaves, with a brief description of the mode of growth and preparation, received from his brother, Mr. K. McIver, Kousanee Tea Plantation, near Almorah, Kumaon, India. Mr. McIver's description was in the following terms: "I enclose herein two or three leaves, pressed, of the Tea Plant, from large bushes, each bush containing five or six, or sometimes more plants, of two to four feet high, and two or three feet in diameter. We pluck only the young or new sprouting leaves, such as I enclose, for making the tea. The remainder of the large green leaves with which the bush is still covered are left untouched, as they crumble and break and cannot be rolled or manipulated. These young leaves are soft and pliant, and can be kneaded without breaking."

#### A NEW CANADIAN DYE.

Professor Lawson exhibited specimens of a new Dye of great richness, prepared in the Laboratory of Queen's College, from an insect, a species of *Coccus*, found for the first time last summer on a tree of the common black spruce (*Abies nigra*, Poir), in the neighborhood of Kingston. This new dye closely resembles true Cochineal, a most expensive coloring matter capable of being produced in warm countries only, and which is used to give a fine and permanent dye in red, crimson and scarlets, to wool and silk. Unlike Cochineal, the new dye, discovered at Kingston, is a native Canadian product, and capable of being produced in temperate countries. Having been but recently observed, a sufficient quantity has not yet been obtained for a complete series of experiments as to its nature and uses; but the habits of the insect, as well as the properties of the dye, seem to indicate that it may become of practical importance. In color it closely resembles ordinary Cochineal, having rather more the scarlet hue of the flowers of *Adonis autumnalis*, and no doubt other shades will be obtained. The true Mexican Cochineal is now being cultivated in Teneriffe, and other vine growing countries of Europe and Africa, with such success as to displace the culture of the grape vine; yet the Directors of the East India Company offered in vain £2,000 for its introduction into India.

## SPECIMENS OF MATERIA MEDICA.

Dr. Fife Fowler, Prof. of Materia Medica, exhibited the following specimens, viz. : Fruit of the Colocynth plant, Cucumis (Citrullus) Colocynthus ; rhizome of Lastrea Filix-mas, the Male Fern, used as an anthelmintic ; seeds of the Croton Oil Plant, Croton Tiglium ; and specimens of Kooso, and Veratrum viride.

Dr. Lawson exhibited specimens of Hamamelis Virginica, collected on Prince Edward Island, by Prof. Inglis, Prince of Wales College, Charlottetown. This tree is widely distributed over the North American continent, and is common in the woods along the lake shore, in the neighborhood of Kingston, producing its flowers in autumn and winter, while the fruit does not ripen till the ensuing summer or autumn. Specimens of Psilotum triquetrum were exhibited, in illustration of Principal Dawson's paper on Fossil Plants, which had been presented to the Society's Library.

The Rev. Principal Leitch, the President, in bringing the proceedings to a close, congratulated the Members on the success of the Meeting, and the wide interest manifested in the Society's proceedings. This meeting differed from those previously held in regard to one circumstance—the presence of the Lady Members. Botanical researches of great value had been carried out by ladies in other countries and all departments of scientific knowledge had benefitted by their exertions. It was gratifying, therefore, that the ladies of Kingston were not behind in this respect, and he looked forward with interest to the contributions which they would no doubt continue to make to the Society's Meetings, in imitation of the example set by Mrs. Lawson. The President concluded by giving some interesting details regarding the employment afforded by the silk culture in Judæa.

*Fourth Meeting.*

FRIDAY EVENING, 8TH MARCH, 1861.

The Very Rev. Principal Leitch, President, in the Chair. There was a full attendance of members, and also a large number of visitors, the Convocation Hall of Queen's College being filled, while the Laboratory adjoining was arranged for the exhibition of preparations under the microscope, botanical specimens, &c. Some of the lady members appeared with bouquets of green-house flowers.

On motion of Prof. Yates, seconded by Mr. Drummond, the following new members were elected :—LADY MEMBERS—Mrs. Carruthers, Earl Street ; Miss Wilson, King Street. FELLOWS—Rev. William Bleasdel, M. A., Rector of Trenton, the Parsonage, Trenton ; F. R. Stanton, Kingston ; B. Billings, Jr., Prescott.

The following letters were read by the Secretary :—

ACTON GREEN, TURNHAM GREEN,  
London, W., February 4, 1861.

DEAR SIR,—I have just received your letter of the 11th ultimo, informing me that I have had the honor to be elected an honorary member of the Botanical Society of Canada. I beg you to assure the Society that I much value so flattering a mark of distinction, and that I greatly rejoice to find one of our most important colonies making such rapid strides in the prosecution of arts and sciences. Pray believe me, yours faithfully,

JOHN LINDLEY, M. D., F. R. S.,  
Emeritus Professor of Botany, University College, London.  
PROFESSOR LAWSON, Secretary of the Botanical Society of Canada.

NASHVILLE, TENNESSEE, U. S.,  
February 5th, 1861.

SIR,—The honor which the Botanical Society of Canada has conferred upon me, by electing me one of the honorary members of the body, is gladly and gratefully accepted. You will please convey my thanks and heartiest good wishes to the members of the Society, and assure them that it shall ever be my endeavor to prove myself worthy of their honor, and that at all times, and in all places, I will bear their interests, and that of the noble science to which they are devoted, in mind. The establishment of such a body on this continent, will, I believe, prove of inestimable value, not only to Canada, but to the United States, and may, I trust, prove to be the means of increasing the small number of botanists in the Southern States. As Editor of a Scientific Journal, having an extensive circulation in the extreme South, I have it in my power to bring the proceedings and wants of the Society before a class of men which it could not otherwise reach, and will be happy to do so.

The Society will please accept a donation of a copy of the said journal, "The Nashville Journal of Medicine and Surgery," which will be mailed to its Secretary every month. I should like to call its attention to an article on *Euphorbia prostrata*, as an antidote for rattle-snake bites, published in the current number.

I hope it will be in my power to send occasional papers and specimens to the Society.

With the assurances of the highest esteem, I am, &c.,

GEO. S. BLACKIE, M. D., (Edin.) A. M., (N. Y.),  
Professor of Botany.

PROFESSOR LAWSON, Secretary of the Botanical Society of Canada.

Letters were also read from Dr. P. E. Hubon, Worcester, Massachusetts; Professor Torrey, New York, offering specimens from his Herbarium, and other members.

The Librarian presented the following list of donations to the Society's Library:—From Dr Lawson, Professor of Chemistry and Natural History, Queen's College, Kingston, the following works by the donor: 1. Remarks on *Lepas anatifera*; 2. Papers read to the Botanical Society of Edinburgh; 3. A paper on the occurrence of Cinchonaceous Glands in Galiaceæ; 4. Paper on Rat-tail Radish; 5. Lecture on Agriculture, from the Canadian Agriculturist; also, a pamphlet by Professor Balfour, entitled "Arrangement of the Vegetable Tissues and Organs." From Professor Blackie, honorary member of Botanical Society of Canada: February number of the Nashville Journal of Medicine and Surgery. Copies of the Annual Report and Prize Lists for 1861, of the Hamilton Horticultural Society, from the Society. Nursery and Seed Lists from Mr. J. H. Bruce, Hamilton, C. W.; Mr. Thos. Bog, Picton; and Mr. J. A. Haage, Erfurt. Also the following donations of seeds: From Mrs. Berry, Kingston—Foreign seeds. From Mrs Dr. Trousdale, Newboro'-on-the Rideau—Seeds of *Adlumia cirrhosa*. From Mr. John Machar, M. A., Mr. Flanagan, City Clerk, and Mr. Holmes—various Flower Seeds. From Prof. Litchfield, M. D.—Seeds of prize beet and other vegetable seeds of improved sorts. From Mr. Thomas Bog, Picton—A very valuable collection of seeds, including *Phaseolus ensiformis gigas*, pickling turnip, varieties of lentils, numerous new and fine varieties of asters, and various greenhouse and annual seeds, imported from Erfurt, Prussia.

Mr. Briggs moved a vote of thanks to the donors, which was seconded by Dr. Yates, and accorded with applause.

Dr. Dickson, Professor of Surgery, exhibited beautiful specimens of Australian sea weeds, collected and transmitted by Samuel McGowan, Esq., Government Superintendent of Telegraphs, to Dr. Dickson. There were also accompanying them numerous specimens of Zoophytes of great beauty. The Society's thanks were voted to Dr. Dickson for the interesting exhibition.

An extensive collection of plants, neatly prepared and labelled, was exhibited from Mr. John Macoun, Belleville.

Mr. John J. Grafton exhibited a specimen of a singular variety of Indian Corn raised last summer in the Township of North Fredericksburgh, County of Addington, from one seed received from China.

At this meeting seeds of various new and interesting economic and ornamental Plants, were distributed to Members who had applied for them.

The following papers were read:—



## NOTE ON THE GENUS GRAPHEPHORUM, DESV., AND ITS SYNONYMY.

BY ASA GRAY, M. D.,

HONORARY MEMBER OF THE BOTANICAL SOCIETY OF CANADA.

About six years ago, I received from Dr. Cooley, of Washington, Macomb Co., Michigan, a panicle, with a portion of the stem and leaves, of a grass which was entirely new to me. A memorandum stated that it was gathered on the borders of a swamp near the collector's residence. Having retained no specimen himself, and no particular recollection of this grass, Dr. Cooley has not been able to find it again.

In preparing the second edition of my Manual of the Botany of the Northern United States, (published in the year 1856), I was obliged to characterize this grass from the imperfect single specimen in my possession, which I did under the name of *Dupontia Cooleyi*, referring the plant, with some misgiving, to R. Brown's Arctic genus *Dupontia*. There is nothing Arctic in the appearance of this grass, which, from the specimen, seemed to have much the appearance and the size of *Cinna arundinacea*; and the habitat, south of lat. 43°, and not far from the Lake and River St. Clair, is by no means boreal.

The very close affinity between *Dupontia* and *Arctophila*, Rupr. having been indicated by Ruprecht\* and by Grisebach†, it was natural to regard our grass as intermediate between the two; and I further suggested the propriety of combining them along with the *Scolochloa* of Link or *Fluminia* of Fries (which Grisebach had adopted as a genus) under *Dupontia*, as the oldest name.

The main object of this communication is to state, that I have recently had the pleasure to receive from Dr. Charles Pickering, specimens plainly conspecific with the Michigan grass (although much smaller and more slender), which this excellent naturalist detected last August at the Falls of the Riviere du Loup, in Lower Canada, about 100 miles below Quebec.

Dr. Pickering not only identified his plant with my *Dupontia Cooleyi*, but, which is more important, suggested that it might be the obscure *Aira melicoides* of Michaux, a grass known only from the specimen preserved in the Michauxian herbarium, upon which specimen, Desvaux and Beauvois had characterized the genus *Graphephorum*. The genus was founded under this name by Desvaux, but

\* Flores Samojedorum Cisuralensium, (in Beitr. Pflanzk. Russ. Reiches), p. 62-65.

† In Ledebour, Flora Rossica, 4, p. 336.

first published by Beauvois. A comparison with the specific character in Michaux's Flora, with the Analysis in Beauvois' Agrostographia, and with a description in the Supplement to Kunth's Agrostographia Synoptica, (the only original sources, except Desvaux Journal, which I have not seen,) proves the correctness of Dr. Pickering's suggestion.

The great size of the panicle in the Michigan specimen, and an erroneous pre-conception in respect to Graphephorum, had wholly diverted my attention from this obscure genus. It is now clear, however, that Beauvois' figure very well represents the Canadian grass, except that it wrongly restricts the villous beard of the rachis to the ultimate and sterile joint, and represents the inferior palea as tricuspidate through an exaggeration of a slight or casual erosion of the tip of each side of the submucronate termination of the mid-nerve, but these inaccuracies are both corrected in Kunth's supplementary description, drawn from original materials.

The grain is perfectly free and deciduous, as it doubtless will prove to be in *Dupontia Fischeri*.

Thus a long lost species of the North American Flora is rediscovered, and a genus which rested for almost half a century in obscurity and doubt, takes its appropriate position,—in my view, including not only its original species, but also *Dupontia*, R. Br., *Arctophila*, Rupr., and even *Scolochloa*, Link; for the firmer texture of the paleæ in the latter, the stronger nerves, and the vague teeth or eroded sinuses at the tip of the lower palea, are characters of small moment.

The name *Graphephorum*, is very appropriate, referring as it does to the penicillate tuft surrounding the base of each flower, which is a distinguishing character of the genus, if it be left (as I think it should be) among the Festucineæ, between *Colpodium* and *Glyceria*, while it also indicates an affinity with the Avenæ, which was recognized by Mr. Brown when he established the genus *Dupontia*.

The several groups, or supposed genera here brought together, form so many sections of *Graphephorum*, which may be disposed as follows:—

#### Genus: GRAPHEPHORUM.

*Graphephorum*, "Desv.," Beauv. Agrost., p. 76, t. 15, f. 8, (1812); Desv. Jour. Bot., ann. 1813, p. 71, ex auct.; Kunth, Enumer. (Agrost.), 1 p. 253, et Supple., p. 193, t. 14, f. 9 (pist. et squamule). *G. mellicoides*, Desv.—*Aira mellicoides*, Michx.

*Dupontia*, R. Br. App. Voy. Parry, p. 190 (1824). *D. Fischeri*, R. Br.

*Scolochloa*, Link. Hort. Berol. Descr., 1, p. 136 (1827). *S. festuacea*, Link. *Arundo festuacea*, Willd. *Festuca borealis*, Mert. et Koch. *F. arundinacea*, Liliieb.

*Dupontia et Arctophila* (sub *Poa*), Rupr., Fl. Samoï., p. 62-64, t. 6, (1845). Spp. plur.

*Fluminia*, Fries, Summ. Veg. Scand., 1, p. 247 (1845, 1846). *F. arundinacea*, Fries, seu *Festuca borealis*, Mert. et Koch.

*Scolochloa* (Link), *Dupontia* (R. Br.) et *Colpodium* § *Arctophila* (*C. fulvum et pendulinum*), Griseb. in Ledeb. Fl. Ross., 4, pp. 386, 388, 393, (1863).

§ 1. Paleæ firmiores, inferior nervis 7 prominulis; glumæ flores 3-4 æquantes.—SCOLOCHLOA, Link.

1. G. FESTUCACEUM. *Arundo festucacea*, Willd. *Festuca borealis*, Mert. et Koch; Hook. Fl. Bor. Am., 2, t. 231. *Scolochloa festucacea*, Link, Griseb. *Fluminia arundinacea*, Fries.

§ 2. Rhachis spiculæ etiam barbata; glumæ scabræ, inæqualis, flores 3-4 subæquantes.—GRAPHEPHORUM, Desv.

2. G. MELICOIDES, Beauv. etc. *Aira melicoides*, Michx.

Var. MAJOR. *Dupontia Cooleyi*, Gray, Man. Bot. N. U. S., ed. 2, p. 556.

§ 3. Paleæ tenuiores, scariosæ; glumæ flores 2-3 subæquantes.—DUPONTIA, R. Br.

3. G. FISHERI. *Dupontia Fisheri*, R. Br. *Poa (Dupontia) pelligera*, Rupr. l. c.

Var. PSILOSANTHUM. *Poa (Dupontia) psilosantha*, Rupr. *Dupontia psilosantha*, Rupr., l. c., t. 6; Griseb. l. c.

§ 4. Glumæ spicula 2-7 flora breviores; flores parvuli.—ARCTOPHILA, Rupr.

4. G. FULVUM. *Poa fulva*, Trin. *Poa (Arctophila) fulva*, *Scleroclada latiflora* et *pæcilantha*, Rupr. ex Griseb. *Glyceria fulva*, Fries. *Colpodium (Arctophila) fulvum*, Griseb.

5. G. PENDULINUM. *Poa pendulina*, Fl. Dan. t. 2343. *Poa (Arctophila) deflexa*, *remotiflora*, et *similis*, Rupr. *Glyceria pendulina*, Læstæd. *Colpodium (Arctophila) pendulinum*, Griseb.

All these species except the last (which may be expected) have already been detected in British or Russian America. *G. festucaceum* abounds on the Saskatchewan, and is likely to occur further South. This species, and especially *G. melicoides*, of which specimens are general desiderata, are particularly commended to the attention of Canadian botanists.

CAMBRIDGE, MASS., JANUARY 30TH, 1861.

LIST OF PLANTS COLLECTED ON THE ISLAND OF ANTICOSTI AND  
COAST OF LABRADOR, IN 1860.

BY JOHN RICHARDSON, WHILE ACCOMPANYING AN EXPLORING PARTY OF THE  
GEOLOGICAL SURVEY OF CANADA.

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

RANUNCULACEÆ.

1. *Thalictrum dioicum*, L. Ellis Bay, Anticosti. July 4th, in flower.

SARRACENIACEÆ.

2. *Sarracenia purpurea*, L. Corneille River. July 25th, in flower.

VIOLACEÆ.

3. *Viola cucullata*, Ait. Ellis Bay, Anticosti. July 4th. Corneille River. July 25th, in flower.

LEGUMINOSÆ.

4. *Vicia Cracca*, L. Corneille River. July 25th, in flower.  
5. *Lathyrus maritimus*, Bigelow. Ellis Bay, Anticosti. July 4th, in flower.  
6. *Lathyrus palustris*, L. Indian Point, Pillage Bay. July 25th, on rock.

ROSACEÆ.

7. *Dryas*, sp. (Petals rose-purple.) Ellis Bay, Anticosti. July 4th, in flower.  
8. *Geum strictum*, L. Ellis Bay, Anticosti. July 4th, in flower.  
9. *Geum rivale*, L. Ellis Bay, Anticosti. July 4th, in flower.  
10. *Potentilla anserina*, L. Ellis Bay, Anticosti. July 4th, in flower.  
11. *P. fruticosa*, L. South-west Point, Anticosti. July 5th, in flower.  
12. *Fragaria vesca*, L. Ellis Bay. Anticosti. July 4th, in fruit.  
13. *Rubus Chamæmorus*, L. Corneille River. July 25th, in flower.

ONAGRACEÆ.

14. *Epilobium angustifolium*, L. Corneille River. July 25th, in flower.

CORNACEÆ.

15. *Cornus Canadensis*, L. Ellis Bay, Anticosti. July 4th. South-west Point, Anticosti. July 5th, in flower.

CAPRIFOLIACEÆ.

16. *Linna borealis*, Gronov. Indian Point, Pillage Bay. July 25th, in flower.

ERICACEÆ.

17. *Vaccinium Oxycoccus*, L. Corneille River. July 25th. S. W. Point, Anticosti. July 25th, in flower.

18. *V. Pennsylvanicum*, L. Corneille River, July 25th.  
 19. *Arctostaphylos alpina*, Spreng. Large Island, Mingan Group. June 28th, in flower.  
 20. *Kalmia latifolia*, L. Corneille River. July 25th, in flower.  
 21. *Lioscluria procumbens*, Desv. Ellis Bay, Anticosti. July 4th.  
 22. *Pyrola rotundifolia*, L. Ellis Bay, Anticosti. July 4th, in flower.

## PLANTAGINACEÆ.

23. *Plantago major*, L. Ellis Bay, Anticosti. July 4th, in flower.

## PRIMULACEÆ.

24. *Primula farinosa*, L. Ellis Bay, Anticosti. July 4th, in flower.  
 25. *P. Mistassinica*, Michx. S. W. Point, Anticosti. July 5th, in flower.  
 26. *Trientalis Americana*, Pursh. Ellis Bay, Anticosti. July 4th, in flower.

## GENTIANACEÆ.

27. *Menyanthes trifoliata*, L. Ellis Bay, Anticosti. July 4th, in flower.

## SANTALACEÆ.

28. *Comandra umbellata*, Nutt. S. W. Point, Anticosti. July 5th, in flower.

## ORCHIDACEÆ.

29. *Calypso borealis*, Salisb. S. W. Point, Anticosti. July 5th, in flower.  
 30. *Cypripedium parviflorum*, Salisb. Large Island, Mingan Group. June 28th, in flower.

## IRIDACEÆ.

31. *Iris versicolor*, L. Ellis Bay, Anticosti. July 4th, in flower.

## LILIACEÆ.

32. *Smilacina racemosa*, Desf. Ellis Bay, Anticosti. July 4th, in flower.  
 33. *S. trifolia*, Desf. Corneille River. July 25th, in flower.  
 34. *Clintonia borealis*, Raf. Ellis Bay, Anticosti. July 4th, no flower or fruit.

## MELANTHACEÆ.

35. *Streptopus amplexifolius*, D C. Ellis Bay, Anticosti. July 4th, in flower.

## GRAMINEÆ.

36. *Calamagrostis Canadensis*, Beauv. Indian Point, Pillage Bay. July 25th, in flower.  
 37. *Phalaris arundinacea*, L. Indian Point, Pillage Bay. July 25th, in flower.

NOTE.—Besides the above, a number of growing plants were brought from Labrador in boxes of earth; but these have not yet been determined. They include about forty young bushes of a fine native Gooseberry, which abounds in Labrador and Anticosti, and has also been met with in Gaspé.

ABSTRACT OF RECENT DISCOVERIES IN BOTANY, AND THE CHEMISTRY  
OF PLANTS.

BY PROFESSOR GEORGE LAWSON, PH D.

**VENATION OF MOSSES.**—In Botany the term venation has reference to the distribution of the so called veins or nerves of the leaf. These veins or nerves have nothing in common with the apparatus to which those terms are applied in the animal kingdom; they form merely the framework upon which the cellular expansion of the leaf is, so to speak, stretched out; but they are in some cases important to the systematic botanist, as indicating the structural grade of plants. In mosses, the existence of a central leaf rib has been long recognized. In some cases this is absent. In others there is in addition a thickening of the leaf-margin. Mr. G. Gulliver, F. R. S., has published a paper in the Annals of Natural History (ser. 3, vol. V., p. 298), in which he suggests that these thickened margins are in reality marginal nerves or ribs. This is a very important suggestion, and may lead to useful results in reference to the morphology of the moss leaf. That in many cases the marginal thickenings of moss leaves structurally resemble, in every respect, the midribs, is a fact that cannot have escaped the attention of Muscologists, especially in such species as *Atrichum undulatum*, yet Mr. Gulliver is the first to suggest what seems to be their true nature. The details he gives are very meagre; it is to be hoped that he will follow out the subject, and, by a careful study of the details of leaf structure in the various families of mosses, deduce some general results that will lead to a recognition of his views by the describers of these interesting and beautiful plants. There are many points on which Bryologists have not yet agreed, and one of the most necessary, so far as regards descriptive Muscology, is to determine what is to be regarded as midrib and what as lamina. The new point of view will no doubt revive the discussion of such questions, with profit.

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 considerable, 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.

**STEPS FOR SEEDS.**—Of the many "steps" 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. André 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.  $68^{\circ}$ ). 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 Sanatorium; 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  $75^{\circ}$ , 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  $50^{\circ}$ ), 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. Kulhutti*—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 Tinnevely 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  $3\frac{1}{2}$  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  $67^{\circ}$  to  $73^{\circ}$  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,  $22\frac{1}{2}^{\circ}$  south latitude, to the province of Shantung in China,  $36\frac{1}{2}^{\circ}$  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.
- Oxypetalum trifolium*, 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.

## NYMPHÆACEÆ.

- Nymphæa 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*, Sully. 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 loam. 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.

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

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

*Circæa 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 Mississauga 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*, Moench. 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 Mississauga River. September 25th, in  
flower.

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

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



- Aster oblongifolius*, Nuttall. LaCloche Island. October 2nd, in flower.
- Erigeron Philadelphicum*, L. Goulais River. July 26th, in flower.
- Erigeron strigosus*, 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.

*Epigæa 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 Mississauga 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 hqstata*, 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 Mississauga 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 Mississauga. Sept. 22nd, in fruit.

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

*Polygonum ramosissimum*, Michx. Mouth of Mississauga 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. Mississauga 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.  
*Cordallorhiza 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. Mississauga 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. *vitis*. 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 xanthophyllum*, 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 cinnamomca*, 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 Mississauga Rivers. September 21st, in fruit.

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

## 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.  
*Madiotrocha 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 aphosa*, 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 Mississauga Rivers, on  
 metamorphic rocks. September 21st.  
*Cladonia rangiferina*, Hoff. Between Thessalon and Mississauga Rivers. Abun-  
 dant 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 prin-  
 cipal underbrush in the woods.  
*Fagus ferruginea*, Ait. Beech. On good soil only.  
*Corylus Americana*, Walt. Hazel Nut. South side Lake Superior; not com-  
 mon.



- 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 valleys 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 lacinae 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 instance, 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 develops 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, &amp;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 Elamboro'. 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.  
*Actœa 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.

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

## NYMPHÆACEÆ.

*Nymphaea 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.

*Opium poppy*, 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 Virginia*, 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.

## PORTULACACEÆ.

*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 quinquesfolia*, Michx. Woods at Ancaster. July, 1860.

## RHAMNACEÆ

*Oeanothus 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.  
*Lespedeza hirta*, Elliott. Prince's Island. August, 1860.  
*Lespedeza copitata*, 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*, Moench. Prince's Island, and near Desjardins Canal. 25th Aug., 1860.  
*Amphicarpa 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*, Moench. 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.

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- 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.

- Nesœa, 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.  
*Oenothera biennis*, L. Mountain side near city. 9th August, 1859.  
*Oenothera 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 Virgintensis*, 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 integrissima*, D.C. Prince's Island. 21st June, 1860.  
*Cryptotaenia 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. 25th 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 artemisiifolia*, 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.  
*Achillea 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.  
*Lactuca 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.  
*Spicularia perfoliata*, DC. Field opposite to J. M. Williams' house. Aug., 1859.

## ERICACEÆ.

- Chiogetes 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 siphilitica*, 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 officinolis*, 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. Brydges's house. 11th May, 1860.
- Pedicularis Canadensis*, L. Mountain side, near Mr. Brydges'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 cœruleus*, 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. Brydges'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 acra*, 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.)

## THYMELACEÆ.

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



## SANTALACEÆ.

*Comandra umbellata*, Nutt. Mountain top near Mr. Brydger'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.

*Lyportea 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. Brydges' 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 fetidus*, Salisb. Oaklands. 16th April, 1860.

## TYPHACEÆ.

*Sparganium romosum*, 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 leucophœa*, 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 rattlesnake.

- 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. Carroll'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. sagittata* 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.  
*Cercus Pennsylvanicus*, L. 27th May.  
*Oratægus 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.

- 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 proanthoides*, Muhl. 13th Sept.  
*Aster azureus*, Lindley. 13th Sept.  
*Aster patens*, Aiton. 13th Sept.  
*Diplopappus albus*, Hook. *Aster ptarmicoides*. 15th Aug.  
*Helianthus trachelifolius*, Willd. 16th July.  
*Helianthus giganteus*, L. 15th Aug.  
*Rudbeckia hirta* L. 12th July.  
*Bidens connata*, Muhl. 26th July.  
*Polymnia Canadensis*, L. 26th July.  
*Solidago allissima*, 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.  
*Alium tricoccum*, Aiton. 3rd July.  
*Lilium superbum*, L. 12th July.  
*Tofieldia pubens*, Aiton. 17th Aug.