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# JOURNAL AND PROCEEDINGS

OF THE

# Hamilton Association

FOR SESSION OF 1896-97.

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**NUMBER XIII.**  
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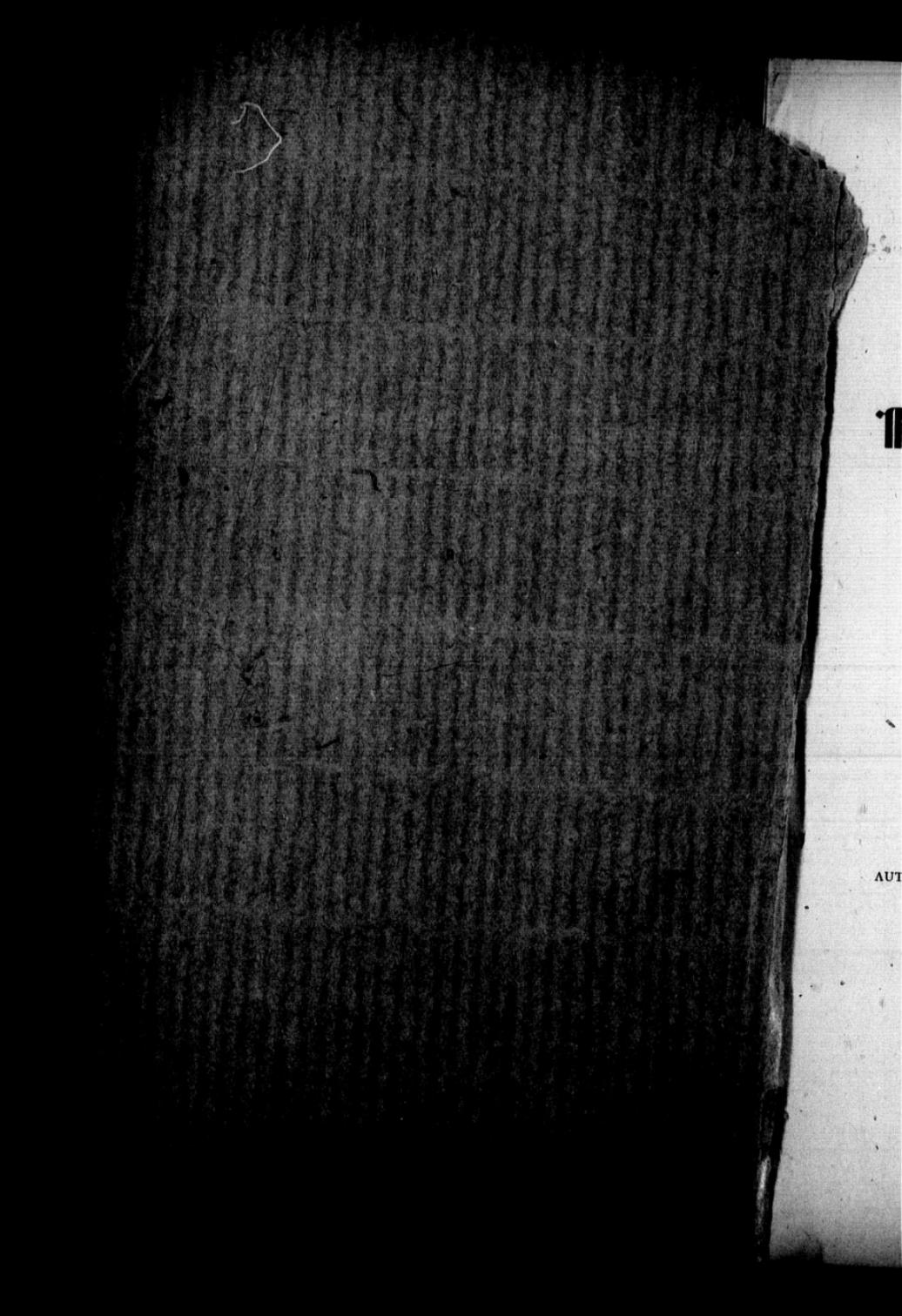
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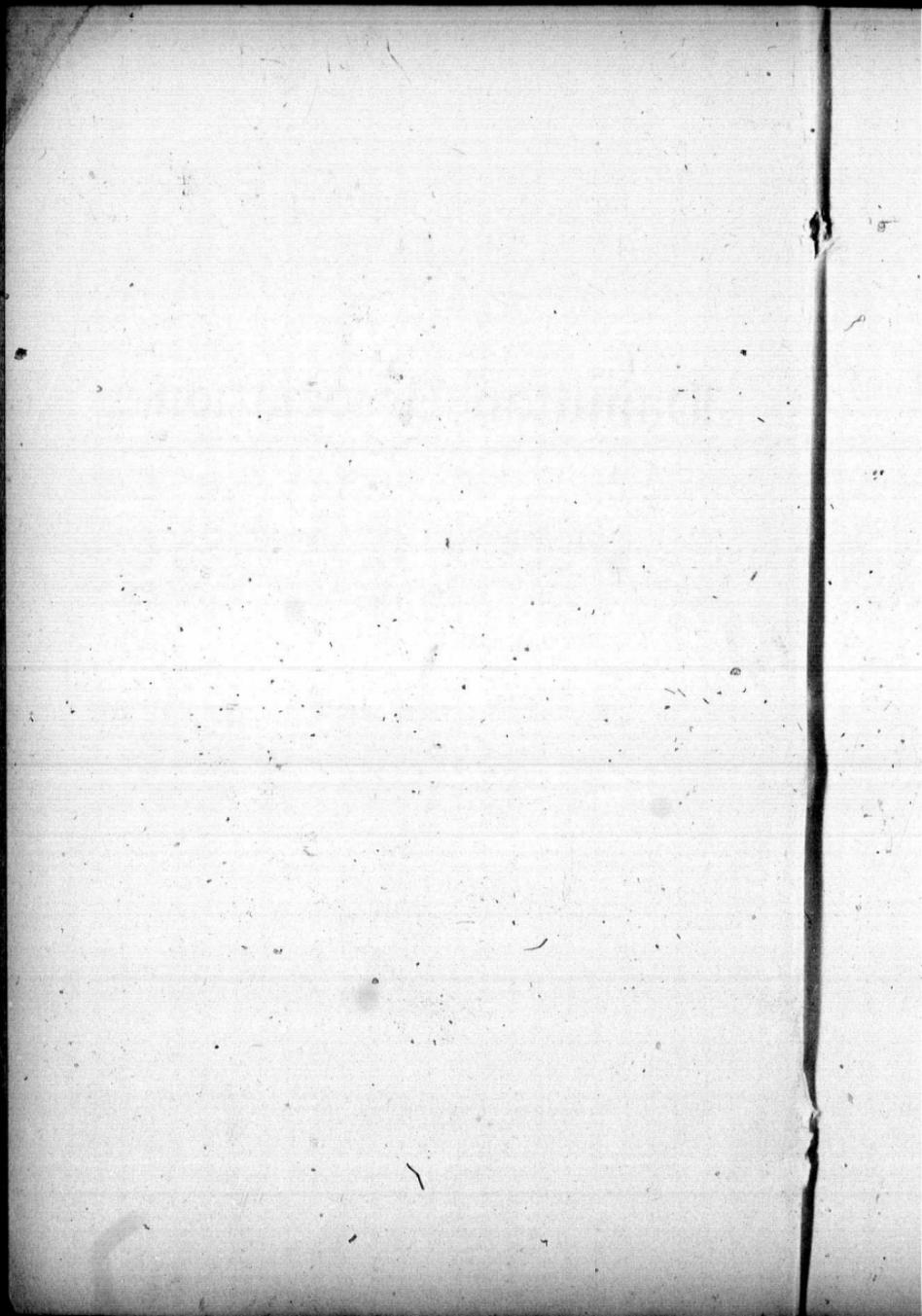
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### REPORT OF THE COUNCIL.

Your Council take pleasure in submitting their report for the session of 1896-97.

There have been held during the present session six meetings of the Council and eight of the General Association.

At five of our General Meetings papers were read, as follows :

1896.

Nov. 5th.—“Inaugural Address,” President A. T. Neill.

1897.

Jan. 7th.—“The Battle of Stony Creek,” Inspector J. A. Smith.

Feb. 4th.—“The Function of Poetry,” F. F. Macpherson, B. A.

May 6th.—“The Dynamics of Social Peril,” Mr. J. T. Barnard.

June 3rd.—“Lake Medad and the Kwin-Ni-Bi-Nah Collection of Indian Relics,” J. O. McGregor, M. D.

The programmes for the three remaining General Meetings were furnished by the members of the Photographic Section.

Three new members have been added during the session and none have withdrawn.

Many valuable additions have been made to the Museum : among these special mention should be made of the unique collection of Shells and Indian Relics, lately placed in the Museum through the kindness of Mrs. S. E. Carey.

T. J. W. Burgess, M. D., an Honorary Member of the Association, has kindly consented to act as our representative at the approaching meeting of the Royal Society of Canada.

In closing this, another year, in the history of our Association, while we may justly look with pride on the work of the present session, yet every member conversant with its needs and its possibilities must feel that much still remains to be accomplished. Notwithstanding the untiring efforts of our various sections, it may truly be said that we are as yet but beginning to investigate the rich stores which nature presents to us in this favored locality, while much already in our possession needs both more room and a better arrangement in order that it may effect its highest possible good as a means of scientific education. This, however, can be effected only by each member striving to do well what pertains to his particular department.

All of which is respectfully submitted.

A. T. NEILL,

*President.*

S. A. MORGAN, B. A., B. Paed,

*Secretary.*

## INAUGURAL ADDRESS.

*READ BEFORE THE HAMILTON ASSOCIATION.*

BY PRESIDENT A. T. NEILL.

It had been my intention to take up the subject of Museums in my opening remarks, but that subject has been very ably dealt with by the past President, Mr. A. Alexander, who read a very interesting paper on "Local Museums" during the last term. This paper you will find in the printed proceedings of the Hamilton Association for last session. I therefore concluded to supplement my previous remarks made in the inaugural address last year, upon the pleasure and benefits derivable from the study of Natural History Science.

Owing to the very interesting programme which has been prepared for your entertainment, I have been limited in time, so that my remarks will be general in reference to the above named subject, though specific in regard to the effect upon the mind when pursued not merely as a recreation, but studied with the view of deriving a permanent benefit, and should these few remarks awaken in any of my hearers a desire to take up the study of Natural History, I would suggest that such ones should become members of the Association and connect themselves with the section which best suits their inclination and taste. Active participation in the work is the only way to succeed in the study of Natural Science, and under the guidance of a member of experience, you will be conducted to the various fields where specimens can be obtained. Much valuable time will thereby be saved to be spent in the study of these specimens. Should any difficulty arise as to the identification of the species, the specimens in the Museum are always available for comparative study, and will no doubt greatly assist the earnest student.

I shall now proceed with the remarks upon the subject which I have intimated.

To those whose minds are imbued with the love of Nature as she presents herself in the ever varying attitudes of organized existence, and attires herself in robes of richest green, so welcome and so

refreshing to the senses after a long and dreary winter, and after having drunk deeply of the pleasures of the summer season, we are now permitted to participate in the beautiful and picturesque scenery which the autumn presents in the various tinted slopes and dales, sadly suggestive of a summer that is gone and reminding us of the near approach of winter; to those who welcome truth in whatever phase she is discoverable in the physico-vital records of a past and passing world; to those who cherish glimpses of the infinite, and would fain tear aside the veil that separates the seen from the unseen; to those, in short, who look through Nature up to Nature's God, I may be privileged to speak a word or two to-night.

There never was a time in the history of the world when the demand for workers in all the departments of Natural Science was so widespread as it is at the present day, consequently we hear of many able and scholarly men devoting their time and talents to the study of the sciences, and as a result of their investigations, we learn almost daily of some new discovery in economic or physical science. These discoveries, which are so frequently announced through the medium of the press, have the effect of stimulating other workers in this great field to a laudable ambition and a desire to communicate something new to the world. We might ask in how many cases has the student, in any branch of science, not been rewarded in a greater or less degree by some important discovery.

It is a peculiar fact that men of leisure do not, as a rule, devote their time and talent in the direction of the most entertaining and fascinating branch of education. The human mind is naturally inquisitive, and as such, can find full scope for all its energies in the scientific field. A thirst after knowledge is in itself a refreshing symptom of healthy progress, though it may in some minds result in the mere fact of gratifying a desire to be entertained, instead of affording that peculiar and substantial satisfaction as experienced in the acquisition of further definite knowledge in some one of the branches of scientific study.

In the daily walks of life, whatever direction our duties may take, or whatever character they may assume, nothing is more essential than a well-regulated mind, able to observe, to store up and to form a correct estimate of the value of facts, and also to draw deductions based upon a reasonable hypothesis, to their proper conclusions as warranted by the circumstances, and the possession of an intellect of

this discerning power is of immense advantage, not only in the acquisition of knowledge, but in the formation of correct opinions.

It is admitted that in so far as a man of narrow sympathies is concerned, a fair amount of the so-called common sense principle may be all that is absolutely necessary for his pecuniary advancement, but if we desire to obtain the higher and more intellectual development of a well regulated mind, the power of detecting the most subtle distinctions between one thing and another, and a thorough comprehension of our social position, we must look to the cultivation of our mental processes. The absence of a retentive memory is by no means indicative of original stupidity, want of industry, or lack of talent, yet those who would become masters of this valuable product of mental discipline can only do so by pursuing some subject, the study of which would involve a methodized and continuous process of abstract reasoning. Confusion and obliviousness are after all the result of indiscriminate observation, and the highest degree of cerebral activity will fail to recall facts once familiarly known unless the storehouse of the mind has been filled in a gradual and tentative manner. Those of you who have at times bewailed the lack of a retentive memory, in proof of the above statement, may in some degree recall the circumstances or conditions under which the knowledge of a subject was obtained, and now is, as it were, shrouded in mental darkness despite your anxious and impatient attempts to recall the desired fact, rule, or name of subject under consideration.

This is an age of rapid progress in which time does not seem long enough to enable many of us to say with eminent satisfaction that we have completed this day's work, and the avenues through which we derive knowledge of the world, its business and social relations, preferring at all times brevity in the treatment of subjects, hurrying over many items at one time which is productive of confusion of facts and has a tendency to induce the habit of indiscriminate observation. The brain cannot and will not store up knowledge under such circumstances and be ever ready at the call of the indifferent student. There must also be a lively and active interest bestowed upon the subject, and where possible, so as to fix indelibly the impressions about to be made, use appropriate illustrations which appeal to the sense of sight. When the eye has become familiar with the form and color, and with all the minutæ of detail, it will

aid the memory in recalling the name of fossil, plant, bird, or other object. The memory, like other organs of the body, is strengthened and invigorated by reasonable exercise. It is true to-day, as it was in the earlier times, though not to so great an extent, that in many instances the cultivators of Natural History Science confine themselves, for the most part, to the mere collection of cabinet specimens, whose individual worth is estimated by comparative beauty or singularity of form, whilst the more important facts and phenomena respecting the relation of these animal, vegetable and mineral bodies, the one to the other, are entirely overlooked.

I would not condemn these collectors. They should be encouraged, for by their desire to possess a goodly collection, by whatever name you may choose to designate it, they very frequently meet with and procure valuable specimens, and in such a state of preservation, as regards form and color, that they might be regarded as typical of their species. These collectors are thereby unconsciously doing a good work, and the army of scientific workers are not slow to acknowledge the fact.

It would be exceedingly difficult for us to imagine a mind capable of retaining within its grasp the multitudinous facts which scientific investigation has unfolded and brought to light. Let us suppose, for the present, that there was such a mind capable of comprehending in full detail the whole range of the scientific world, and could see mirrored before him not only the explored, but also the unexplored fields of Science. We cannot doubt but that a flood of light would be thrown upon their intermutual relations, and special dependence on the objects by which they are surrounded. Notwithstanding this drawback, the limitation of the human mind, as regards the comprehension of nature in all its phases, the various students of natural and scientific research, have, perforce, become specialists in their particular branch of study, and have produced, as the result of their labors, a cogent statement of facts, which, when united, places before the student a concise and instructive collaboration, based upon the fundamental unity of plan, which pervades all created nature throughout time and space.

Those who look upon botany, zoology and geology, as so many distinct sciences, should bear in mind that the laws regulating the facts which these various branches of study have generally brought

to light, exhibit but one grand scheme of contrivance, adoption and design. The philosophical and truth loving naturalist perceived that in all epochs of the world's history, in whatever condition its cosmical elements have appeared, the laws prevailing hitherto are the same as those in operation at the present day, and the singularly varied results that we now witness are regulated by the degree, direction and conditions imposed upon those laws by the allwise Creator, who alone is capable of ordaining or abrogating their existence.

In the study of Natural History, in the widest acceptance of the term, I can claim, as I did in my remarks one year ago to-day, especial consideration, on the ground of its uplifting and ennobling tendency, and in doing so can powerfully appeal to the honest convictions of one of her most favored sons. I refer to the eminently philosophical address, by the late Professor Huxley, on "Natural History as Knowledge, Discipline and Power," delivered in the capacity of Fullerian Professor, at the Royal Institution, in 1856, forty years ago. He said: "Let those who doubt the efficiency of science, as moral discipline, make the experiment of trying to come to a comprehension of the meanest worm or weed, of its structure, its habits, its relation to the great scheme of nature. It will be a most exceptional case, if the mere endeavor to give a correct outline of its form, or to describe its appearance with accuracy, does not call into exercise far more practice, perseverance and self denial than they have easily at command, and if they do not rise up from the attempt in utter astonishment at their habitual laxity, an inaccuracy of their mental processes and in some dismay at the pertinacious manner in which their subjective conceptions and hasty preconceived notions interfere with their forming a truthful comprehension of objective facts. There is not one in fifty whose habits of mind are sufficiently accurate to enable him to give a truthful description of the exterior of a rose." It is too true, that things familiarly known and understood, often fail to leave their due impression on the mind. They teach no lesson. They do not awaken even a passing interest. Such indifference should not exist in man possessed of the faculty of appreciation in so eminent a degree, if his mind has been fully awakened to the importance of using aright, and not allowing to lie dormant those heaven-born faculties, which tend to make this life a brighter and happier one.

## LAKE MEDAD AND THE KWIN-NI-BI-NAH COLLECTION OF INDIAN RELICS.

*READ BEFORE THE HAMILTON ASSOCIATION.*

BY J. O. MCGREGOR, M. D.

This beautiful little lake, with the homely but filial name, is situated just within the western limit of Halton County, in the 2nd Concession north of Dundas Street. It has an area of about 40 acres, and is undoubtedly the remains of a lake eight or ten times as large, having a broad outlet running in a northerly direction, as well as a much smaller one leading into Lake Ontario. That the adjoining marsh to the west, and the marshy ravine extending northerly, together with the present lake, were once parts of the same body of water, is shown by the marl deposit found at the bottom of all three. The existing portion of the old lake has been preserved by the entrance here of several streams fed by powerful springs, of which the largest could furnish the city of Hamilton with an abundant supply of pure water, while the adjoining marsh has been made such by washings from the banks which form its borders.

Lake Medad is noted for its pure water and ice; the excellent quality of its fish: its beautiful and picturesque scenery, as well as for marl of first quality, but most of all for things archæological. With these last in an honest and imperfect manner I shall now attempt to deal.

The western border of the lake is a rugged and mostly perpendicular ledge of rocks. Here at the bottom of the ledge bursts forth the principal spring that feeds the lake. Near this spring, on the bank above, which, as well as the adjacent country for miles around, was and is the best of corn land, was situated a large Indian village or town, which, as shown by the position of its ash-pits, occupied the northern slope of a U shaped piece of ground, gently rising in three directions, north, east and south from the open part of the U, which may be conceived to be on the top of the ledge just mentioned.

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Through the midst of the U, from top to bottom, ran a deep cut, which with the ledge just mentioned served to protect the town to some extent on its southern and western sides, while the northern and north-eastern sides of the U, which form a ridge, were most probably palisaded. I have no doubt that this village was the Otinawatawa, visited first by LaSalle in 1669. In the fall of this year that unfortunate but heroic explorer was among the Senecas seeking a guide to the Ohio (then identical with the Mississippi). He failed to get one, but a young Indian who was on a visit then from the Iroquois colony of Otinawatawa, offered to conduct him to his home, where he would find a competent guide. LaSalle accepted and set forth. His party proceeded to Lake Ontario, thence along the southern shore of the lake past the mouth of the Niagara to the head of the lake, thence north a few miles to the village of Otinawatawa.

This account answers perfectly to the location of the village described above (which is about five miles, as the crow flies, from the head of the lake), and to no other known Indian village. At this village, or one of the neighboring villages, LaSalle (in September) met Louis Joliet, another explorer almost as celebrated as himself. These villages will be referred to later on.

About four hundred yards to the north of Otinawatawa was the burial ground of the colony. As in all other observed similar cases, this burying ground was the most elevated part of the ground adjacent to the village, and was discovered to the present generation by the bones and wampum which a hedge-hog threw out of an ossuary wherein he had made his burrow. So far three ossuaries have been found here and explored. They are similar to those of other localities, being five or six feet deep, of variable size, and containing, in addition to human bones, the utensils, implements and ornaments of those therein buried. These ossuaries, as well as the neighboring ash-pits, had all been opened up before my attention was called to them; yet by far the greater part of my collection has come from the banks of Lake Medad.

The other localities from which I have obtained Indian relics are an ossuary on the banks of the 12-mile creek, about a dozen miles from Bronte, near which, on the river he loved so well, Chief Kwin-Ni-Bi-Nah was buried, after whom I have named my collection;

also the 10th and 13th concession of East Flamboro, and the 7th concession of Beverly. In all these localities ossuaries have been discovered in connection with the ash-pits, except those in the 13th concession of East Flamboro. The ash-pits here are so different from the others I have mentioned as to merit special attention.

In the first place they are very old, being covered with soil and vegetable matter to the depth of two feet, and the ash-pits themselves are four feet or more in depth. In the first foot of the ash-bed pottery of different patterns was found; in the next two feet bones and bone implements, while near the bottom were broken and charred human bones mingled with the bones of the deer, the bear and other animals. This last circumstance proves that anciently the Indians of this village were cannibals.

As no articles of European manufacture are found in these ash-pits, we must conclude that the village ceased to exist before the beginning of the 16th century. It was in one of these ash-pits that I found my most valued ceremonial stone. In shape it is the segment of a circle's circumference, and nearly round; in size it is about 10 inches long and 1 inch thick; in color a reddish brown. There is a hole in the centre like that of a pick-axe ready to receive its handle.

The large univalve shells found occasionally in the ossuaries are interesting from several points of view. They are all of one type, being inversely spiral, or what is known as cone shells, and are said to be peculiar to the Gulf of Mexico. If so, we need not wonder that these Indians could tell LaSalle and other white men of the great river Ohio (which was identical with the Mississippi) and of the immense gulf into which it emptied.

Moreover, the Indians of Otinawatawa must have been either great travellers or enterprising traders, and very rich, as proved by the vast number of precious things made from these shells. From these precious shells were made wampum (or Indian money), beads, amulets and other ornaments of the highest character. Of the three cone shells in my collection, two came from the ossuary at Otinawatawa.

The Kwin-Ni-Bi-Nah collection includes about a peck of wampum, a magnificent necklace, two feet long, made of cone shell and stone beads, ranging in size from peas to acorns, and arranged so as

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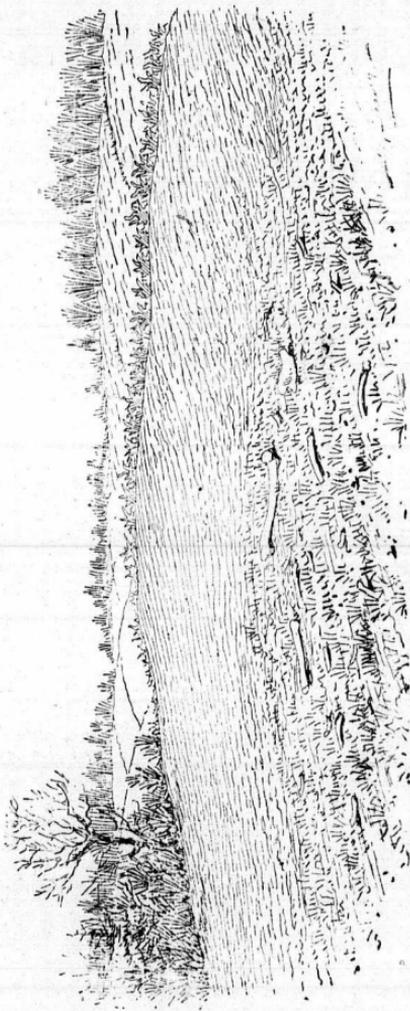
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AN UNEARTHED OSSUARY ON BANK ABOVE LAKE MEDAD.

to have one stone bead followed by two shell beads. The above necklace was found at the bottom of the ossuary arranged in this order—the money of course, being decayed away. Also a very peculiar shell amulet, heart-shaped,  $3\frac{1}{2}$  inches by 4 inches in size, made from one of these cone shells, and having an owl's face carved on one side: (Query: Was the owl selected as representing wisdom?) All of the above I obtained from Otinawatawa stores, and yet I came upon the scene after the treasure-house had been ransacked.

Of perfect pipes I have about 40, besides a great number of broken ones; most of my perfect pipes are made of stone. One that I have is in an unfinished state, both the bowl and the stem being only partly drilled out. Perfect clay pipes are comparatively rare, owing, I presume, to their being so easily broken. Some of the above are carved so as to represent the human bust or face; others represent some well known animal. Some of these figures look towards the smoker and some in the opposite direction.

Of flint arrowheads and spears I have about a peck; also several stone hammers and about 80 stone axes or adzes; also 4 totems (stone), one representing a bird and one a wolf; also a fine specimen of an Indian mill, weighing about 150 lbs. To the above list of articles of native manufacture must be added many bone and horn implements and utensils, as well as ornaments, such as awls, spears, needles, beads, latley bones, etc.

Of course my collection includes articles of European manufacture, such as iron tomahawks, glass beads of various patterns and sizes, a few copper arrow-heads, a pewter ring with I. H. S. engraved upon it, also an almost entire brass kettle, about 7 inches in diameter and 6 deep. The state of this kettle, though not quite entire, goes far to disprove the generally received opinion that the Indians invariably spoiled the kettles which they buried with their dead so as to prevent them from being stolen. Besides, why did they not destroy their pipes for the same reason? and again, if they were to be of service to the dead, to spoil them must necessarily defeat that object.

There is one thing that I have noticed in collecting Indian curios that we never come across a duplicate except in wampum and arrow-heads.

ANNUAL REPORT OF THE GEOLOGICAL SECTION OF  
THE HAMILTON ASSOCIATION FOR THE YEAR  
ENDING MAY, 1897.

The Section has much pleasure in submitting this, their annual report, because of the satisfactory progress which has marked its efforts during the past year.

The members who have met from time to time to carry on the work feel that they have been amply rewarded for the little sacrifice made in the interest of the Section, because of having been kept in touch with the march of geological discoveries, as well as the scientific topics, which are occupying the minds of the Palæontological students of the different countries. Last year, while Professor Rauf, the German student, was busy with the analysis and classification of the stromatoporidae, Professor Head and others, of the United States, were engaged in studying the fossil sponges, the graptolites, and the star fishes. This year the channel of inquiry has been extended to include a large number of heretofore obscure genera and species.

The monograph of Professor Gurly, upon the graptolite of North America, alluded to in last year's report, has not yet been completed, and he has had sent to him, by Colonel C. C. Grant, additional specimens to further illustrate his work.

Since our last year's report the members of the section have had submitted to them some difficult problems relative to the possibility of their being a large area of the carbonaceous deposit in Ontario, because of the reported discovery of anthracite in the Algoma district among the Huronian rocks.

The amiferous rocks of Western Ontario have attracted the attention of not only the geological student and mining engineer, but also the enterprising speculator. Mining developments have revealed the fact that some of these rock areas possess much mineral wealth. This has had the effect of diverting much of our ready money into new channels, and as a result, a number of new towns, as they are called, have sprung up suddenly and dot the plains and the hillside.

During the past year the magnificent collection loaned by Mrs. Carry, containing many geological specimens, has been placed in the museum of the Hamilton Association. This loan, it is needless to say, is duly appreciated by all the members of the section. In addition to this, quite a large number of fossils have been added to the museum by Col. C. C. Grant, from the quarries of this vicinity and from the boulders found amongst the gravel on the Burlington Heights. Mr. A. E. Walker, the chairman, contributed polished sections of sponges obtained from foreign parts.

Colonel Grant, during his researches, has discovered what he considers to be the correct horizon of the *arthrophycus harlanii*, that is, in the upper sandstone bed of the Clinton formation, and not in the Medina as heretofore allocated.

Colonel Grant has prepared a list of the additions recently made to the museum. This list contains many new species not yet determined.

The Section discussed the advisability of having prepared a full and complete list of all the fossils contained on the shelves and the cases of the museum.

Papers of geological interest were read at all the meetings held by the Section. The following are the dates of the meetings and the subjects of the papers read :

1897.

- Jan. 29th.—“Notes on Some Recent Additions to Ontario Palæontology,” by Col. C. C. Grant.  
 Feb. 26th.—“Local Fossils and Additions to Palæontology,” by Col. C. C. Grant.  
 March 26th.—“Local Palæontological Notes Continued,” by Col. C. C. Grant.  
 April 30th.—“Minerals of our Local Rocks,” by Col. C. C. Grant.  
 May 27th.—“Concrete Forms and Stratigraphy of the Cutting of the Spur Line,” by Mr. A. E. Walker.

A. T. NEILL,  
 Secretary.

NOTES ON SOME RECENT ADDITIONS TO ONTARIO  
PALAEONTOLOGY.*READ BEFORE THE HAMILTON ASSOCIATION.*

BY COL. C. C. GRANT.

The tunnel on Hunter Street, Desjardine's Canal and the southern shore of Lake Ontario, near Winona and Grimsby, afforded me, during the past summer, an opportunity of securing some rare and fairly well preserved Cambro Silurian fossils, embedded in drift shingle. I need not state how difficult it must be to declare whence travelled specimens came from originally. Take our Trenton and Hudson River rocks (lower Silurians), for instance; so many fossils are common to both. We may find it no easy matter to assert as to which of the series these wandering, water-worn fragments belonged. The term "Cambro Sil." has been objected to, and when rocks are found in situ and the horizon clearly defined, it may seem unnecessary to add to the nomenclature, but where the conditions are different, as in "the Drift," the name is assuredly convenient when characteristic specimens of a series are absent. Where a doubt exists, the general term "Cambro Sil." appears to be more suitable, since no error can possibly occur. The Drift specimens of the tunnel, Hunter Street (with perhaps one or two exceptions), were well-known Upper Hudson ones, and were rather few in number; this may be owing in a great measure to cemented gravel adhering to the shingle, which prevented one from noticing the indications outside. The Lake Iroquois Beach, at the canal, presented some interesting slabs before the debris at the foot of the cliff, near the bridge, was broken up for road metal. This locality is well-known to possess fossiliferous shingles, containing many rare and well preserved fossils, chiefly from the Upper Hudson River (or Bala) series of our English Geologists. However, a Trenton Slab also occasionally puts in an appearance, as well as others, difficult to locate since the organic remains are common to both. It has long been a favorite hunting ground

for local collectors (the writer included); Dr. Spencer, F. G. S.; the Rev. Dr. Hartley Carmichael; my friend, the late Wm. Turnbull, etc. On breaking up a few of the water-worn shingles which had been detached from above last spring, I discovered remains of two or three *Lingulæ*, which differed from any figured, at least in one case; and from a large flag, containing two Trenton fossils, the interior cast of a valve which appeared to bear a near resemblance to the Clinton *Lingulæ* (*L. perovata*—Hall). Close beside it, another in a badly fractured condition, displayed the concentric and longitudinal lines characteristic of the Trenton *Obolus Filosus*, figured on page 200, 3rd edition, Dana's Manual. The hollow cast of a *Lingulæ* valve resembling *L. quadrata* (Trenton also), was obtained at the same time and place, and I cannot find either mentioned as putting in appearance in Canada, by Billings, Spencer, or Nicholson. So we may record the circumstance.

Some of the hard red shingles at the canal contain numerous specimens of the minute Ostracod, named by T. R. Jones, Royal G. S. London—*Leperditia Canadensis*. I was surprised to find embedded in a grey limestone there, several examples of this interesting microscopical group (varieties probably), differing in size (and shape occasionally). May not this represent different stages of growth, as well as varieties proceeding from the parent stock? A *Cyrtodonta*, nearly related to *C. Hindi*, is rarely found at the Iroquois Beach, and a fine cast of *Orthis Occidentalis* (Hall) is occasionally discovered. The late Mr. Turnbull informed me he preferred the modern lake beach to any locality near Hamilton for lower Silurian fossils. The shingle there is free from adhering gravel or sand, and one can more easily detect outside indications of the organism inside. That may be so, but for my part, I formerly found more rare specimens in the gravel pits at Slabtown than at the Beach. I have not been there for many years. It appears to be an unknown hunting ground to them.

The lake shore near Winona and Grimsby furnished me with some very fine Cambro Sil. Slabs during the past summer; some few are in one of the cases of the museum, but the greater part were too large for the limited space on the shelves, and were forwarded to the Redpath Museum, Montreal, which already possesses an interesting collection of our local fossils.

Sir W. Dawson, when in London a few years ago, described and figured several of the organic remains from Hamilton, Ont. More recently, I understand, the *Toronto Globe* gave a brief account of another paper in which the grand old Canadian geologist calls attention in the motherland to some others obtained since from this neighborhood. A very large quantity of drift and boulders was deposited on the lake shore about a mile east of Winona Park. The land there is slightly sloping, and merely a few feet above the surface of the lake now. The mottled red and white sandstones of the "Clinton Upper Red Band," of the Grimsby ravine and quarries, leads me to suppose that some at least of this material was brought down by river floods, conveyed by lake currents and ice perhaps to the point in question. This current along the southern lake shore, alluded to in a paper by Mr. VanWagner, Stoney Creek, hardly admits of disputation. I have noted it experimentally at Winona when the water was perfectly calm, and also when the wind was actually blowing from an opposite direction. The granites, greenstones or other igneous boulders are not uncommon in the "Erie or boulder clay." The Lake Ontario itself is gradually gaining on the land at Winona Park, more so than is generally supposed, and if unchecked the encroachment may surprise many who believe it a trifling matter, not likely to occur for many years yet, nor in our time. The limestone shingle in many places along the lake shore is exceedingly tough under the hammer, and it is by no means an easy matter to extract the fossils uninjured, yet occasionally you find exceptions as in a large slab containing numerous generations of the Trenton Bracheopod, "*Leptæna Sericea*," found also in the Hudson River or Bala beds. I cannot find in the Paleontological works I consulted any reference to a species of this shell, a variety perhaps, with a shorter hinge line. It usually occurs at least on a different layer. It bears some resemblance to *L. transversales*, of the Clintons, presenting however, a more flattened appearance, which may be due to pressure. The keeled and sculptured *Cyrtolites Ornatus* (Conrad?) *L. Sil.* Europe also occurs in a hard limestone, together with numerous casts of *Murchisonæa Gracilis*; it proves difficult to extract. It seems strange to find it so frequently associated with the other Gasteropod. While we added a few specimens to our collection of local drift fossils recently, the Geological Section must admit it is still very

incomplete, and poorly represented in our cases. The late Professor Nicholson does not seem to have been even as successful as ourselves, since he merely figures in the *Palaeontology of Ontario* a little over a dozen already known as Hudson River Characteristic Fossils.

This able Palaeontologist, intimately acquainted with the Lower Silurians of Ohio, U. S. A., etc., arrived at an opinion which the writer thinks hardly admits of dispute, viz: That the greater part of our Cambro-Sil. limestone shingles along the lake shore of Ontario originally came from Hudson River (Upper Bala Beds). In the limestone shingle on the Beach at Hamilton, along the lake shore as far as examined, the examination agreed with the same conclusion. When quartered formerly at Toronto I got a considerable number of specimens along the lake shore by wading into the water and examining not only the upper surface of shingle, but the lower also, turning over any likely looking flag or pebble.

The catalogue of Drift Fossils, Hudson River formation, found by Dr. Spence, F. G. S., on the old and new beaches, is incomplete, although he names a few which apparently were not discovered in Ontario by Dr. Nicholson. In addition to the few specimens I have already mentioned, I think several others may be added to Professor Spencer's list: *Ambonychia Bellistriata* (Hall), who gives it as Trenton; one found by writer at the Iroquois, and another at the modern Beach by the late W. Turnbull, *Murchisonia Bellicineta* (Hall), *Strophomena Fluctuosa* (Billings), (found at Anticosti also), *Bellerophon bilobata* (Hall). There are three or four specimens of a Nov. Gen. figured by Hall and Whitfield in the *Palaeontology of Ohio*, viz.: *Orthodesma Contracta*, *O. Curvata*, *O. Recta*. I have been unable to find any record of their occurrence in Canada. All three, however, are found at the Iroquois Beach, and two in lake shore shingle; one (or more perhaps) was in Mr. Turnbull's collection from the modern Beach. *Orthonota Parallela* (Hall), according to same authors, belongs to this new Genera.

At the lake shore near Winona, recently I discovered the cast of a dorsal valve of a Crania. I thought at first it might prove nearly allied to *C. Laelia* (Hall), a *Cincinnatti* specimen, even although I remarked the absence of radiatory Striae characteristic of the species, and also its occurrence in what I considered a Trenton limestone. On comparing it subsequently with Dr. James Hall's figure and description, I saw I

was mistaken: the outline is oval, not circular, the apex prominent, not sub-central, but close or nearly overhanging the cardinal margin. I cannot recall any of the *Cranidæ* it resembles, and I doubt if it has been claimed as a Canadian hitherto—*Strophomena Nicrassata* (Hall). There are several others in so imperfect a condition that it would be exceedingly difficult to recognize them. Some undoubtedly may be referred to *Cypricardites* (Conrad), and *Certodonta* (Billings). Professor Miller considers the claim to priority of nomenclature should be admitted and accorded to Conrad. *Cypricardia* was a name conferred by Lamarck many years earlier than either.

In conclusion I cannot see why we do not possess a more varied assortment of Hudson River and Trenton Drift Fossils. We certainly could double the number recorded by Dr. Spencer, F. G. S. With few exceptions the young fellows in Hamilton take but little interest in our Association or its Sections. In all matters relating to Natural History, Antiquities, etc., Canada lags far behind. There is hardly a city in the United States, of moderate size, where you will not find a naturalist located as a dealer in shells, fossils, corals, etc. An establishment of the kind does not exist even at the seat of government of this Province, Toronto, and where a flourishing University exists. It does not seem creditable to Ontario that we are compelled to send to the United States for almost everything we require in the shape of Natural History objects. I often wonder why men who have been well educated will rush into professions already overcrowded and neglect opportunities of starting Natural History establishments so much needed here. I know many are doing well in Rochester and Albany; there are two in the latter place, and perhaps others that I am not acquainted with. On mentioning the circumstance to a gentleman recently, he remarked: "Yes! you see Canadians don't care for things of that kind." At a future time I may offer a few remarks on lately acquired Clinton or Niagara fossils. I annex a list of the Cambro-Silurians which may be added to the ones recorded by Dr. J. Spencer, F. G. S., etc.

SPENCER'S LIST.—FOSSIL FROM MODERN AND ANCIENT  
BEACHES, HAMILTON, (CAMBRO SIL. DRIFT).

|                                   |          |
|-----------------------------------|----------|
| <i>Stenopora Fibrosa</i> .....    | Goldfuss |
| <i>Columnaria Alvaolata</i> ..... | Billings |
| <i>Athyris Headi</i> .....        | "        |

|                              |          |
|------------------------------|----------|
| Strophomera Alternata .....  | Conrad   |
| Strophomera Delloidea .....  | "        |
| Modiolopsis Modeolares ..... | "        |
| Avicula Demissa .....        | "        |
| Cyrtolites Ornatus .....     | "        |
| Orthis Occidentalis .....    | Hall     |
| Obolella Crassa .....        | "        |
| Ambonychia Radiata .....     | "        |
| Murchesonina Gracilis .....  | "        |
| Orthoceras Lamellosa .....   | "        |
| Orthoceras Cribisepta .....  | "        |
| Leptaena Serecia .....       | Sowerby  |
| Orthis testudinaria .....    | Dolman   |
| Orthis Lynx .....            | Echwald  |
| Cyrtodonta Narrietta .....   | Billings |
| Modiolopsis—several .....    | —        |
| Orthonota .....              | —        |
| Ctenodonta .....             | —        |
| Syrodesma post-striata ..... | Emmons   |
| Leperditia Canadensis .....  | Jones    |

CAMBRO SIL. DRIFT FOSSILS FROM HAMILTON AND LAKE  
SHORE, WINONA:

|  |           |
|--|-----------|
| Diplograptus Hudsonicus .....                    | Nicholson |
| " Pristis .....                                  | Hall      |
| Graptolite undetermined yet.                     |           |
| Orthodesma Contracta .....                       | Hall      |
| " Curvata .....                                  | "         |
| " Recta .....                                    | "         |
| " Parallela .....                                | "         |
| Orbiculoidea Tenni lamellosa .....               | —         |
| Obolus filosus .....                             | Hall      |
| Murchesonina (not M. Gracilis) Bellicinata ..... | Hall      |
| Bellerophon Bilobata .....                       | Sowerby   |
| " Expansa .....                                  | Hall      |
| Crania—undetermined yet—2 species.               |           |
| " Scabiosa .....                                 | Hall      |
| Discina—1 or 2 species .....                     | —         |

|                                   |                             |
|-----------------------------------|-----------------------------|
| Lingulella—2 species.....         | —                           |
| Modiolopsis Concentrica.....      | —                           |
| “ Pholadeformis.....              | (recognized by Prof. Foord) |
| Cleidophorus Placinatus.....      | Hall                        |
| Leptobolus.....                   | Hall                        |
| Cleidophorus Sp.....              | Hall                        |
| Leperditia—several varieties..... | —                           |
| Orthoceras Mulle Cameratum.....   | —                           |
| “ Junctum.....                    | Hall                        |
| Strophomena Fluctuosa.....        | Billings                    |
| Ambonychia Belli-Strata.....      | Hall                        |

(A few others undetermined yet).

NOTE.—About 22 added to Spencer's list.

NOTE.

Since our last meeting we forwarded a considerable number of fossils from Hamilton, viz.: to Mining School, Kingston University; Geological Survey Office, Ottawa; Smithsonian Institute, Washington; 2 boxes containing 60 Graptolites, about 50 others respectively, with a few more local forms added.

A request was made for a few Silurian Fossils by Mr. Patterson, T. C. D., which was sent to Dublin, per post.

Another small collection, about 12 Graptolites, was transmitted direct to Dr. Gurly, by same means.

We have also furnished some few local collectors with named characteristic specimens of local fossils by request. They are such as are generally found here. We may at least hope these may induce a few of the recipients to take a little interest in the Geology and Palaeontology of a district which attracted the attention of many outside the Dominion itself. Dr. Head, of Chicago, on a recent visit, very kindly presented a small collection of Niagara sponges and sections from the Tennessee beds, U. S. A., to the Museum. Some of the specimens appear to be new Genera or Species.

A small collection of Hexactinellid sponges, etc., from here, was also forwarded to the Queen's College, Cork, Ireland.

LOCAL PALEONTOLOGICAL NOTES IN  
CONTINUATION.*READ BEFORE THE GEOLOGICAL SECTION OF THE HAMILTON  
ASSOCIATION.*

BY COL. C. C. GRANT.

The Medina rocks, following the Cambro Silurians in ascending order, afforded us very few organic remains recently. The freestones of the grey band have been nearly worked out here. It could hardly pay to quarry it close to the escarpment, owing to the thickness of the debris, etc., resting on it. The freestone quarry near the reservoir, where I obtained so many Fucoids formerly, was abandoned many years since. An *Athyris* was not uncommon on, or rather inside, a thin layer, which, if not identical, was closely allied to *Athyris Intermedia* (Hall). As the specimens represented only internal casts, it would not be safe to be positive on the point. They displayed the concentric lines of growth and general appearance, but were larger than the Clinton Brachiopod. This, as also a Gasteropod obtained at Grimsby Ravine from a large detached block, may be added to Dr. Spencer's rather meagre list of Medina fossils. It was sent to Ottawa for Professor Whiteaves' determination. He thinks from a hurried examination it may come under the head "*Holopea*." Where the mouth (orifice of the shell) is not clearly displayed, there is always a little difficulty in classification.

Dr. Spencer mentions the few shells in the series are mere casts in the grey band Sandstones, ill preserved. Appended, you will find some few others, in List B., unknown to Spencer, but I am under the impression I may have omitted others (not more than three or four probably). Even with this addition, the series display in this neighborhood is a decidedly meagre list of all organic remains, save Fucoids. Dana remarks: "The rocks of this epoch, in New York and further west, contain few fossils also." Dr. James Hall, however, describes specimens we have not found here yet.

The *Orthoceras*, now in the Redpath Museum, Montreal, was obtained from the under surface of a thick layer in a quarry near the city, and the *Stromatopora*, from the upper of a singular block, in a pocket or hollow. Both quarries have since been abandoned (worked out).

We next come to the overlying Clinton beds, known in the Old Country as the "May Hill Sandstones." You are all aware how the action of the Grand Trunk Railway authorities closed up and rendered inaccessible to us the chief and most interesting portion of this series, below the brow of the Niagara Escarpment. It appears difficult to understand how such a clause was ever inserted in a Dominion Railway Act, without the approval of the company and its legal advisers. How it was smuggled in without opposition from the representatives of Nova Scotia, a province possessing such a man as the Hon. J. Howe and others, seems incomprehensible. New Brunswick, too, the home of Harté, Bailey and Mathews—why were its representatives silent when a clause was inserted in this Railway Act, which unfortunately admits of no explanation, save this: It was passed through ignorance and carelessness, by such men as we Canadians generally select (especially in Ontario), as representatives (?) It seems unfortunately true, as was remarked recently, the better class of men in Canada feel little disposed to take an active part in politics. This circumstance may explain the reason for the purchase at Ottawa, a short time ago, of an old ramshackle building for the Dominion Geological Survey Office and Museum, altogether unfitted for the purpose, where the priceless treasures therein contained are in danger of being destroyed by fire, etc., at any moment. Are they not insured? Perhaps, gentlemen of the Dominion Parliament, there are organic remains contained in that totally unsuitable building that never could be replaced and that money could not purchase. Do not, through ignorance or indifference, ignore the representations frequently brought to your notice. Do not afford our cousins south of us further grounds for tauntingly upbraiding Canada with the slow progress we are making in Geological Science. When our neighbors point out the extent of yet unexplored territory, I presume they allude to what all scientific men know, viz.: That the Geological Survey Staff is insufficient in number for the work it has to perform. How it has accomplished so much, with such inadequate

means, is what must astonish any one who takes the trouble of examining the maps published by the survey.

An erroneous idea generally prevails in Ontario that the chief object of the field geologist is to find out and locate where minerals occur. We want some show for what geology costs us. If this expressed opinion is accepted and passes without rebuke from legal legislators at the seat of government at Ottawa, need we be surprised when men of similar pursuits as ours in the United States scornfully point to our Dominion as the only civilized country in the world that places impediments in the way of scientific investigation—that offers every obstacle possible to research. I am reminded the States are not themselves beyond reproach. Witness the case of the late Professor Winchell, for instance. Well, that was the act of a few fanatical bigots. The regents of an obscure denominational college, whose very name was almost unknown outside its own state until the Professor's appointment to the chair of Geology attracted attention to it. The Michigan University, of far greater importance, was only too well pleased to offer a wider field for the exercise of his unquestioned abilities. That was merely the work of about half a dozen ignorant, narrow-minded bigots, whose action was received with contempt or indignation both in Canada and the States. But is there not a measurable distinction between an act emanating from such men and an Act passed by the Dominion Parliament, which renders the Canadian naturalist liable to be prosecuted as an ordinary vagabond if he happens to cross a railway track in pursuit of a butterfly, or as a geologist ventures inside a railway fence to examine the face of an escarpment or cliff in order, in the interest of science, to settle some disputed point, or obtain for a Canadian museum a rare fossil not found elsewhere?

In an extract taken from the *Canadian Magazine*, written by G. T. Blackstock, I find as follows: "When we are making bold to emulate her (the United States) prosperity, at the same time that we exhibit a higher civilization, a better type of manhood, it is at such a time that an artificial handicap is placed upon us in the race by the solemn acknowledgment by the mother country, in the face of Christendom, that the United States is the paramount power on this continent." Now is this fact, above stated, proof of the more advanced civilization he claims for our Dominion? When I men-

tioned to a Smithsonian and another Professor lately that I regretted the Directors of the Grand Trunk Railway had warned off naturalists from the chief points of interest about Hamilton, and mentioned the reason assigned for so doing, they expressed considerable astonishment at such an occurrence, and doubted if the railway people had not made a stupid blunder in wrongly putting a construction never intended on the clause of the Act in question. A higher civilization—how is that displayed? Take science for instance. A short time ago the Dominion Geological Survey Office was removed from Montreal to Ottawa. No preparation was made to provide a suitable building for the priceless organic remains, minerals, etc., collected at great expense during half a century. I am informed that a gentleman who possessed some influence, political I presume, had a sort of white elephant on his hands in the shape of an old barrack which he could not convert to any useful purpose. He interviews his friend, the head of a government department, and states he is willing to dispose of the same for the required offices, the bargain is made, and the Director-General of the Geological Survey invited to take possession of the recent purchase. It was useless to remonstrate and point out its unsuitability for the purpose. "Now, my dear fellow, stow away your confounded old stones and things as well as you can; it is too late to tell us all that." No money insurance could compensate the Dominion, or restore even a fraction of the loss we may sustain at any moment, by an accidental fire, for instance. A short time ago I understand some very uncomplimentary remarks regarding the progress of scientific research in Canada, appeared in a paper published in the States. I have not seen it. If we are open to a charge of this sort the blame does not lie with the staff of the Geological Survey Office. The annual sum appropriated by the Dominion Legislature is quite inadequate for the survey of a territory as extensive as the United States combined; independent of that, what a vast difference there is in examining and reporting on an unexplored country and one that has been opened up and penetrated by rail or road in all directions. The fault, if it exists, does not rest with the staff, but the government, which grudgingly gives the smallest sum for the advancement of science. "The chief object of geologists," remarked a gentleman who visited the Museum recently, "I take it is to locate on the maps the places where valuable minerals may be

discovered." Our visitor's views most probably are entertained by a great many representative men at Ottawa, and sarcastic remarks we may expect from our relatives south of us, until a superior class, educated in Canadian Universities, are selected by members of the Dominion Legislative Assembly to replace many whose sole ambition seems to be merely to advance their own interests. Party feeling, appealing to ignorance, a purchased press, "Tory, Grit or Independent," sums up the glorious record of Canadian democracy. But despite all the disadvantages imposed on our Section by the Dominion Parliament or Grand Trunk Railway (and no person can imagine the infamous clause of the Railway Act was inserted without the knowledge and concurrence of the Company) I am enabled to submit for the information of the members, a considerable addition to the list of Clinton fossils published by Dr. Spencer, even though debarred for many years from prosecuting research along the base of the escarpment at "the bluff" and other interesting points. I annex the lists. I feel, however, at the same time, that in the latter many others are omitted which were obtained several years before specimens were placed in our museum cases.

Despite all our disadvantages and the very restricted portion of the Clinton or Mayhill Sandstone series now exposed to research, we have succeeded in securing some specimens of considerable interest. One is well-preserved Crinoid, with jointed arms, something like a *Lecanocrinus*, yet I do not think it can be brought under that head; indeed, for that matter, I am unable to find any typical representative figured either in Hall or Billings. Dana mentions that a few Crinoids and fragments are known in this series, but all I see regarding them is in the works I consulted. Two only are named (common also to Niagaras). Another specimen from the shales above the Medina Greyband, also recently obtained, owing to its imperfect state of preservation presents a very puzzling appearance. The writer and our chairman agreed on one point, viz., that it was neither a sponge or coral, although some resemblance to each was noticed; finally we determined to submit it to the Paleontologist of the Dominion Geological Survey, Prof. Whiteaves, for examination, who thought it was an Echinoderm, a Blastoid probably. No doubt it belongs to the Radiates, and it bears a marked likeness to the upper surface of a Blastoid. Yet it may be

related to *Palæocyclus Rutoloides*, one of the *Echinus* family, found also in same horizon in the States, and figured in Dana's Manual, 3rd edition. The upper valve of a *Crania* (probably *N. S.*), may also be noticed as occurring in our local Clintons, particularly since I can find in no work I consulted that this family is recorded as being hitherto obtained in this rock series. Species are found in the Hudson River below and in the Niagaras above.

We have learned from the Toronto papers, that the British Association have accepted an invitation from some of the Professors and gentlemen there interested in scientific matters, to visit that city in August next. It is, we understand, the intention to ask the men of science to devote a day to Hamilton and vicinity. If the statement is true, would it not be as well for the Hamilton members and civic authorities to endeavor to have that infamous clause of the Dominion Railway Act rescinded while they are here. To welcome scientific men from Great Britain and Ireland, if they venture to hunt for organic remains in the most interesting portions of our rock exposures, by prosecuting them as trespassers and tramps, seems rather a singular way of displaying hospitality. "*This is the only civilized country in the world that endeavors to retard the progress of science,*" said a gentleman from the States recently, when informed that we were debarred by the Legislature of this progressive and enlightened Dominion, from pointing out the locality where colored *Lingulæ* are found.

We do not presume to anticipate the steps the municipal authorities of Ontario may take in according the visitors a cordial reception and warm welcome. Yet, subsequently, members of our Association are likely to be placed in the humiliating position of being compelled to inform our invited guests that we are unable to show them over the places where our rarest organic remains are obtainable; that scientific research is looked upon in our Dominion as the pursuit of some idle trespassers, who travel about on foot, instead of taking *the cars*, thereby showing a most reprehensible example to the general public. In the face of such a representation, will not the reception accorded excite anything but contempt for the Federal representatives, whose Railway Act restricts us to the very limited exposure of the corporation and two private quarries at Hamilton, and the long since abandoned ones at Grimsby, containing Dr. James Hall's Sil-

urian Fucoid, *Arthroplycus Harlani*, which occurs in better preservation there than any found hitherto, perhaps in Europe.

When we consider that all the rarest fossils in the neighborhood of this city have for many years been locked up, or enclosed through the action of the Federal Parliament of the Dominion, that we are unable (now especially) to exhibit a fair collection of local organic remains, star fishes, crinoids, colored shells, etc., are we not fully justified in indignantly denouncing (not only in the interest of science, but of Ontario itself), an act which cannot fail to bring discredit to every Canadian?

I am quite assured, while some may feel disposed to conceal the matter, you will not find one to defend it.

LOCAL PALEONTOLOGICAL NOTES IN  
CONTINUATION.READ BEFORE THE GEOLOGICAL SECTION OF THE HAMILTON  
ASSOCIATION.

BY COL. C. C. GRANT.

When the Secretary of this Association suggested that a complete list of Local Organic Remains was much required, and that it would be of interest, probably, to some outside the immediate neighborhood who may wish to ascertain whether the fossils discovered here differ from others found elsewhere in similar Silurian rocks, while I admit the request was very natural on his part, we must feel the difficulty of compliance, since our Hamilton fossils were scattered far and wide before the Museum here was established, and no record kept of the specimens so distributed. All that possibly can be done now is to add to Dr. Spencer's Catalogues (the only ones published already), specimens since obtained or others which have not quite passed from recollection.

The Niagara Graptolites and Hexactinellid Sponges of Hamilton have attracted no little attention outside the Dominion. As regards the former we may be permitted to mention an extract taken from the *Ottawa Naturalist*, written by Dr. Ami, Dominion Geological Staff, viz.: "Dr. R. Gurley, in the *Journal of Geology*, Chicago, gives an interesting list of the species of Graptolites of North America, and in this list are included several species of Graptolites (Canadian) from various formations and localities which are new to science." Dr. Ami thinks that there is no country in the world which can boast of so many and so well preserved specimens of Graptolites as Canada. Since Dr. James Hall's splendid work on the Graptolites of the Quebec group, in 1864, several new forms have been discovered in the lower Province by Dr. Ami, and other officers of the survey. Indeed, it is not improbable that some of us may be compelled to modify our views yet regarding the culmination of the family at a later period in our Niagaras. The two last boxes

forwarded to Washington from this, have been received. They contained 112 Graptolites, and one of them contained quite a number from the upper or glaciated chert, which appeared to represent recent genera or species. We must not forget several specimens recently have been found in Europe, and described by Lapworth and others who take great interest in the ancient Sertularians. Including small parcels transmitted through the post-office, and ones previously received, probably the Smithsonian Institute is in possession of 400 from Hamilton alone.

When these organic remains are examined and described by Dr. Gurly, we hope some at least will afford connecting links in the chain of life, with specimens obtained from the well known Quebec group of the Canadian Geological Survey and of the late Sir W. Logan.

Perhaps second only to the Niagara Graptolites in interest are our local Sponges, and, unfortunately, as yet few have been figured or described.

When Dr. Head, of Chicago, was in the city recently, we called his attention to a few specimens he had not seen before, and offered to loan them for description. We believe he declined these on the ground that his work on the Niagara Sponges was already completed. Merely a portion of Professor Rauff's magnificent monograph on Fossil Sponges, etc., is known to us here, viz. : the beautiful illustrations accompanying the work, owing to unacquaintance with the German, for unfortunately in the Dominion modern languages, outside of our own, are looked upon as possessing a tendency to disunion. Of course we recognize, as Canadians of this Province, Ontario, that it would be better for the Dominion if all its inhabitants adopted the language usually spoken on this continent. Now it appears, however desirable this may be, we ought to recognize the colonists of the older Province, Quebec (of French extraction chiefly) are unanimously opposed to such a proceeding. You may recollect a paper published in our Proceedings for Sessions 1890-91, written by a member (H. P. Bonny) ; in that you will find the following remark referring to this subject : "When you find a body of over a million, compact and autonomous, it is absurd to expect that they will change their speech." If such is the case, and if we are ever to become a united people here, would it not be of some little advantage to make French in our schools compulsory, or substitute this for one of the

dead languages which seldom are of any use in after life? To the scientific student now a knowledge of such languages as French and German is almost indispensable. As our President has not yet received the concluding portion of Prof. Rauff's great work on "Fossil Sponges," it may not be considered advisable to give at present an imperfect list of our Niagara-Hamilton forms until all are figured and described. In our museum cases you may notice a Globular Sponge, which I pointed out to Dr. Head, of Chicago, recently; the outer surface is covered with minute pores, with larger ones interspersed somewhat irregularly. While in shape it corresponds with *Bolastronia granti* (Head), the star-like markings appear to be altogether absent. It seems more than doubtful, therefore, if it comes under this *Nov. Gen.* The specimen in the case is the only one found here as yet.

While I feel assured that many of the Glaciated Chert, Flint-flake Fossils, *Cladopora*, etc., remain undescribed, perhaps it would be better to omit allusion to them until such a time as some one can be found to make such obscure fossils a particular study.

During the past season very few sponges or sections of sponges were obtained in the field on the escarpment beyond the Reservoir; the chert lumps have not had, as yet, sufficient time to weather, and in the ones nearer the city and better known, few are left that are worth removal. The flint-flake localities near the corporation drain proved also rather disappointing. The conditions, however, were not as favorable as in previous years; there was greater difficulty in finding specimens owing to the nature of the crop; if the stubble is long, for instance, or clover laid down to replace oats, etc., it is exceedingly hard to pick out organic remains at all.

A few Gasteropods (sea snails), scarcely so well preserved as to admit of description; a large and fine *Crania*, like one found several years ago, which was either sent away or lost in removing; and a small *Subulites*, sums up nearly what the flint-flake fields afforded us last season; however, it may be remarked, that it was necessary to devote more time than usual in order to furnish Dr. Gurly with as complete a collection of the Niagara Graptolites as were obtainable here, in order to enable him to complete his *Monograph*. These ancient Sertularian remains (duplicates in some instances), were forwarded, not only to the Geological Survey Office, Ottawa, but likewise

to the Redpath Montreal Museum. In fact we are open to the taunt, while the Geological section of the Hamilton Association furnishes our own cases with few specimens, we are, perhaps, too liberal in recklessly distributing far and wide all that may be more wisely retained as characteristic of that upper portion of the Silurian age here. Unfortunately we have not sufficient room. The Hamilton Graptolites alone would fill the largest case in the museum, and if a complete set of the Niagara Sponges, sections and varieties, displaying internal structure, etc., could be procured, they would take up a far greater space than we can now afford.

Only a few visits were paid, during the past season, to the water-lime quarry (Barton-Niagara), Russeaux Creek, and nothing new was found there. Appended to this Journal of Proceedings you will find a catalogue of our local Niagara fossils by Dr. Spencer, F. G. S., etc. Others are added, although the list is supposed to be yet incomplete.

## THE MINERAL OF OUR LOCAL ROCKS.

READ BEFORE THE GEOLOGICAL SECTION OF THE HAMILTON  
ASSOCIATION.

BY COL. C. C. GRANT.

My friend, Mr. Neill, President of the Hamilton Association, at a recent meeting of the Geological Section, informed us that he had received from a "well wisher" (anonymously) the very liberal contribution of \$20, to be expended in a certain manner that the writer indicates, in order to induce the younger generation to take a greater interest in Canadian Natural History, Minerals, etc. With your permission, gentlemen, I respectfully submit some few notes on local Mineralogy, which may prove of some little assistance to the student, if I rightly interpret the intention of the generous and anonymous donor. I have noticed, more especially, of late, quite a number of people here take a far greater interest in Mineralogy than is generally supposed; doubtlessly this is owing to the prominence of late given to mines and mining matters in the public press. I remarked, on several occasions, onlookers were attracted to the various rocks, Auriferous Quartz, etc., displayed in city stores on some of our principal streets. Farmers, not unfrequently, bring me specimens of decaying granite boulders, containing veins of golden or silver mica, for examination, and are much disappointed when informed they did not possess the properties of the precious metals; iron pyrites also are often mistaken for gold. At or about the end of last month I was shown a very fine cabinet specimen of the latter; its owner concluded there was a copper mine close by somewhere, and did not seem altogether satisfied with what he heard regarding it. It came, perhaps, from a pocket in the Barton Niagaras at Lime Ridge, or may have been obtained from lower beds of limestone nearer Hamilton. The Mineral appears to be rare in both, at least in the Crystalline form. Still rarer a Pseudomorphus Crystal of Sulphur, one that presents a form which is

foreign to the species to which the substance belongs (Dana). In the case of the only one seen by me in Canada, it occurred in the Hancock Quarry at the head of the Jolley Cut. It assumed the primary cubic shape of a Fluor Crystal, and was enclosed in Dolomitic Limestone. Probably the original Fluor disappeared, and the space it occupied was refilled by infiltration of the matter. Sulphur Springs are very common in this district. One which was tapped in the waterlime beds of Rousseau Creek, two or three years ago, left a large deposit of the Malodorous substance there.

Mr. Carpenter formerly opened a quarry on the Barton and Glanford road, a few miles in rear of the escarpment, for road metal. Unfortunately it has long since been abandoned. To a few of us in Hamilton it was known as "the Barton Mineral Quarry," and we thought it richly deserved the distinction, owing to the large number of small, but beautiful, Fluor Crystals, as well as various minerals occurring in limestone pockets. The former (wine-red, sky-blue, white, etc.) were exceedingly brilliant, and had so much the appearance of real gems that Dr. Spencer and the writer had some difficulty in convincing the farmers' sons about the place that they were not the genuine articles, and were deficient in hardness. They were so much admired by visitors that I gradually gave away my entire collection, and found, by accident only, one poor specimen remaining, which I placed in a museum case. One of the minerals found was recognized by Dr. Spencer as Elastic Bitumen. He mentioned that it was considered very rare, and on reference to Dana I found he credits only three places with its possession, viz.: a lead mine in Derbyshire, England; a coal mine in Montrelais; and at Woodbury, Ct., in a bituminous limestone. Mineral tar was another strange production there. Dr. Spencer mentioned it in a paper, but he did not venture on any theory regarding its origin. It was found in pockets also. I noticed there an unusual number of crushed Cephalopods, so completely flattened by over-pressure that it was altogether impossible to form any idea regarding the species whenever four or five were found massed together irregularly—some lying across others and all presenting the peculiar appearance of the Mount Bolca Fishes I had previously examined in Europe. I found whenever a pocket in the limestone underneath occurred, it was almost invariably filled with mineral tar (bituminous matter), and

that petroleum was derived from animal matter—at least in this instance—can hardly be disputed, and for the reason given in a former paper published by the Hamilton Association, I doubt if mineral oil owes its existence to vegetable matter at all. I believe it to be a production of the animal kingdom. Zinc Blende (Galena) and Celestine were obtainable also in this quarry. I got a few fossils. An *Avicula*, probably *N. Specis*, occurred in the lowest bed of all. I have not been there for many years, and I am not aware whether it has been re-opened since.

In the quarries at the head of the Jolley Cut some fine cabinet specimens of White Baryta, Selinite and Earthy Gypsum are obtainable not unfrequently in the thick limestone band below the Niagara Shales, which is known to the quarry-men by the singular name of "the nigger-head bed." You may notice in it occasionally empty pockets lined with what is commonly called Dog's-tooth Spar. The mineral gypsum has a great affinity for moisture, rain water, etc., and if it succeeds in penetrating to where its relative is concealed, it takes it off altogether, and merely leaves the empty pocket—the void or hollow—which we are asked to explain. In numerous instances the student of Mineralogy may notice in our local Niagara rocks that Selenite undoubtedly was deposited at a period subsequent to the formation of the Dog's-tooth Spar. In many instances you may notice the transparent mineral resting on the crystals.

The travelled boulders brought from the north in the great Ice Age, which we remark lying on the surface of the fields in every direction, do not come under the head of local rocks, yet specimens of much interest are frequently embedded in them. A vein in a greenstone, close to the road fence near the Lime Ridge, afforded me a remarkable fine cabinet specimen of Feldspar (Orthoclase). This mineral, one of the constituents of granite, is used extensively for the manufacture of porcelain or china ware, and may prove of some commercial value if only the original place it came from could be discovered. Another boulder near the corporation drain afforded me Silver Mica and Black Biotite, while another presented some inferior Crystals of Garnet.

A fragment of a Metamorphic Rock (a Quartz and Jasper Conglomerate), was presented to me some time ago. It was said to be taken from a weathered, rounded boulder near Waterdown.

Professor Chapman, Toronto University, mentions that this remarkable Conglomerate occurs in Situ, north of Lake Huron. Well, to-day this ancient traveller finds a resting place at last in the cabinet of *another tramp*, perhaps less appreciated.

The above-named gentleman published a very useful work some years ago, entitled, "A Popular Exposition of the Minerals and Geology of Canada." The student will find the later (corrected edition) useful. Dana's Mineralogy, an excellent work for more advanced students of the science, is, I am told, universally used as the text book in the leading universities of this continent. The gifted author's researches seem simply marvellous—they were not confined to America. Every country on the face of our globe contributed its natural mineral treasures to enrich the pages of nature's famous historian.

How applicable, although not addressed to Dana by Longfellow, are the words of the invitation :

"Come wander with me, she said,  
Into regions yet untrod,  
And mark what is still unread  
In the manuscripts of God ;  
So he wandered away and away  
With Nature, the dear old nurse,  
Who sang to him night and day  
The song of the Universe."

As regards the localities of minerals, it is absolutely necessary for the young collector to possess some little knowledge of what scientists call Igneous, Metamorphic and Sedimentary rocks (the latter alone are represented in situ in this part of Ontario) ; the cavities in the other two are frequently rich in minerals. It would be advantageous also to possess a few characteristic fossils of the various formations known to geologists. We often learn, for instance, that gold has been found in a quartz vein running through rocks of a certain age. We may be enabled to discover it in other localities on finding the organic remains to correspond with the named specimens in our possession. Men known as practical miners (not mining engineers), often know but little respecting the dip of the rocks, the direction of metal-bearing veins, etc. We feel how hopeless a task it is, however, to endeavor to convince the general public in Canada to the contrary. Thousands of dollars have already been buried

deep in the soil, in a fruitless search for coal in Silurian sea sediments. Well, it reminds me of an occurrence in Ireland about the time I received my first commission in Her Majesty's Service. The Government of the United Kingdom of Great Britain and Ireland, after mature deliberation, arrived at the conclusion that the natives of the latter Island could not well prove an utter neglect of their interests, when we, My Lords, have already directed the general officer in command of the scientific branch of the army, to select such men, officers, etc., as he may consider necessary to carry out the suggestions of certain supporters, who ask us to give them what they call a Trigonometrical Survey of that portion of the empire. In due time, detachments of the Royal Engineers (then known as the Royal Sappers and Miners), arrived and commenced operations by erecting pillars of large, loose boulders on the highest points of the mountain chains. English tourists, I understand, have mistaken them since for Druidical Monuments, or Altars of the Pagan Sun Worshipers. Unfortunately, during the progress of the work on which they were employed, some Silurian Graptolites were laid bare and mistaken for land plants of the Carboniferous age, and worse still, the places where discovered, marked on the maps as coal fields. As a natural consequence, relying on the assertions of the survey, mining companies were started, and many thousand pounds sterling expended in what every geologist knew to be a fruitless search. The military authorities appear never to forget the ridicule the scientific corps of army brought on themselves and their selectors on that occasion. The sarcastic comments of the men of the hammer were so bitterly resented, that long after the occurrence, a Horse Guards communication addressed to the Commanding Officer of a regiment serving abroad, clearly intimated the displeasure of an important personage while he strongly disapproved of geological pursuits on the part of military men altogether. The matter above stated may show the necessity of the changes which have recently taken place in the British Army.

Let me give another instance where a slight knowledge of geological matters would not have been amiss in this scientific branch of the service. At Newcastle, in the Blue Mountains, Jamaica, a reservoir was made for the use of the troops stationed there. The bottom was lined with porous, earthy material, not with the proper

article—stiff brick clay. As fast as the rain, in the rainy season there, poured into it, it found an exit below. An engineer officer was sent up from the lowlands to rectify the matter. He amused himself one day poking fun at an old highland captain, asking him if the weather on the hill did not remind him of the Scotch mists in the Isle of Skye. "Why, the rain is utterly beastly here!" "Well, mon, if you find it so vera disagreeable, how would it do for you to shift your quarters to the *only dry place* here known to us, *the engineer's water-tank!*" A roar of laughter from all present followed this *nemo me impune lacessit*, as the gallant officer retired discomfited and badly demoralized, like the retreating sergeant and his party at an early stage of a fight during the Civil War. The story is: The brigadier noticed a considerable number of men retiring rapidly, and at such a pace that he rightly concluded they were not wounded (falling to the rear), so he directed a staff officer to ascertain the cause of this unusual proceeding. After a hard gallop they were overtaken, halted, and the non-commissioned officer in charge asked by the indignant galloper "Why in h—, are you conveying so many slightly wounded from the field; none are seriously injured." "True, sir," said the sergeant, as he gave the military salute, "but you may inform the general the men were *badly demoralized.*" As far as I know he resumed his retreat, despite all remonstrance.

I placed a few local minerals (as a temporary arrangement) in the large case at the upper end of the museum. We must regret our inability to find anyone willing to take charge of this department, or to replace the long-felt loss we sustained in other departments by the removal of Moffat, Hanham and Leslie from the city.

MEMO. OF THE CUTTING ON THE SPUR LINE  
WHERE IT CROSSES MAIN STREET WEST.

*READ BEFORE THE GEOLOGICAL SECTION OF THE HAMILTON  
ASSOCIATION.*

BY A. E. WALKER.

The cutting here is over twenty-two feet in order to admit of the building of a bridge over the main road ; the upper part of the cutting is brick clay ; about five feet below this is some five feet of clay containing so much lime that it is useless for brick purposes ; where this clay rests on the concrete bed of the old line of the beach, the lower part of the clay is filled with little concretions of clay, called by the workmen ginger roots ; they have much that appearance, being very crooked and twisted. They are probably formed by the lime water running into the cracks and crevices of the clay, converting them into stony matter by the same process that forms the concrete beds of pebble. The concrete beds here are about four feet thick, the upper part a fine concrete, and the lower part coarser, with here and there a layer of sand between the beds. Below these beds we have five feet of very fine sand. Here we strike a very singular formation which the workmen supposed to be packed brushwood ; it is about two feet thick. It is here that we strike water, which runs from east to west with the cutting. These streams of water as they run through the sand have deposited so much liquid lime that they have consolidated the sand into streams of stone. It seems strange that the water should run horizontally through this loose sand, leaving long stick-like forms like twisted ropes, varying from the size of your finger to the size of one's arm. The sight was wonderful to see: a layer nearly two feet thick, which looked like the ends of sticks or bamboo rods, standing out in bold relief, for the cutting was directly across this formation ; the sand falling away, left them sticking boldly out on both sides of the cutting. Of course these stick-like forms do not continue for any great length

in uniform thickness; they often coalesce and divide again into very strange forms, breaking into thin streams or twisting into knotty folds. Below this is another bed of the same sand, and it is in this bed just below these stick-like forms we come across strange globular forms, which have been called petrified melons. Some bear a striking resemblance to those forms, while others are like pears, plums and other fruits. Some one remarked that this part of Ontario was the finest fruit-bearing section, and it had evidently been so some twenty thousand years ago, as petrified fruit was found in abundance. I stood by and saw five of these forms taken out from one square yard of sand. They take all imaginable forms. I saw one like a dumbbell, a straight bar about five inches long with a perfect globe at both ends. It is not uncommon to find drips through the sand, stalactite forms of various shapes, but in the two-foot beds above described they run parallel to the lay of the sand, and many of the globular forms were no doubt formed by dripping water. About two feet below the railway bed you strike the blue tile.

After you cross the railway bridge, on Main Street going west, you strike a much higher elevation. On the south side of this elevation the bank is cut into to obtain the sand. This cutting is over twenty feet deep, and there is a very fine vein of sand beds, showing the various lines of drift. It would be of much interest to the Association if some member of the photograph section would take views of both sides of this cutting, showing the concrete beds and various beds of sand. The lowest of these beds of sand show the same consolidated strips, and under these the same globular forms of all sizes, like those found at the railway cutting, but they are at an elevation of some fifteen feet higher. There appears to be no dip and no connection with the lower beds at the railway cutting. The same form appears to be repeated at a higher level; on the opposite side of the road they are reaching lower beds of sand, but not so low as those of the railway cutting, so that I could not find if they were repeated. These hills and washings-out reach the marsh and are of much interest, cutting through the Burlington Beach. The cutting of the railway to the canal is also of much interest.

## THE FUNCTION OF POETRY.

*READ BEFORE THE HAMILTON ASSOCIATION.*

BY F. F. MACPHERSON, B. A.

In undertaking to write a paper on "The Function of Poetry," I do not expect to give expression to any novel-views on poetry, because, in the whole domain of literary criticism, there is no subject that has received more attention at the hands of writers of all degrees of attainments and of the greatest diversity of opinion. My aim is only to recall to you one of the most important and least understood departments of literature. It behooves us especially to interest ourselves in poetry now, because there is a danger, for reasons that will appear later, of poetry losing its hold temporarily on the public.

The first question that confronts us is—what is poetry? To this question one might give almost a score of answers, from Aristotle of ancient Greece to Stedman of the New World. There is no one definition, however, of all that are before us which satisfies us, in which we can see the principles that are found in the several kinds of poetry, simply because there is one, the greatest, principle which defies definition. But to a person of literary taste, who has cultivated that taste in the manner described by Ruskin, it is not so difficult to tell whether a certain poem possesses poetic excellence, though it would be more difficult to explain minutely the points in which such excellence dwells. There are, however, certain requisites to poetry which will bear discussion and exposition without injuring our appreciation.

In fact it is entirely unnecessary to be able to criticise a poem in a technical way in order to appreciate it; on the contrary, if one has the proper spirit to comprehend the poet, a descent to technicalities may injure the purity of the feeling. The lines of Byron on the beauty of Venus de' Medici are apt in this connection:

“ We gaze and turn away; and know not where,  
 Dazzled and drunk with beauty, till the heart  
 Reels with its fullness ; there—forever there—  
 Chained to the chariot of triumphal art,  
 We stand as captives and would not depart.  
 Away !—there need no words, nor terms precise,  
 The paltry jargon of the marble mart,  
 Where Pedantry gulls Folly—we have eyes :  
 Blood, pulse and breast confirm the Dardan shepherd's prize.”

And again :

“ Let these describe the undescrivable :  
 I would not their vile breath should crisp the stream  
 Wherein that image shall forever dwell ;  
 The unruffled mirror of the loveliest dream  
 That ever left the sky on the deep soul to beam.”

When we wish to know exactly something in any branch of study, we go very sensibly to those who are proficient in it. To poets themselves let us appeal as those who can teach us best. No one, I think, states better the two necessary principles than Shelley in ‘The Skylark :’

“ Better than all measures  
 Of delightful sound,  
 Better than all treasures  
 That in books are found,  
 Thy skill to poet were, thou scorner of the ground !”

The poet here emphasizes the fact that in the highest kind of poetry there must be beauty of expression as well as nobility and loftiness of thought. I shall discuss these principles in their order.

For a long time after Aristotle, the dominant idea of poetry was that it consisted of *invention*, the form or expression being held of small value. By the artificial school of modern times the form was exalted above the matter. But in the finest of the world's poems there is seen the combination of nobility of thought with the most artistic expression. It is a familiar fact that when the mind of a people is stirred by strong emotion, the form of expression chosen is rhythmical. We see this in the chants of the savage, in the musical myth of Orpheus and in the ballads of all nations. This natural music or rhythm must be in harmony with the thought, and accordingly as the poetic thought of the world becomes more sublime, the artistic expression of that thought must rise in beauty with it. One

of the best writers on the subject of poetry has thought so strongly on the importance of rhythmic expression that he asks: "Unless the rhythm of any metrical passage is so vigorous, so natural and so free that it seems as though it could live, if need were, by its rhythm alone, has that passage any right to exist?" He goes on to say: "Are we not driven to admit that certain poems whose strength is rhythm, and certain other poems whose strength is color, while devoid of any excellence of thought, may be as fruitful of thought and emotions too deep for words as a shaken prism is fruitful of tinted lights?"

Sometimes in prose even we find the language which expresses some deep pathos assuming the rhythmical flow of verse. In 'The Mill on the Floss' we find a striking and well-known example of this: "The boat reappeared, but brother and sister had gone down in an embrace never to be parted, living over again, in that one supreme moment, *the days when they had clasped their little hands in love and roamed the daisied fields together.*" In what else does Portia's speech on the quality of mercy differ from prose but in its rhythmical flow? The order of words is not different from that of prose, but it is a proof of the poetic genius of the author, that he has chosen words which do not require manipulation for the purposes of rhythm. Any sign of artificial arrangement for rhythm is always distasteful. To conclude this discussion of the importance of poetic form, it is a most instructive and educative pursuit to compare the verses of some of the old artificial schools where rhyme and rhythm were the whole aim and poetic thought almost entirely unconsidered, with the loftier efforts of some of our later poets, such as Wordsworth, Shelley or Tennyson, where there is more attention paid to the thought, but where the form is almost perfect too. It will be enough to give one quotation from one of Wordsworth's sonnets on 'King's College Chapel,' where he describes:

"That branching roof

Self-poised, and scooped into ten thousand cells,  
Where light and shade repose, where music dwells,  
Lingering—and wandering on as loth to die,  
*Like thoughts whose very sweetness yield the proof*  
*That they were born for immortality."*

This brings us to the second and more important part of the subject: What is Poetic Thought?

Ruskin, in a passage in which he deals with the essence and condition of Beauty, holds that the sense of the beautiful must be conjoined with high morality; that no true artist can be without lofty ideas. If this be so, and we cannot doubt it, it follows that no master of poetic beauty can be without the loftiness of thought and emotion which raises the true prophet to be a leader and guide of men.

The essence of the poetic temperament is the power of prophecy, of spiritual insight, the power to see into the heart of the world and human nature, and connect us with the divine. The grandest of all poetry is the Hebrew, and this power of prophecy is there seen with the least concealment.

Perhaps the best way to make clear what this power is, is to indicate in what poetry is different from prose, on the one hand, and from science, on the other.

The older writers were accustomed to contrast poetry and prose. But in our time there has come to be recognized a new kind of composition, called "poetic prose." What is the real difference between poetry and prose, and how may they be so harmonized as to be united into poetic prose?

Theodore Watts has stated the answer to the first of these questions in very felicitous language: "For what is the deep distinction between poet and prose man? A writer may be many things besides a poet; he may be a warrior like Aeschylus, a man of business like Shakespeare, a courtier like Chaucer, or cosmopolitan philosopher like Goethe; but the moment the poetic mood is upon him, all the trappings of the world with which for years he may, perhaps, have been clothing his soul—the world's knowingness, its cynicism, its self-seeking, its ambition—fall away, and the man becomes an inspired child again, with ears attuned to nothing but the whispers of those spirits from the Golden Age, who, according to Hesiod, haunt and bless the degenerate earth. What such a man produces may greatly delight and astonish his readers, yet not so greatly as he astonishes himself. His passages of pathos draw no tears so deep or so sweet as those that fall from his own eyes while he writes; his sublime passages overawe no soul so imperiously as his own; his humor draws no laughter so rich or so deep as that stirred within his

own breast." Such is the extasy of the poet ; the prose writer never forgets himself so.

It is apparent to all that there are many different kinds of prose, according to the object of the writer, but in all there is felt the constant control of the Reason, of Logic. No matter how high the flights of thought, how magnificent the expression, the whole is kept under the guidance of the intellect and follows the line of argument. This is prose.

Poetic prose does not free itself altogether from this control of reason, but adds to it the prophetic power which is the distinctive quality of poetic thought, a happy combination of reason and imagination. It is a significant fact that some of the greatest writers of this class have at first had the intention of expressing themselves in verse. Plato, Carlyle and Ruskin had this ambition, and each gave up the idea mainly because he was forced to acknowledge his deficiency in the power of rhythmical language. Yet I doubt if there are many who are called poets who excel them in prophetic power.

On the other hand we have the contrast of Poetry to Science. This truer contrast is first remarked by the Lake School of Poets. Coleridge expressed it in one of his conversations, and since then there has been little hesitation in accepting it. Science, it is said, deals with the relation of things in the universe to each other : poetry with the relations of the universe to man and God. A good illustration of this difference can be found in the way in which a poet and a scientist approach any great phenomenon. If we can suppose them to see for the first time a rainbow in the sky, we find the wonder of the poet leading him to seek the moral and spiritual meaning to him, as did the sons and daughters of Noah :

" His heart leaps up when he beholds  
A Rainbow in the sky."

The wonder of the scientist, no whit less than the other, will lead him to investigate the physical causes and to reduce the phenomenon to the action of a few laws. Each grows perhaps a little intolerant of the other. We read of how Keats and Lambé proposed the toast "Confusion to the memory of Newton," because he had destroyed the poetry of the rainbow by reducing it to a prism. A still more striking illustration of the narrowness of the purely scientific mind is offered by Balzas in 'The Search for the Absolute,' as

quoted by Stedman: "Balthazar's wife, suffering agonies, makes an attempt to dissuade him from utterly sacrificing his fortune, his good name, even herself, in the effort to manufacture diamonds. He tenderly grasps her in his arms, and her beautiful eyes are filled with tears. The infatuated chemist, wandering at once, exclaims: 'Tears! I have decomposed them; they contain a little phosphate of lime, chloride of sodium, mucin and water.' Such is the 'last infirmity of noble minds' to-day." A poetic mind will prompt one to pluck a flower, and by gazing on it with rapt attention, rise to an appreciation of its beauty and feel himself the nobler for it; a scientist will pull it to pieces, separate it into stamen, petal, stem, root, etc., and be satisfied with being able to catalogue it correctly.

"A primrose by the river's brim,  
A yellow primrose was to him,  
And it was nothing more."

It possesses for him no suggestiveness from associations, which is one of the strongest elements in poetry.

The difference then between science and poetry is: the one analyses, the other spiritualises. And these two things cannot be reconciled. One writer, Prof. W. H. Hudson, in an article in the *Popular Science Monthly* on the subject of Poetry and Science, holds that "the business of the poet in his capacity of spiritual teacher is to help us to clothe fact with the beauty of fancy; not to try to force fancy into the place of fact. Let us understand what is scientifically true, socially right, and our feelings will adjust themselves in due course. It is for science to lead the way, and the highest mission of the poet is ever to follow in its wake, and in the name of poetry and religion claim each day's new thought as its own." Surely a strange claim this for science to make in regard to poetry, which antedates it by a thousand years! There is a dash of truth in the words, because the poet must have some facts to build on, but the writer shows most emphatically that he does *not* understand the true nature of poetry. If what he says be true, what chance was there for the ancients of the earth to rise to any loftiness of poetic thought? Science has demolished the old beliefs in the method of the creation of the world; does that detract from the grandeur and glory of the Hebrew poetry? It should if poetry is always to be found in the wake of science. Plato believed that the earth was flat, no doubt;

did that hinder him from expressing thoughts as high as any of us can follow? Sophocles believed in omens and oracles; did that hinder him from writing dramas which still claim the admiration of the world, in spite of the 'dry light' of science thrown into the dark corners of error and superstition? Milton chose to base his *Paradise Lost* in a theory of the universe, which was not believed even in his own day; does that lessen the greatness of the conception and the excellence of its treatment? It has been said that no one in our day could write *Paradise Lost*, not even Milton, were he alive; I do not doubt it; but why? This gives us the key to this whole misconception.

When a poet has conceived, in a moment of inspiration, some mighty thought, and burns to deliver this his message unto men, he must do it in a way intelligible to them, as nearly as language will do it. It would be folly for him to employ symbols of thought which would not appeal to those whom he wishes to reach; he must use the words they know; he must employ as comparisons objects they are familiar with; he must translate the divine idea into the language of fact, and only so far is the poet bound down by and made the follower of science. Science is continually adding to our stores of knowledge; poetry must make use of these stores as a vehicle to convey its meaning.

Besides there is a realm into which poetry enters from which science is forever barred. Science can tell us what physical changes take place at the moment of death, but it is absolutely incapable of dealing with the question of why a man 'lays down his life for his friend'; that belongs to Religion and Poetry.

In concluding this question of the contrast between Science and Poetry and Religion, I hazard the statement that it does not follow from this contrast that they are opposed to each other. There has been too much said about the opposition of Science and Religion especially. There can be no opposition of them if each confines itself to its own sphere. It is said that Carlyle, one of our prose-poets, was bitterly opposed to Science, but such is not at all the case. His true position is stated plainly in a short passage in 'Heroes and Hero-worship': "This green, flowery, rock-built earth, the trees, the mountains, rivers, many-sounding seas; that great, deep sea of azure that swims overhead; the winds sweeping through it;

the black cloud fashioning itself together, now pouring out fire, now hail and rain; what *is* it? Ay, what? At bottom we do not yet know; we can never know at all. It is not by our superior insight that we escape the difficulty; it is by our superior levity, our inattention, our *want* of insight. It is by our *not* thinking that we cease to wonder at it. Hardened round us, encasing wholly every notion we form, is a wrappage of traditions, hearsays, mere *words*. We call that fire of the black thunder-cloud 'electricity,' and lecture learnedly about it, and grind the like of it out of glass and silk; but *what* is it? What made it? Whence comes it? Whither goes it? Science has done much for us; but it is a poor science that would hide from us the great, deep, sacred infinitude of nescience, whither we can never penetrate, on which all science swims as a mere superficial film. This world, after all our science and sciences, is still a miracle; wonderful, inscrutable, *magical* and more, to whosoever will think of it." There is here no opposition to science, but rather a just estimate of its value and its limits.

What is left now is the hardest part of the task. It is difficult to say very much, with any degree of clearness, about what is almost indescribable, which must be felt, not taught. To say it briefly, poetry is the record of the inspirations which have been sent by some higher power to help us on our way. It is the habit of some to laugh at inspiration as a cloak to hide all sorts of extravagances and fancies, but that is not the inspiration which moves the world. There is hardly any one who does not know it in some degree. Many a time flashes will visit us, presenting a new thought or an old one in a new and grander way—we know not how it came or was suggested—nothing seemed to lead up to it, but there it was, and perhaps never left us. Such little flashes, or twinklings, rather, are to the inspiration of the poet but as the stars to the sun.

"Each year brings forth its millions; but how long  
The tide of generations should roll on  
And not the whole combined and countless throng  
Compose a mind like thine? though all in one  
Condensed their scattered rays, they would not form a Sun."

These flashes of inspiration are the fountain of poetry, or, in the words of Shelley, "poetry redeems from decay the visitations of the divinity in man."

These moments of inspiration come mysteriously and unbidden, but not unconditionally. The conditions are that the mind should dwell on the subject long and lovingly.

"If Thought and Love desert us, from that day  
Let us break off all commerce with the Muse ;  
With Thought and Love companions of our way,  
Whate'er the senses take or may refuse,  
The mind's internal heaven shall shed her dew  
Of inspiration on the humblest lay."

We must by contemplation put ourselves in the way of inspirations. There is no habit more strongly emphasized by the wise men than contemplation. David in the fourth Psalm commands to "*commune* with your own heart on your bed and be *still*;" and again, "be *still* and know that I am God." It is this virtue of silence which Carlyle holds in such reverence as the mother of truth and insight.

The faculty by which the poet creates his poetry is the imagination. What imagination is has been well expressed by Prin. Shairp : "Imagination is not, as has sometimes been conceived, a faculty of falsehood or deception, calling up merely fictitious or fantastic views. It is pre-eminently a truthful and truth-seeing faculty, perceiving subtle aspects of truth, hidden relations, far-reaching analogies, which find no entrance to us by any other inlet. It is the power which vitalizes all knowledge ; which makes the dead abstract and the dead concrete meet, and by their meeting live ; which suffers not truth to dwell by itself in one compartment of the mind, but carries it home through our whole being—understanding, affections, will."

There are two ways in which the imagination works : (1) by presenting to us in concrete outline the forms of things not present ; (2) by adding to material things a spirituality which they do not possess in themselves. The first is well described by Wordsworth in his sonnet on the Inner Vision, with a hint of the second :

"Most sweet it is, with unlifted eyes  
To pace the ground, if path be there or none,  
While a fair region round the traveller lies  
Which he forbears again to look upon,  
Pleased rather with some soft ideal scene,  
The work of fancy, or some happy tone  
Of meditation, slipping in between  
The beauty coming and the beauty gone."

Ballad Poetry generally is the result of the first kind of imagination and delights in rousing it in others. The simple scenes, the quick transitions, the mere hints to suggest the complete picture—all these bespeak the working of the simpler kind of imagination. As examples of the higher kind of imagination, I can only refer you to Wordsworth's *Education of Nature*, "Three years she grew in sun and shower," and to Shelley's 'Skylark,' two of the finest short poems in our language. This is the imagination which

"adds the gleam

The light that never was on sea or land,  
The consecration and the poet's dream."

The working of the higher imagination is most beautifully and exactly described by Wordsworth in his 'Tintern Abbey':

"Nor less, I trust,

To them I may have owed another gift,  
Of aspect more sublime; that blessed mood,  
In which the burthen of the mystery,  
In which the heavy and the weary weight  
Of all this unintelligible world  
Is lightened: that serene and blessed mood,  
In which the affections lead us gently on,  
Until, the breath of this corporeal frame  
And even the motion of our human blood,  
Almost suspended, we are laid asleep  
In body, and become a living soul:  
While with an eye made quiet by the power  
Of harmony, and the deep power of joy,  
We see into the life of things.

For I have learned

To look on nature, not as in the hour  
Of thoughtless youth; but hearing oftentimes  
The still, sad music of humanity,  
Nor harsh nor grating, though of ample power  
To chasten and subdue. And I have felt  
A presence that disturbs me with the joy  
Of elevated thoughts; a sense sublime  
Of something far more deeply interfused,  
Whose dwelling is the light of setting suns,  
And the round ocean and the living air,  
And the blue sky, and in the mind of man;  
A motion and a spirit, that impels  
All thinking things, all objects of all thoughts,  
And rolls through all things."

This, then, is some indication of the result of the working of imagination on the material of the whole world—nature, man and God. What the world would have been without the presence in it of the poet and his song—it is beyond the power of thought to conceive. We could do without philosophy, without science even, but without poetry to spiritualize our dreary monotony, life would be a woful desert, full of dead men's bones.

As a fitting conclusion for a discussion, however inadequate, on this subject, let me quote the words of Tennyson's Poet's Song :

“The rain had fallen, the Poet arose,  
He passed by the town, and out of the street,  
A light wind blew from the gates of the sun,  
And waves of shadow went over the wheat,  
And he sat him down in a lonely place,  
And chanted a melody loved and sweet,  
That made the wild swan pause in her cloud,  
And the lark drop down at his feet.  
The swallow stopped as he hunted the bee,  
The snake slipped under a spray,  
The wild hawk stood with the down on his beak  
And stared with his foot on his prey,  
And the nightingale thought : I have sung many songs,  
But never a one so gay,  
For he sings of what the world will be  
When the years have died away.”

## THE DYNAMICS OF SOCIAL PERIL.

READ BEFORE THE HAMILTON ASSOCIATION.

BY J. T. BARNARD.

In this paper I purpose dealing with one cause of uneasiness and apprehension as to our social future. Thoughtful men everywhere discern a dark shadow keeping pace with all productive and moral advance; a shadow that deepens by contrast with the lustre of our industrial development. The Rev. Dr. John Hall recently startled his fashionable Fifth Avenue congregation by saying: "The war cloud hanging over America is discontent and despair among its citizens."

Three elements or symptoms are discoverable in our social disorder:—

Disappointment.

Dissatisfaction.

Distress.

If Bishop Ridley, lying in the Tower, before his condemnation, had been vouchsafed a vision of nineteenth *fin de siecle* advance; if he had seen clearly, though afar off, the harnessing of steam and electricity; if he had seen man's needs and comforts being produced a hundred-fold faster than in his day; the spinning jenny, the power loom, the knitter, the sewing machine, the reaper, the thresher, the power planer and all the other myriad appliances for lightening toil and increasing human enjoyment; if he had seen time out-stripped by the telegraph; men conversing audibly a thousand miles apart; the hurricane distanced by the locomotive; the steamship reducing the time of voyages from weeks to days; if he had seen the printing press daily turning out miles in length and tons in weight of literature; if he had seen his beloved Bible published in hundreds of dialects and yearly distributed in millions; if he had seen the awakening of the Christian heart to the needs of the heathen and missionaries by the thousand penetrating to every pagan land; if he had seen over a hundred millions speaking the English tongue; British navies dotting the oceans everywhere, their ships bearing Christianity and civilization to earth's remotest ports; if he had seen Britain

and her eldest daughter Columbia virtually rulers of the world, foremost in political freedom, in liberty of conscience, in commerce and in wealth; what would have been the martyr's thoughts and emotions? Would he not have longed with vehement desire to witness the coming glory, when the world would stand on the very threshold of the kingdom of heaven on earth, if indeed it were not fully set up in the days when such wonders would come to pass?

Let us imagine the last desire of the martyr gratified; let us imagine him conducted from the celestial regions back to the earth in this our day; let us suppose a discrete power of vision only permitted him; a capacity for hearing only certain sounds; let us suppose him guided over the nations of Christian civilization, able only to see warlike preparations and, to observe the sorrows and misfortunes of its peoples. All Europe would lie below him a military camp, the din of preparation for deadliest warfare everywhere assailing his ears. Let him, accompanied by his heavenly Asmodeus, pass over Chatham and Woolwich—working night and day in the same fearful occupation; let him visit the shipyards and behold wonderful instruments of destruction of gigantic size; let him then be handed over by his guide to the escort of General Booth; with him let the martyr visit the dockyard gates of London, the wealthiest city of the world and the very heart of the world's Christian effort, and see there the anxious, eager search for a chance to work at roughest toil; let him see the despair in the faces of the hundreds who turn away not fortunate enough to obtain the privilege of abject drudgery; let him visit the refuges in the slums of the east end; the hundreds of thousands of hopeless toilers in sweater's dens; let him hear Gen. Booth speak of three millions of Englishmen on whom the sun of prosperity never shines, whose lives are passed in deepest gloom, scarcely living at all indeed, but rather slowly sinking from the cradle to the pauper's grave, born in adversity, reared in poverty and dying in despair. Witnessing these horrors in his beloved home, what must the emotions of the martyr be? If the redeemed can weep; if the glorified soul can be wrung with anguish, that of Ridley would go back to his heavenly home, his eyes fountains of tears and his heart heavy with grief. The news he would take to the rest of the glorious army of martyrs would be: "The Kingdom has not yet come to earth, the power of Satan there is greater now than ever."

And as he felt so ought we to feel. Bitter disappointment, profound dissatisfaction and keen distress are ever with us.

Let us ask why?

We have much to gratify us. The pauper of to-day can see sights of beauty in art; can enjoy comforts and luxuries impossible to a Tudor prince. Asphalt pavements, electric lights, etc., are free to the pauper; the prince of the olden time waded in darkness through mud. But with all our advance something vital is lacking in our progress, the chalice of civilization has bitterness in its aftertaste.

Political freedom, education, invention, schemes for enjoyment to the full, abundance of things to delight the eye and please the ear; with all such blessings to the full, we despond, our hearts sink with fears at evils yet to come. We are disappointed, dissatisfied, distressed.

We ask why; do we really care to know? A sick child loathes physic, and we sick children of an unhealthy civilization shrink from knowledge of our malady and put away from us any suggestion of real remedy.

We would charge with insanity the occupants of a house if they refused to regard evidences of fatal defect in the foundation; if they were so intent on decorating the reception rooms, the living rooms, the library and the picture gallery, that they bestowed no attention on the critical condition of the foundation walls, and the soil on which they rested. Tapestries and works of art may conceal cracks in the walls they cover, but they do not repair them, much less affect their cause. And we vainly hope to uplift society by arts and occupation that do not recognize the depths to which we are surely sinking.

What shall be our first task? Sink our social foundation walls to the bed-rock of justice? or shall we go on geologising, photographing, studying ancient history or gravely collecting relics? All these are excellent in their place, but their proper place is in a society securely planted on justice. They are the decorations of our earthly home. The firmness, security and stability of that home is our first consideration.

Planted on justice! Is our civilization happily situated? Are man's rights recognized, asserted and secured by our social organization?

But first, has man any natural rights? Excellent men say yes as excellent men say no. And this denial either originates in or is fortified by the very popular doctrine of evolution. To accept evolution is to deny natural rights. For if man, an evolution, appears on earth endowed with natural rights, when were they conferred on him? In all his devious paths from the moneron up through millions of transmutations and advances, we can conceive of no point when he came into this alleged inheritance of natural rights. Down that path which we are told has been trod by the predecessors of man in his upward journey, we can see no recognition of natural rights. The lamb might covet them indeed, but to possess them he must first obtain consent of the wolf. The sharpest teeth, the alertest movement, the longest leap, these constitute the natural rights of the animal kingdom. And hence the consistent evolutionist, in dealing with the status of man, denies him the possession of natural rights. He conceives them as the creation of society. Professor Watson, maintaining that society is organic, tells us "individuals can have no rights apart from society."

On the other hand, there are still left some who believe man, physically and psychologically, is an independent creation of the Almighty. Granted by Him the privilege of life, the right to retain that life and the right to the exercise of his powers in maintaining that life, and hence the right to the use of the means of maintaining it are corollaries of man's independent creation. Those who hold these views regard man as endowed with rights not bestowed on the lower animals. Whereas, whoso sheddeth man's blood, by man shall his blood be shed—every moving thing that liveth shall be meat for man; into his hands they are delivered. Man may kill an ox and be guiltless, but the ox that gores a man must be stoned to death.

But whether we believe that rights are conferred by society or by the Deity, we may unite in one opinion—man's life is sacred. I may not kill my neighbor, nor may I deprive him of his means of livelihood. Divine law and social utility agree in this.

We respect man's life; we guard property rights; have we really taken the pains to ascertain what is property and what is not? A fatal misconception as to what constitutes property will be found on examination to be prominent in our civilization. With this misconception I propose now to deal, for it is the fateful cause to which I

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referred in the first words of this paper. That cause sustains the relation to our social organism that a foundation of sand bears to the superstructure. It sustains to social evil the relation that the tree-trunk bears to the limbs, branches and twigs that depend upon it for life. That cause is a wrong, innocently inherited, ignorantly retained and fondly cherished as a beneficent thing worthy of all honor and of all legal efforts to retain it.

Christianity points to man's depravity as the source of wrong, social as well as individual. Subdue that depravity, it tells us, and the social problem is solved. "Let the wicked forsake his way, and the unrighteous man his thought," is the first step towards a larger life, individual and social. But, if this condition be imperative on the individual in order to escape from evil, it is equally binding on a number of depraved units of which society is composed. If we can be brought to recognize a specific wrong created and maintained by individuals acting in their corporate capacity, ought not society, that extended human organism, repent as each individual component must repent? If society has created the right to life and the right to liberty, the right to produce and the right to own the thing produced; if society insists on industry; if it condemns the voluntary pauper, should it not also insist that opportunities to produce shall be equally available to all? If it does not so insist; if it has not thus far made provision for free productive exertion, has not society failed in its functions? To insist that man shall be industrious, and then to impede his industry, is inconsistent. Society demands that its units shall not beg or steal; has it not therefore created for itself a duty, the duty of assuring to each a free chance to obey its mandate?

Has society so far recognized this duty? It most certainly has not. "Here, you fellow, get to work at once!" cries society, "but before you do work, see to it that you pay some fellowman a proper fee for the privilege of setting to work." If the wretch refuses to pay, or cannot pay, society banishes him from civilization. He may freely locate in the wilderness, if he can get there. There, and there only, may the worker for a while enjoy what society ought to secure him anywhere and everywhere.

An able man, mentally, physically strong, can pay for the privilege of working, and prosper, becoming himself one of those who

exact tribute from workers. Less capable men can pay and live; the weakest cannot, and hence become dependent, humbly seeking the privilege of being set to work by the stronger, and regarding employment as a boon.

Society insists on the industry of its members. Society insists that the industrious shall pay tribute to other units. Society has thus created a condition that must cease, or society will be overthrown. An irresistible force and an immovable substance cannot both exist. If society imagines it is immovable, it will some day, and no very distant day, discover what is meant by irresistible force. Disappointment, Discontent, Distress, must crush all who impede their action and who stimulate their force.

A collision impends. Everywhere can be seen the signs of the times. The barometer of social peace is falling, the thermometer of diffused prosperity is dropping. We may by artificial methods cause both to rise, but we do not thus dissipate the storm—we do not thus drive back the advancing cold wave. Natural weather is beyond our power to control, but, thank God, the social atmosphere may be cleared and the freeze out of industry may be forever thawed. It is in our power to avert the threatened social cyclone.

The first business of society in the premises is to establish in practice what is as undeniable as an axiom: Inasmuch as it is man's duty to produce, it is his right to freely perform that duty.

What is it to produce?

It is the drawing forth and adapting from nature, and the transportation and exchange of those things which supply man's needs, comforts and luxuries.

What are the factors of production?

Man's own exertion, on the one hand, and the natural material on which alone that exertion can be expended, on the other. The first is called Labor and the second Land. All wealth is the result of Labor expended on Land.

What is wealth?

Natural products that have been secured, moved, combined, separated, or, in other ways, modified by human exertion, so as to fit them for the gratification of human desires.

All is not wealth that is called wealth. A man who holds in possession deeds of land, scrip, promissory notes, mortgages, bank

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bills, etc., is said to be possessed of wealth. But in Political Economy these are not wealth. They might all be burned up, or cancelled, or repudiated, and the world would be none the poorer. It is one thing to possess the power of exacting wealth, it is quite another thing to possess it. Wealth consists of such things (product of labor), the existence of which is for the benefit of the race, and therefore the lessening or the increase of which constitutes general loss or gain.

The material welfare of the race depends: First, on the production; and second, on the proper distribution of wealth.

Is mankind satiated with wealth?

No; man is insatiable for wealth. Therefore, as land is the raw material of wealth, and as labor is the inexorable condition of its creation, scarcity of employment must be due to some impediment to the free exertion of labor on land. Geographically, land is abundant; legally, there is perpetual famine of it, and this famine ever increases in intensity as we approach great centres of population. This famine is due to the inconsistent action of Society.

Society having implicated itself, through its imperative demand that no man shall either beg or steal, it should give to all an equal opportunity to obey its mandate to produce. In this opportunity it must insist that no one shall occupy a position inferior to another. To demand that a horse shall compete in a race, then hitch him securely to the starting post and punish him because he does not put forth his speed, would be unreasonable and cruel. To demand that men shall not beg or steal, but work, and then permit others to bar them from their only opportunity, is equally unreasonable, equally cruel, but far more dangerous. You can keep from a horse's heels; you cannot so easily escape from an intelligent being made desperate from a sense of injustice. Dynamite bombs reach farther than a horse's hoofs.

But is society now actually perpetrating this unreasonable, cruel and dangerous thing?

By its authority land is not reserved for the equal use of all. Some are favored, others are necessarily deprived. If society recognizes the right of an industrious man to remain in civilization within reach of its benefits, if it insists that he shall not beg or steal for a living, it is also in duty bound to give that man an opportunity to

freely exert his productive powers, and to save him from the exactions of those who would fain despoil him. The command to labor implies the duty of providing the opportunity. The prohibition to beg or steal lies equally on all; the opportunity to work appertains equally to all.

What are equal opportunities to produce?

Does it mean that society shall sub-divide its territory so as to give to each an equal opportunity? This was done in Israel under Joshua; and where production is in its simpler forms, where each family is its own farmer, miller, baker, tailor and shoemaker, such a method is infinitely superior to the plan followed by Britain in America, where it created and maintained such wealth-exacting institutions as the Canada Company, the Hudson Bay Company, etc.

But now that sub-division of labor is intensified, such a simple mode of dealing with land is no longer effective. While retaining the principle acted on by Joshua, we must adapt it to our more highly differentiated industrial condition.

Does it mean nationalization of the lands, society assuming ownership, becoming in its units landlord as well as tenant and therefore dispossessing or buying out the present owners, and letting out their lands in lots to suit tenants? It need not; equal rights to the use of the earth may be created and maintained without any such social upheaval, without any such perpetuating of the burdens now borne by the producer.

We are familiar with the phrase "land values," or the value of land; have we taken the pains to think out the genesis and the nature of such values?

Land varies in usefulness—in fertility or position—but so long as a country is uninhabited, its land has no value, for value is the relation one thing bears to another in exchange, and no man will give anything in exchange for the privilege of using land in uninhabited territory; he can get the use of it for nothing.

Dineen's corner, at the junction of King and Yonge Streets, Toronto, was purchased for a few dollars about 70 years ago. What is its value to-day apart from the improvements?

It was leased for years for \$6,000 per annum (ground only). That lease recently expired. The lessee, after careful calculation, wrote the owner (a resident of London, England), an offer of \$9,000

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a year. He was indignant; he fully expected the offer would be \$12,000, for a lot of land 60x90 feet. What action of its owner created that enormous increase of value, from \$20 to over \$200,000? None. No man can create or increase the value of the land he occupies. It was the existence of population near that lot; it was their increase in numbers, in enterprise, that wrought the mighty change. Land values appear with people and disappear with their departure. Lots in Port Moody were once at boom prices; when I passed through it 8 years ago, no merchant would take a store in it rent free. Population had been driven away by the extension of the C. P. R. to the site of the present City of Vancouver.

After the Simpson fire in Toronto the Ontario Government withdrew the Jamieson lot from sale because \$5000 ground rent could not be realized. One man was ready to pay \$4,200 per annum for it, a lot about 40x80, and there was no semblance of improvement on it; the debris of the fire was an expense, for it had to be removed, but hundreds of thousands of people pass that corner every year.

Now in this genesis of land value we have two things of moment to us as patriots.

1st. The value of land being created, that is, produced by the people, society, by virtue of its assumed protection of the rights of property, must demand that value shall be kept for the enjoyment of its producers—the people. If society says to the individual, "You shall use and enjoy what you produce," it must also say to the people as a whole "you also shall enjoy that which you have produced."

2nd. The second thing we find with this discovery of the genesis of land value is a sure and certain mode by which the industriously disposed shall have free opportunity to exert their productive powers.

If each man monopolizing valuable land, yearly gives to society that value of his land which is created and maintained by the presence of people, he enjoys no better opportunity than does the man who is monopolizing land that has no value, for this man has nothing to pay, and the other yields up all the advantage of his superior location. Both are on the same footing therefore, so far as opportunity to produce is concerned.

But we have discovered more.

If society, realizing the genesis of land values, takes as its right the value its presence creates, it removes from the individual all motive to hold more than he puts to the best use, hoping to realize gain from its rise in value. Land, therefore, will be valueless except to the user. Hence the worker need never be landless, need not solicit employment, need not regard employment as a boon conferred. Right here in civilization, within sound of church and school bell, hard by railway and trolley lines, accessible by the daily paper, both urban and rural, are lands unused or poorly used that would become available immediately for industry.

But we have discovered still more. Inequality of opportunity is the hot bed of involuntary poverty, discontent and a strong incentive to vice and violence. With the death of hope comes the life of the fiend. A sense of injustice, well founded, underlies the discontent of civilization; it is the cause of the social ferment that is arousing the gravest apprehension as to our future, among thoughtful men who wonder whither we are drifting.

Communism, Anarchy on the one hand; Special Privileges and their creature the Plutocracy on the other—these are the forces lining up for a struggle, which, if it begins, must destroy our civilization.

The recognition on our statute books of the equal right to the use of the earth, by taking the whole value of land as public property, is the flag of truce, the peacemaker, the recognition of a universal brotherhood. Only in this action is safety to be found. Disdain the study of this right to the use of the earth; fritter away time in dilettante recreation, and you as positively help on the coming revolution as though you waved the red flag and the torch, and flung the dynamite bomb. There are two dangerous classes, those who pooh-pooh all possibility of peril, who say things are all right and are daily growing better; and the other, the ever increasing host of the malcontent, beaten in life's struggle, cherishing hate for those who have won. The self-satisfied, the indifferent, the too-busy and the disbelievers on one side—the Anarchist and his recruiting ground the hosts of the submerged, on the other; both dangerous, equally dangerous. To which do we belong?

REPORT OF THE PHOTOGRAPHIC SECTION FOR  
THE SESSION 1896-97.

Interest in amateur photography in Hamilton has been steadily increasing during the past year, and the members of the Photographic Section have reason to feel gratified by the way the members of the Association and their friends have attended the exhibitions of lantern slides given by them, thereby showing their appreciation of the efforts made by the section to promote the study of the photographic art, and we expect that the outcome of these exhibitions will be a greatly increased membership.

There are now forty-eight names on our roll. The Section mourns the loss of one of its members, Mr. E. Jackson Sanford, who died in Texas while in search of health.

The club outings during the year were very well attended, especially the one to Bronte Ravine, no less than twenty members being there; a very pleasant afternoon was spent and a number of good views were secured. Other outings were held, including Red Hill Ravine, Taplestown, Dundas and vicinity, Rock Chapel and DeCew's Falls.

The thanks of the Section are due to Mr. S. John Ireland, for kindly criticism and advice on work done by the members, also to Mr. John S. Gordon, for his instructive lecture on picture composition.

Practical demonstrations were given by the following members: Mr. A. M. Cunningham, on development; Messrs. J. R. Moodie and A. H. Baker, on lantern slide making; Mr. S. Briggs, on printing and developing bromide paper; and Mr. J. H. Land, on lantern slide development with Glycin.

The Section were successful in having a sufficient number of their set of one hundred lantern slides sent to New York pass a critical examination of technical perfection, to allow them to enter the American Interchange, which includes clubs of all the large cities of United States, also Toronto and Montreal, and the members were

very much encouraged to know that no less than seventy-six were selected by the examiners, and the opportunity of seeing the work done by the different clubs during the season has been very instructive and very much enjoyed by all who attended the exhibitions.

The Section is also a member of the Canadian Lantern Slides Exchange, which is composed of clubs in the cities of Toronto, Montreal, Ottawa, St. John's, N. B., Halifax and Hamilton.

We are looking forward to another successful season, and it is to be hoped that each member will continue his interest in the work and maintain the gratifying reputation gained by the Section.

J. R. MOODIE,  
*Chairman.*

J. M. EASTWOOD,  
*Secretary.*

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REPORT OF THE BIOLOGICAL SECTION FOR  
THE SESSION 1896-1897.

The Biological Section has only held two informal meetings during the winter, and have given attention to Botany only.

What should be a very strong section is at present in a weak state, and should have more attention from the members, not only in the line of Botany but in other branches of Biology.

Our members have been devoting their time to identifying and catalogueing the specimens collected during the past few seasons.

A careful comparison of these with the lists of Logie and Buchan, and additions made in this Society's Proceedings of 1889 and 1890, shows that we have collected 128 species and varieties not hitherto reported from this locality, a couple of these being new to America, a few new to Canada and several new to Ontario, while three critical forms are withheld, subject to Prof. J. Macoun's further examination and report.

The local additions are as follows :

- Thalictrum purpurascens—L.
- Ranunculus Flammula var. reptans—E. Meyer.
- Cimicifuga racemosa—Nutt.
- Corydalis glauca—Pursh.
- Cardamine rotundifolia—Michx.
- “ Pennsylvanica—Muhl.
- Draba Caroliniana—Walt.
- Alyssum calycinum—L.
- Nasturtium Armoracia—Fries.
- Thlaspi arvense—L.
- Viola Selkirkii—Pursh.
- “ palustris—L.
- “ lanceolata—L.
- “ tricolor—L.
- Dianthus barbatus—L.
- Saponaria Vaccaria—L.
- Hypericum Canadense var. minimum—Chois.
- Malva sylvestris—L.
- Callirrhoe digitata—Nutt.

- Linum *usitatissimum*—L.  
 Euonymus atropurpureus—Jacq.  
 Aesculus *Hippocastanum*—L.  
 Polygala polygama—Walt.  
     " Senega var. *latifolia*—Torr. & Gray.  
 Lupinus perennis—L.  
 Trifolium *hybridum*—L.  
     " *incarnatum*.  
 Medicago *sativa*—L.  
 Robinia viscosa—Vent.  
 Desmodium rotundifolium—D. C.  
 Vicia *sativa* var. *angustifolia*—Seringe.  
     " *Caroliniana*—Walt.  
     " *sepium*—L.  
 Gleditschia triacanthos—L.  
 Prunus *Cerasus*—L.  
 Spiraea tomentosa—L.  
 Physocarpus opulifolius—Maxim.  
 Fragaria Virginiana var. *Illinoensis*—Gray.  
 Potentilla arguta—Pursh.  
     " *recta*—L.  
 Poterium *Sanguisorba*—L.  
 Rosa humilis—Marsh.  
     " *cinnamomea*—L.  
 Crataegus punctata—Jacq.  
 Pyrus *Malus*—L.  
     " *communis*—L.  
 Sedum *acre*—L.  
 Epilobium *hirsutum*—L.  
     " *adenocaulon*—Haussk.  
 Mollugo *verticillata*—L.  
 Viburnum *Lentago*—L.  
 Galium lanceolatum—Torr.  
 Asperula *arvensis*—L.  
 Solidago rugosa—Mill.  
 Heliopsis laevis—Pers.  
     " *scabra*—Dunal.  
 Chrysanthemum *Balsamita*—L.

- Artemisia *Absinthium*—L.  
   " *vulgaris*—L.  
   " *Abrotinum*—L.  
   " *biennis*—Willd.  
 Senecio aureus—L.  
   " *Jacobaea*—L.  
 Cnicus muticus—Pursh.  
 Centaurea *nigra*—L.  
 Cichorium *intybus*—L.  
 Hieracium *aurantiacum*—L.  
   " *murorum*—L.  
 Lobelia Dortmanna—L.  
 Campanula *rapunculoides*—L.  
 Vaccinium stamineum—L.  
   " *macrocarpon*—Ait.  
 Kalmia glauca—Ait.  
 Pyrola rotundifolia—L., var. *incarnata*—D. C.  
 Asclepias quadrifolia—L.  
 Frasera Carolinensis—Walt.  
 Myosotis arvensis—Hoffman.  
   " *verna*—Nutt.  
 Lithospermum canescens—Lehm.  
   " *angustifolium*—Michaux.  
 Nicandra *physaloides*—Gaertner.  
 Gratiola aurea—Muhl.  
 Gerardia tenuifolia var. *asperula*—Gray.  
 Teucrium occidentale—Gray.  
 Pycnanthemum muticum—Pers.  
 Salvia *officinalis*—L.  
 Monarda fistulosa—L., var. *mollis*—Benth.  
 Nepeta *Glechoma*—Bentham.  
 Scutellaria parvula—Michx.  
 Plantago *media*—L.  
 Polygonum, *tenu*—Michx.  
 Ulmus *racemosa*—Thomas.  
 Myrica Gale—L.  
   " *asplenifolia*—End.  
 Betula *lutea*—Michx, f.  
 Salix *alba*—L.

- Salix viminalis*—L.  
*Populus alba*—L.  
     "    *monilifera*—Ait.  
*Goodyera repens*—R. Br.  
     "    *Menziesii*—Lindl.  
*Habenaria lacera*—R. Br.  
*Muscari botryoides*—Mill.  
*Hemerocallis fulva*—L.  
*Polygonatum giganteum*—Diet.  
*Streptopus amplexifolius*—D. C.  
*Trillium grandiflorum* var. (?) *viridescens*—Peck.  
     "    *cernuum*—L.  
*Sparganium simplex*—Hudson.  
*Sagittaria graminea*—Michx.  
*Potamogeton heterophyllus*—Schreb.  
*Eriocaulon septangulare*—Withering.  
*Cyperus Schweinitzii*—Torr.  
*Carex prasina*—Wahl.  
*Dulichium spathaceum*—Pers.  
*Eriophorum gracile*—Koch.  
*Milium effusum*—L.  
*Cynodon Dactylon*—Pers.  
*Pellaea gracilis*—Hook.  
*Aspidium spinulosum*—Swartz.  
     "    *cristatum*—Swartz.  
*Botrychium ternatum*—Swartz, var. *obliquum*.  
*Lycopodium lucidulum*—Mich.  
     "    *annotinum*—L.  
     "    *obscurum*—L.  
     "    *complanatum*—L.  
*Selaginella apus*—Spring.  
*Marchantia polymorpha*—L.

Taken outside of our limits but new to Ontario :

*Echinops exaltatus*—Schrad (Beeton).

*Utricularia minor*—L. (Niagara Falls).

    "    *resupinata*—B. D. Greene (Georgian Bay Island).

J. M. DICKSON,  
*Chairman.*

H. S. MOORE,  
*Secretary.*

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*Yours Sincerely*

*William Yates*

*Hatchley Aug<sup>t</sup> 3<sup>o</sup> / 97*

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## NOTES BY THE WAYSIDE.

READ BEFORE THE BIOLOGICAL SECTION OF THE HAMILTON ASSOCIATION.

BY WILLIAM YATES, OF HATCHLEY.

One of our most pleasant outings was that undertaken during the month of June just now past, the territory gone over being a part of Brant County, and also a part of Norfolk County, near the Lake Erie shore, from about Port Ryerse to Turkey Point. We were accompanied by Mr. James Goldie, sr., of Guelph, Ont., who has inherited a large share of botanical and horticultural enthusiasm from his father, who attained a certain historical fame seventy or eighty years ago as a collector and classifier of British and North American Floras.

At the date of our starting out (June 15th) there had recently been abundant rainfalls, and the wild rose bushes, *Rosa blanda* and *Rosa lucida*, which adorned the margins of the fields and the waste places by the roadsides, bore a greater profusion of their aromatic pink blossoms than usual; and a number of the small frame dwellings of the residents of these light sandy localities seemed fairly embowered with this interesting shrub, which flourishes best in a dry and porous soil. We noticed, also, amid the "Oak Scrub" bordering the road near the village of Walsh (Charlotteville Township) the handsome blue spikes or thyrses of the Lupine, *Lupinus perennis*, a sight never to be forgotten.

In a number of farms that one passes, a feature of great beauty and picturesqueness was lent to the sandy knolls by the clustering aggregations of *Lithospermum hirtum*, whose cyme-like masses of yellow blossoms rivalled the brilliancy of the flowering Gorse bushes, which (as narrated in botanical annals) aroused the admiration of Linnaeus on viewing these flowers for the first time on an English common. This species is larger, but has scarcely as symmetrical foliage as its congener *L. canescens*, which is the common form in Brant County.

On the bluffs bordering Lake Erie, the bright pink and roseate tints of the flowers of *Phlox subulata* were very noticeable, and it was remarked that some of the residents of the neighboring town of Simcoe had transplanted this wildling as an adornment to their lawns and flower borders. The Juniper bushes, and also the Sassafras shrub, were of frequent occurrence on the same elevations.

Where the two Phloxes (*P. subulata* and *P. divaricata*) were met with, that rare and beautiful species of Violet, *V. pedata*, was known to be of frequent occurrence in the shaded thickets of this district; but clouds arising, that threatened thunder-showers, induced us to shorten the programme of journey for the day, and not a single specimen of this coveted wild-flower graced our collection on this occasion.

A species of *Ranunculus* that seems peculiar to barren, sandy spots, and whose foliage had a dwarfed appearance, was thought by Mr. Goldie to represent *R. rhomboideus*. In some of the shaded dells through which gurgling rivulets pursued their course towards Lake Erie, were many tall flower stems tipped with brilliant yellow button-like flowers; these our companion believed to be a species of *Senecio*, of which *S. aureus* seemed most common.

An interesting botanical "find" occurred by the roadside, one mile to the north from Vittoria village; this was the so-called scented fern shrub *Comptonia asplenifolia*. The locality seemed a bit of primitive but half-cleared boggy land, and it was thought that the foliage well deserved its fame of being "sweet scented." This shrub belongs to the Myricaceæ (Sweet Gale Family).

In that portion of the jaunt into Brant County, a curious instance of plant "Albinism" was met with on a previous occasion later in the season. This was *Asclepias incarnata*. Some roots of the same plant found growing at the same spot this 15th day of June, were dug up for transplanting, but had not arrived at the blossoming stage of growth.

What was believed to be the rare native form of honeysuckle *Diervilla trifida* was seen on a gravelly hillside, but the date being too early for blossoms, identification was difficult or risky. However, it may be remarked that this shrub has been found incontestably near Stratford.

A number of instances of the yellow star-grass *Hypoxis Erecta*

were noticed, but *Gillenia trifoliata* had not come into blossom and was difficult of detection among the dense growth of shrubs and briars; however, the neat little Irid, *Sisyrinchium Bermudiana*, was found in flower, and also the wild Columbine, with *Anemone thalictroides* and a few samples of *Lithospermum Canescens*, were in an early stage of floral beauty. *Sanicula Marylandica* was noticed, but only just showing blossom buds. *Polygala Senega* and *Helianthemum Canadense* were two weeks more backward in growth than at the same date in 1896.

In the depth of the forest, a bird note was heard resembling the solemn tolling of a distant church bell; this was soon ascertained to be one of the rare imitatory "calls" of the blue jay, and only a woodsman of experience would have expected that bird capable of producing such a musical sound, but doubtless the mellowing effect of distance in the cloistered groves lent a charm to the tone.

The notes of the Hermit Thrush, which have been scant this year, were listened to with unfeigned delight on this occasion, and the sylvan and silvery echoes of the "Veary" were conspicuous in the evening; also the reiterated "whittilee, whittilee, whittilee" of the *Maryland yellow-throat*, and the loud, bold performance of the *Rose-breasted grosbeak* were prominent among the bush orisons, as was also the innuendo "zee, zee, zeeing" of the Canada warbler, and in the willow scrub the "witch, witchow" (witch-witch, witchow) of the *Bay-breasted Warbler* and other common finch notes added to the concerted melody of the mid-June evening, on the homeward drive, winding up with the weird calls of the *Caprimulgidae*, as the shades of night came on, of which the so called *Night Hawk* was one.

At the home of a near neighbor there are regular nocturnal visits from one or more Whip-poor-Wills, and these birds, perched on the roof peak of an adjoining kitchen, voice their invective for hours together in the moonlight intervals, and these vocalizations keep alive rather sombre memorials in the minds of the human inhabitants of the dwelling, as "poor Will" symbolizes in the language of affection a missing member of the family who thirty-two years ago went away to seek Dame Fortune in the far west, and of which son or brother no tidings have for three decades been obtainable. The articulation of these syllables by this moonlight disturber of the silent groves is

quite distinct. Even the trill of the letter 'r' is very pronounced, and an emigrant is said once to have jocularly remarked "that this country was evidently laid out for an English speaking race, where even the birds in three or four instances call to each other with an imperial purity of enunciation, and cannot be corrupted into dialects or provincialisms, but stick to their watchwords, "Whip-poor-Will," "Kill-deer," and "Bob White" in the presence of all comers.

The bob-o-links have been, I think, unusually numerous and songful during the present summer. These birds did not come into the new clearings of this part of Burford Township until extensive areas of clover and other meadow grasses had been established. The bob-o-links and larks dislike the smoke and burning operations of clearing bush land, and though they were numerous three or four miles away (in other settlements), twelve or fourteen years elapsed after the land was cleared ere they came to regularly frequent these parts.

After a dry period of about two weeks duration, we in this section were favored with some very copious showers on June 29th, and to a human weather guesser the indications pointed to an unsettled condition of the atmosphere. On Wednesday morning, the 30th, the sky was partly overcast with dark and threatening clouds, and the air was stuffy with a light and variable breeze, but the spider tribe seemed to have had information from a private source that dry, fine weather was coming, or had set in, and the tilled fields were at dawn on the 30th thickly bestrewn with cobwebs that had been woven during the previous night; and the sequel proved that the spider instinct was a trustworthy one, for subsequently to the web spreading phenomenon above noticed, there was a succession of glorious, bright days. The extensive areas overspread by the myriads of webs, where the earth's surface was suitable to the insect's life operations, and not encumbered by dense vegetable growth of grasses or growing grain, created surprise, and the more especially as these insect fabrications seemed to be the work of a single night, as scarcely a vestige of the devices and snares were to be seen at dark on the evening of the 29th.

Many of the so-called lower species seem to have no idea of solid transparencies, such as window glass, as was lately brought to the notice of this writer by a large buzz fly which had found a lodg-

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ing for the night in a very dim corner of our bedroom ; on the first glimpse of dawn the said fly made an impetuous dart towards the window, and struck against one of the window panes with a bang that sounded like the impact of a hail pellet. Similarly an inexperienced shrike, noticing a pair of caged canaries which had been placed on a window ledge inside a front room, made a lunge at what may have seemed an easy capture, but was knocked unconscious, if not silly. The shrike was picked up but never rallied, but was sent to a taxidermist.

A ruffed grouse, whose history we wot of, once, when hotly chased by a hawk, darted at the window of the house of one of our acquaintances, broke the glass and gained ingress to the sheltering room, and was soon let out again through the hastily opened door, as there seemed reason to fear that the big bird would'nt emerge at the same aperture that had afforded an entrance.

A red squirrel that had gained entrance to the room of a dwelling, seemed to become panic stricken and made such a number of absurd attempts to burglarize the window glass, that several persons united in the work of eviction through a widely open door.

The instances of birds colliding in their headlong flight with telegraph wires are so common as no longer to excite surprise or comment. Dead birds which have ended their career in this fashion are very frequently picked up by the section men about here. The birds when seeking their food in the grass or herbage near the railway track are panic stricken by the sudden whistle of an onrushing train, and dart away at hap-hazard speed often in ill-guided bewilderment.

The railway section men also say that they recently picked up the mutilated remains of a full grown racoon that had loitered on the track the night previous ; the quadruped seemed to have been dazed by the glare of the seemingly unmoving headlight and remained undecided just one moment too long.

My brother James, who was employed for a large portion of his life in pioneer-like work in the forests, used to relate several grotesque traits, showing the impetuous force in bird-flight, as, for instance, once noticing the rapid approach of a wood thrush, to whose song he had for a short time been listening (he was standing at the time behind a large tree), suddenly jerked out his spread hand

right in the line of the thrush's flight, and the shock to the bird was so severe as to bring stunning and unconsciousness, and the point of the bird's beak penetrated the palm of the hand held out, target-like, as to make a wound that after healing left an indelible scar that my brother was accustomed to exhibit years after when narrating the incident.

The golden-quilled wood-pecker, the shore-lark, the meadow-lark and the quail are the birds said to most frequently meet their end by striking the telegraph wires, as reported of by the railway track repairers.

A number of the summer migrant birds are now fostering their second brood of the season. Yesterday (July 2nd) some corn-hoers disturbed a plover of the Kill-deer species that was sitting on four eggs placed in a slight depression of the ground near a hill of corn. It was said that the irritated bird threw most demoniacal looks at the disturbers of her peace and dignity. The bird was as little molested as possible, and the incubating process was soon resumed.

When ploughing in the same field about a month ago, a mother bird of the same species was noticed wandering with a brood of four young that were apparently only a few days out of the egg-shell, and one of the *Sand-pipers* has a nest with eggs situated but a few rods from the above. The eggs of these two birds differ but little in form, size or color.

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## THE BATTLE OF STONY CREEK.

*READ BEFORE THE HAMILTON ASSOCIATION.*

BY INSPECTOR J. H. SMITH.

By the splendor of its trappings, by the martial ardor which it inspires, by the heroic bravery of its devotees, and by the pomp and pageantry of its surroundings, war carries the mind of man away from its stern realities and shocking barbarities, where

"Naked plains and ravaged fields  
Succeed to smiling harvests, and the fruits of peaceful labor."

Could we, if only in imagination, visit the battlefield after the struggle is over, and see the mangled forms of the dead and dying, witness the desolation and destruction that follow in its train, and hear the wail of the widow and orphan as they mourn over loved ones, how differently should we look upon it! With what deep feelings of solicitude would our hearts be stirred if even rumors of war should reach the quiet of our homes! But how much greater would the intensity of these feelings be, if the pleasant valleys and hills of our native land should ever resound to the measured tread of invading armies!

Some such thoughts must naturally have arisen in the minds of these pioneer settlers when they learned that the authorities of the American Republic had openly proclaimed war against Great Britain. Among the peaceably disposed inhabitants of Canada, whose only crime appears to have been a warm attachment to the mother country, and an honest devotion to her laws and institutions, these alarming reports must have spread feelings of terror and dismay. To see their homes and their loved ones exposed to all the hardships and privations of an unprovoked war, and to witness the ruin of their country at the hands of a kindred people, speaking the same language, and holding in common the traditions of a glorious past, nerved them to deeds of valor and aroused a spirit of resistance that must ever command the respect and admiration of their posterity. Our forefathers had not forgotten the bitter experiences of the Revolutionary struggle,

nor yet had the courage which animated them during these trying times died out in the breasts of their sons. True in their devotion to British rule, and inspired by a deep, patriotic enthusiasm, they at once organized themselves into battalions of militia, took up arms, and were ready to lay down their lives in defence of home and country.

Whatever reasons there may have been to provoke the colonists to revolt in 1776, it is quite evident that the verdict of history does not in any way recognize the justice of the declaration of war in 1812. The difficulties that arose during the few preceding years might have been peaceably adjusted by the diplomatic agents of the two countries, had not a reckless Democratic majority, bent on conquest, determined to invade the homes of their peaceful and inoffensive neighbors to the north. This they did, but not one acre of territory was annexed, nor yet did they gain one single permanent advantage. On the contrary it strengthened the allegiance of the Canadian people and bound them more closely to the throne of Great Britain.

At this time the situation in Canada was indeed precarious. With a population of less than 300,000 all told, and these widely scattered in small settlements without any means of rapid communication, with a long and exposed boundary, and with the mother country embroiled in European wars, is it at all surprising that the hearts of these sturdy pioneers were filled with misgivings as to the fate of these colonies? Did not the burden seem greater than they could bear? Had they not been strong in their allegiance to Great Britain and true to the principles of their forefathers these provinces would have been conquered and Britain would have been stripped of her colonial possessions in America. However, Providence had decreed otherwise, and we are now left to work out our destiny as part of that Greater Britain, "upon whose shores the sun never sets." May we then as Canadians be true to our country, loyal to that great Empire of which we form a part, and ever bear in mind that this is the

"Land of the beautiful and brave  
The freeman's home—the martyr's grave,  
The nursery of giant men,  
Whose deeds have link'd with every glen,  
And every hill and mountain stream  
The romance of some warrior dream."

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In the western province the situation was even more desperate than it was in the east. When the war broke out it was estimated that the population of Upper Canada did not exceed 80,000. These were grouped in small settlements along the frontier, and were exposed to attack both by land and water. The principal centres were along the northern banks of the St. Lawrence, at Kingston, around the Bay of Quinte, at York (now Toronto), around the head of Lake Ontario, and along the Niagara River, with a few settlements on Lake Erie and the River Detroit. When we consider the sparseness of the population, for it did not exceed that of the County of Wentworth and the City of Hamilton combined, and the long frontier they were called upon to defend, the outcome of the war is indeed gratifying. Nor was the want of population the only drawback. The means of communication between these widely separated settlements was particularly bad, for the country had been settled less than thirty years, and the roads in most cases were merely paths cut through the forests. This rendered the transportation of troops and supplies a long and arduous task. The rapid concentration of an army at a given point is essential to the successful defence of any country. In addition to these disadvantages the mother country was engaged in war on the Continent, and could not furnish the necessary troops to defend her colonies as she would have done had she been free from European entanglements.

The United States declared war against Great Britain on the 18th of June, 1812, exactly three years before the decisive battle of Waterloo. Some of the causes that led to the gradual estrangement of the good-will of the Young Republic from the mother country, and eventually led to the declaration of war, are to be found in the series of events that occurred in Europe during the six preceding years. Embittered by the memories of the terrible blow inflicted on his navy at Trafalgar and the Nile, Napoleon, when the Prussian Monarchy had been humbled at Jena, turned fiercely upon Great Britain, and attempted the destruction of her commerce by issuing the famous "Berlin Decree." This decree was formally promulgated on the 21st of November, 1806, from Berlin, the Prussian Capital. Although it did not extinguish British commerce, yet it inflicted serious damage upon it, and caused heavy loss to many of her merchants. The rigorous enforcement of this decree compelled the

British Ministry to adopt defensive measures. Accordingly, on the 7th of January, 1807, the first "Order-in-Council" was issued. At first this was well received in the United States, but afterwards it was made a pretext for war. In June, 1807, an unfortunate incident occurred in the too rigid enforcement of the "right of search." The American frigate Cheseapeake had on board some deserters from the British Navy, whose return had been demanded by the British Consul at Norfolk, and by the captains of the vessels from which they had deserted. These demands were refused. Acting under instructions from Admiral Berkeley, Captain Humphries, of H. M. Ship Leopard, followed the Cheseapeake to sea, and, coming up with her, intimated that he desired to send a message to the commander. A letter was sent asking that the deserters, whose names were given, be restored to the British. Commodore Barron, the commander of the Cheseapeake, refused to comply with this request, whereupon the Leopard fired a broadside. A short skirmish ensued, which ended in the American vessel striking her colors, and restoring the deserters. This incident aroused a strong feeling of antipathy against Britain, which was greatly strengthened by the issue of an angry proclamation by the President on the 2nd of July following.

Events in Europe forced the British Ministry to issue a second "Order-in-Council," which was done on the 14th of November, 1807. Napoleon, on the 17th of the following December, issued the "Milan Decree" as an answer. Intelligence from Europe plainly indicated to the American authorities that the policy of France did not exempt the United States from the operations of the "Berlin Decree." Acting upon this information, Congress, on the 25th of December of that year, passed the "Embargo Act," which excluded all foreign vessels from sharing in the coasting trade.

Public opinion, which was constantly being fomented by demagogues and partizan politicians, steadily increased in its hostility towards Great Britain. To allay this feeling and to offer reparation for the affair of the Cheseapeake, the British Ministry sent an envoy extraordinary to America. His mission failed, owing to the refusal of the President to withdraw his proclamation of the 2nd of July. The "Embargo Act," seriously injured American commerce, and was soon superseded by a "Non-Intercourse Act," which failed to satisfy either its promoters or the public, and was therefore repealed.

Another maritime encounter between the American 44-gun Frigate President and the British 18-gun sloop Little Belt, which was destroyed on this occasion, added to the complications already existing. The American captain was tried by court-martial and acquitted. Great Britain accepted the official statement that no hostility was intended on the part of the American Government. The Americans had made an offer that if France would withdraw her decrees, or England the Orders-in-Council, she would prohibit her commerce from the other. Napoleon promised to revoke the "Berlin" and "Milan Decrees" if the Americans would carry out the policy of non-intercourse with Britain. This they did, but Napoleon failed to fulfil his promises.

The downfall of the Percival Ministry in Great Britain brought Lord Liverpool to the Premiership. With him was associated Lord Castlereagh, as Secretary of Foreign Affairs. Twelve days after this Ministry was formed the obnoxious "Orders-in-Council" were revoked. But it was too late; Congress had already declared war against Great Britain, and was massing her armies along the frontier of Canada.

From the tone of the President's message, and the tenor of the speeches delivered in Congress by some of the leading members of the Democratic party, it was clearly foreshadowed that Canada would be the objective point. They were quite confident of an easy conquest, as may be seen from the following extracts from speeches made in Congress prior to the declaration of war. Dr. Eustis, United States Secretary of War, said: "We can take Canada without soldiers; we have only to send officers into the Provinces, and the people, disaffected towards their own government, will rally round our standard." The Hon. Henry Clay, who in 1814 signed the treaty of peace as one of the Commissioners, expressed himself still more strongly: "It is absurd to suppose we shall not succeed in our enterprise against the enemy's provinces. We have the Canadas as much under our command as Great Britain has the ocean, and the way to conquer her on the ocean is to drive her from the land. We must take the continent from them. I wish never to see a peace till we do. God has given us the power and the means; we are to blame if we do not use them. If we get the continent she must allow us the freedom of the seas."

The Americans were ambitious of securing possession of and controlling the destinies of the whole of North America. Actuated by this motive, and taking advantage of the time when Britain was engaged in a fierce struggle with the First Napoleon, and when she was taxed to the utmost to maintain her supremacy, nay, even when her very existence as one of the great powers of Europe was threatened, the American Congress openly declared war. Their avowed object was to redress certain alleged grievances, notably some "Orders-in-Council" prohibiting all foreign vessels from trading with the French, and the "right of search" for deserters from her navy, but the real purpose, as shown by subsequent actions, was the acquisition of the Provinces of British North America. These "Orders-in-Council" as well as the "right of search," which formed the chief grounds of complaint were withdrawn by Britain, but the Americans still persisted in going on with the war.

The plan of campaign adopted by the Americans was to invade Canada by way of Lake Champlain in the east, by the Niagara River in the centre, and by the River Detroit in the west. Sir Isaac Brock, who was administrator during the absence of Sir Francis Gore, determined to make the first attack. Consequently he sent Captain Roberts to Fort Michillimackinac, which was surprised and taken. This confirmed the allegiance of the Northwest Indians and secured a valuable strategic point to the British. General Hull crossed the Detroit River at Sandwich, summoned the Canadians to lay down their arms and submit themselves to the Americans. They bravely refused to do, and defied both him and his army. In the meantime General Brock issued a proclamation from his headquarters at Fort George, to allay the fears and to strengthen the hands of the people in the west. He also sent Colonel Proctor with a small force to aid the garrison at Amherstburg. General Hull was driven back to Detroit and forced to surrender, which he did with the best grace possible. Along the Niagara River the Americans were defeated at Queenston Heights, while at Rouse's point in the east, they retired after a slight skirmish. Doubtless the temper of the Canadian people was a disappointment to them, for they anticipated an easy victory. In this they were very much deceived, for instead of being welcomed with open arms they met with the most determined resistance. Thus ended the campaign of 1812, with the British successful

at all points, but with the loss of their brave commander, Sir Isaac Brock.

"The mind that thought for Britain's weal,  
The hand that grasped the victor's steel."

The Americans conducted the campaign of 1813 on lines somewhat similar to that of 1812, but instead of attempting the conquest of the whole of British North America, they concentrated their efforts on the Province of Upper Canada. The American forces had been greatly strengthened during the winter, both on Lake Ontario and along the Niagara frontier. Commodore Chauncey made an attack on York, the Capital of Upper Canada, and, on the 27th of April, succeeded in capturing it. Here they remained until the 2nd of May, destroying the public buildings and plundering the churches and library. They then made a descent upon Fort George at the mouth of the Niagara River, where General Vincent was stationed with an army numbering something less than 1,400 men. Being unable to hold his position against the superior forces concentrated upon it, he retreated towards Burlington Heights.

Affairs in Upper Canada were rapidly approaching a crisis that was to decide the fate of the Canadas. There were only some 2,100 British troops available for the defence of the Upper Province. These were assisted by a noble band of militia who were determined to contest every foot of ground. The American army on the Niagara frontier numbered fully 6,000, and this, with the superiority of the American fleet on Lake Ontario, rendered the conquest of this province extremely probable. After the capture of Niagara, and the retreat of General Vincent to Burlington Heights, the military authorities were so disheartened that they determined to disband the militia, and abandon the western portion of this province to its fate. Accordingly, on the 28th May the militia were disbanded, and told that they might go home if they chose to do so. Some few returned to their homes to protect their families, and look after their private interests, but the great majority followed the army to Burlington Heights, determined to do all in their power to drive out the invaders. The Hon. W. H. Merritt, in his journal of the war, says: "I strongly suspected from the indifferent manner in which the militia were treated, that the Upper Province was to be abandoned, which opinion was entertained by most people. \* \*

I felt in a sad dilemma. The thought of abandoning the country and leaving everything that was near and dear to me was most distressing.

Continuing his narrative of the events preceding the battle of Stony Creek, Mr. Merritt says :

"On the evening of the 29th of April I was deputed by Brigadier General Vincent to bring down all the boats from Burlington, which was accomplished in sixteen hours. The enemy, with their fleet, returned to Fort Niagara. From this time until the 27th of May every man was turned out at two o'clock in the morning, and remained under arms. Some men were twelve nights in succession on guard. Our small force was formed into three divisions. Col. Myers, with 'Kings,' and two companies of militia, defended the lake coast to the Four Mile Creek; Col. Harvey, with three companies of Newfoundlands and three companies of Glengarrys, one company of the 41st, one company of the 44th, and two of militia, up the river to Queenston; General Vincent, with the 49th regiment and militia, in rear of Fort George, to act as occasion might require. Col. Harvey and myself rode up and down the river during the night and slept at day. On the 25th the enemy commenced operations by cannonading Fort George, which they burned. For want of ammunition we were unable to return fire. On the 27th, at four in the morning, they were discovered under cover of a thick fog. They commenced to land at 9 a. m. Our right and left divisions were obliged to fall back on the reserve, which, numbering but 800 men, were forced to retire.

"After finding the boats commanded by Commodore Barclay, who was at Twenty Mile Creek with the light company of the Kings, and ordering the troops down, I returned with them as far as 'Shipman's,' where I was met by a message and ordered to go to De Cew's, to which place the army had retreated. Remaining all night, I took the party through the woods, arriving there next morning at 9 o'clock on the 28th of May.

"This day the militia were disbanded and the regulars marched to Grimsby on the way to Burlington Heights. Early on the 29th I returned to the Twelve, at Shipman's, where the enemy had its advance guards. I remained at my father's until midnight, when I returned to Grimsby to report. Here I was ordered to remain with

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the troops and a few militia until driven off by the enemy. Their appearance next day with a flag of truce, shortly followed by a party whose force caused me to retreat to Stony Creek on the 1st June. During the next week we had several skirmishes in which I lost some of my men."

Mr. Merritt had previously organized a company of dragoons, and with these he was detailed to protect the rear of the retreating army. Being well acquainted with this section of the country, he was able to do this work effectively, although it taxed his men to the utmost, as they had little rest and scarcely any sleep for six or eight days. His acquaintance with the people enabled him to keep well posted in all the movements of the invaders. He used this knowledge to the great advantage of the British, but the enemy with their large invading force drove the pickets of the rear guard across the big creek near the Red Hill, and as far west as Aikman's. This was the position of the British when the Americans encamped near Stony Creek late in the afternoon of the 5th of June. Mr. Merritt, continuing his narrative, says:

"A reconnoissance by Colonel Harvey and Cornet McKenney revealed the fact that the enemy were encamped for the night at Stony Creek, and that they had a party of 1,500 men on the lake shore. On the return of the party sometime near midnight when Mr. Merritt and a number of officers were lying on the grass fast asleep, a suggestion was made either by Cornet McKenney or Mr. George, an ensign in the militia, that it would be a good idea to attack the enemy in their camp, and probably surprise them before daylight shewed the real state of their numbers. Col. Harvey approved of the plan and proposed it to General Vincent, who after a little deliberation proceeded to carry it into effect, much to the joy of all who left their homes a few days ago in grief and sadness of heart.

"In the silence of a warm summer's night the order to advance was quietly given, and never were preparations for a deadly grapple with an invading foe more heartily received. It has been truly and eloquently said that the battle of Stony Creek was neither a Waterloo nor an Inkerman, but that the issues at stake for the men of the Niagara peninsula were, everything equal, as important in their results as the success of the most dearly won field that ever the conquerors rested upon."

J. B. Lossing, in his sketches of the war of 1812, asserts that the countersign "was obtained from a treacherous dweller near, who, by false pretenses, had procured and conveyed it to General Vincent."

There is a tradition that the statement made by Lossing is not wholly devoid of truth. The person referred to as "a treacherous dweller near," was Mr. Isaac Corman, who then lived on lot 22, in the 3rd concession of Saltfleet. It appears that when the advance pickets of the invading army approached Stony Creek on the afternoon of the 5th June, they saw a man setting gate posts at the end of the lane leading to his house. They took this man prisoner and marched him to the lake shore where some 1,500 of the Americans were encamped. He was left in charge of an officer who at first treated him with scant courtesy. Hearing this officer speak of Kentucky, he informed him that he too was a Kentuckian. This produced a great change in the bearing of the officer, who, after this declaration, treated him as a friend and not as a foe. They engaged freely in conversation when Corman told him that he was a cousin of General W. H. Harrison, then commanding the American army in the west, and as boys they had many a time played together at school. This established confidence, and the officer gave him permission to return to his home. Mr. Corman asked how he was to pass the sentries. The officer, placing the fullest confidence in his integrity, gave him the countersign, and he at once started on his way.

In the meantime Mrs. Corman had become very anxious as to the fate of her husband. While busy with her household cares, who should come in but her youngest brother William, then a young man of 19, and who was afterwards known as "Billy Green the scout." She informed him that her husband had been made a prisoner while at work, and was then in the hands of the Americans. They talked the matter over very earnestly, when young Green determined to make a search for his missing brother-in-law, and if possible find out where he was confined. He started in the direction of the lake shore and was fortunate enough to meet his brother-in-law at Davis' on his way home. Here Corman gave the countersign to young Green, who at once started for his home on the mountain. It was now getting quite dark. After several nar-

row escapes from being captured by the sentries he reached his home. It is said that on one occasion so completely was he hemmed in that he got down on all fours and trotted across the road like a dog, and made good his escape into the woods. When he reached home, he got a horse from his brother Levi, and followed the bush road by way of Mount Albion as far as the top of the mountain south of Hamilton, where he left his horse with a friend. He then proceeded on foot to Burlington Heights, where he met Col. Harvey and gave him the countersign. Col. Harvey consulted with General Vincent and his brother officers, when they decided to make a night attack on the enemy. Preparations were at once made, and the army began its march to Stony Creek. The weight of evidence fixes the time of this attack as about 2 o'clock in the morning of the 6th of June. It is said that he piloted Col. Harvey and his men on their march through the forests and led the advance at Stony Creek.

The American countersign used on this occasion, so tradition says, consisted of the first syllables of General W. H. Harrison's name, and was given in the following manner: Sentry to stranger—"Who goes there?" Stranger—"A friend." Sentry—"Approach, friend, and give the countersign." The sentry then takes the position of "charge," and presents the point of his bayonet to the breast of the stranger, and keeps it there until the countersign is given. Stranger at point of bayonet—"Will." Sentry—"Hen." Stranger—"Har." The sentry lowers his musket and allows the stranger to pass.

It seems quite evident that the British authorities had obtained the American countersign from some source, for they not only passed the sentries, but reached the centre of the camp before the Americans were aware of their presence.

Corman, after parting with young Green, continued his journey eastward to his own home. Hearing a noise behind him, he turned to discover the cause, when he was seized by three American soldiers who took him prisoner a second time. They accompanied him home and remained on guard at his house over night. Early next morning news came that the American army was in full retreat. On hearing this the guards forsook their posts and joined their retreating comrades. In their hurry to depart they left some sacks

and a soldier's canteen. These articles were kept for many years by the Corman family as mementoes of this visit.

The reader will pardon a slight digression here in order that a brief account of the young man who carried the countersign to Col. Harvey may be given. "Billy Green the scout" was the youngest son of Adam Green, who emigrated from New Jersey to Canada in 1792, and settled on the mountain in Saltfleet, a little to the south of Stony Creek. As a boy he shunned companionship, and loved to wander in the woods alone. He was an expert climber, seemed to have no sense of danger, and was perfectly at home in the forests. It is said that he could climb almost any tree, run out on one of its branches, jump across to the limbs of another, and thus go from tree to tree much as a squirrel does. He was active in movement, quick in decision, very impulsive, and seldom thought of the consequences of any act. Hence he was well fitted for any daring adventure, and seemed to delight in danger of any kind. He differed from the other members of his father's family, and led quite an eventful life. He died in Saltfleet in the 89th year of his age.

Mr. Merritt gives the following description of this important battle :

"The order came to move forward : we had to march six miles before we came up to our pickets : our force consisted of only 500 men, with one field piece in the rear, which was of no manner of use. All my hopes depended on this bold enterprise, for had we not attacked them, they would have advanced next morning, and in all probability we should have retired without risking an action, as our force was not one-third of theirs. Proctor and the whole upper country would have fallen.

"On our arrival at Davis' we heard the report of a gun from their picket ; the detachment halted, formed into sections, and the loading was drawn from each gun. The light companies of the 49th Kings were in advance ; General Vincent and staff at the head of the column, in the rear. I was attached to him for the night. The enemy were encamped on Gage's fields, in a very advantageous position ; 2000 of their men were on the hill to the right of the road (i. e., on the south side), and 500 in a lane on the left (the north side) in advance of their artillery, which was situated on a hill directly

in front of the road that our troops must come ; their pickets nearly half a mile in advance also in the woods. These we made prisoners without giving alarm. On our entering the clearing we were fired on by the second picket who were more alert. The 500 on our left were the first that were discovered.

"General Vincent ordered a charge, and our men set up a tremendous shout, which continued along the whole line, and was the cause of throwing the enemy into the greatest disorder and confusion imaginable. Our two light companies of the 49th routed the 500 men before the main body had time to come up. Cornet George was by my side, and told me the fight was over and the victory ours.

"I happened to cast my eyes around and discovered the fires of the main body, which I showed to him. Col. Harvey and the officers were using every exertion to get the men formed when the enemy opened a most tremendous fire on us from the hill, and likewise opened from their guns on the opposite side. Our men dispersed in every direction, and had not Colonel Penderlethe with 30 men, charged and captured their guns, we should have been completely defeated. I never heard so rapid a discharge of musketry ; the hill was a continual sheet of fire. However, after capturing their artillery and both their generals, they thought proper to retreat from the field. At the appearance of daylight we followed their example, fearing that when they discovered our force they would renew the attack.

"After we left the field Col. Harvey desired me to return, and, if possible, find Major-General Vincent, supposed to be either dead or wounded. Not thinking of the enemy, I was challenged by a sentry under old Gage's house. I was on the point of surrendering as my pistols were both in my holsters, when I adopted the stratagem of enquiring, "Who placed him there?" and rode up to him. He, by my blue military coat, took me for one of his own party, and answered—"his captain, who had just gone into the house with a party of men." I then enquired if he had found the British General, and pulled out my pistol, which made him drop his gun. At that moment a man without any gun ran down the hill ; I called him ; he came, when I had the good fortune to secure both, and bring them off. This stratagem had succeeded once before, or I should not have thought of it.

"The enemy retreated next morning, followed by droves of Indians and militia, who, on hearing of the fight, gathered from all parts."

The defeat of the British at Moraviantown forced them to continue their retreat from the west. After a long and toilsome journey, during which they endured severe privations, and suffered greatly from the hardships incident to a march through an almost unbroken forest, they reached the village of Ancaster on the 17th of the same month. When the inhabitants of this quiet country place heard of the reverses in the west, and saw the straggling groups of soldiers as they entered the village, their minds were filled with grave apprehensions as to their own safety. It seemed to them inevitable that they should witness the destruction of their homes and property. The panic spread rapidly, but as no victorious army followed, quiet was soon restored. The remnant of Proctor's army reached Burlington Heights, where they met the Centre army on their retreat from Niagara, for Sir George Prevost had issued orders to General Vincent to evacuate all the British posts, and to retire to Kingston with the least possible delay. At Burlington Heights they held a council of war, when it was decided that the western part of the province should be defended at all hazards.

A picture with true perspective gives to the eye an accurate representation of the scene which it depicts, so the placing of the battle of Stony Cr ek, and the council of war at Burlington Heights in their true historical perspective, enables us to form a more correct estimate of their importance. The time at which these events occurred was undoubtedly the crucial period of our history, and the loyalty and devotion of the people were tried as if by fire. The crisis of the war was safely passed, although unknown to the actors in the struggle. These two places are indeed historic ground, and as Canadians we should show our appreciation of their true worth by erecting some monument to commemorate these events.

"Yet this 'battle' sways the future, and behind the dim unknown  
 Standeth God within the shadow keeping watch above His own.  
 We see dimly in the present what is small and what is great,  
 Slow of faith, how weak an arm may turn the iron helm of fate."

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## CURATOR'S REPORT.

*Donations to Hamilton Association Museum, 1896-97.*

14 grains of wheat, said to have been taken from an Egyptian mummy of the time of Joseph.

1 A small Scarabæus from Egypt.

7 small silver coins, Mexican and Turkish:

1 A piece of Japanese brocaded silk, a hundred years old.

2 Bancos Japan-ware tea-pots.

3 brown social teapots.

2 small milk jugs.

1 cup and saucer of fine china.

1 Chinese sweet-pot.

1 Sandal-wood fan (Chinese).

1 Japan bath roller ball, used after taking a bath.

2 bean seeds.

2 Japanese children's dolls. These are highly prized, and are handed down from generation to generation.

A copy of the first Japanese newspaper, "The Japan Herald," September, 1896.

Donated by Mrs. S. J. Myles, Oakland, Cal., U. S.

A memorial from Balaclava: a small, round tobacco-box, found in the pocket of a dead soldier on the field of battle. Donated by Mrs. G. MacKelcan.

A piece of the steam-boat Victoria, wrecked in the river Thames, London, Ont., May 24th, 1881. Donated by Mrs. J. Allan, Hamilton.

A very large collection of shells, corals and Indian stone implements; Chinese and Japanese curiosities—a large collection; curious parrot fishes; old newspapers and books, etc.; a few mineral and fossil specimens. Loaned by Mrs. Carry, Hamilton.

ALEX. GAVILLER,

*Curator.*

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JOURNAL AND PROCEEDINGS.

HAMILTON ASSOCIATION.

Statement of Receipts and Disbursements for the Session 1896-97.

RECEIPTS.

|                              |          |
|------------------------------|----------|
| Cash balance from 1896 ..... | \$230 55 |
| Government Grant .....       | 400 00   |
| Anonymous Grant .....        | 20 00    |
| Members' Subscriptions ..... | 124 00   |
|                              | <hr/>    |
|                              | \$774 55 |

DISBURSEMENTS.

|                                      |          |
|--------------------------------------|----------|
| Rent Museum and Dark Room .....      | \$170 50 |
| Caretaker .....                      | 42 00    |
| Expenses Photographic Exhibits ..... | 63 93    |
| Gas .....                            | 10 35    |
| Postage, Stationery, etc. ....       | 26 00    |
| Printing .....                       | 31 00    |
| Annual Reports .....                 | 189 00   |
| Grant to Photographic Section .....  | 74 39    |
| Sundries .....                       | 75 35    |
| Balance on hand .....                | 92 03    |
|                                      | <hr/>    |
|                                      | \$774 55 |

We have examined the vouchers and found them correct.

H. P. BONNEY,  
 F. HANSEL, } *Auditors.*

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## FLORA OF HAMILTON DISTRICT.

BY J. M. DICKSON AND A. ALEXANDER, F. S. S.

In preparing this list we have followed the classification and nomenclature of Dr. Asa Gray's Manual of the Botany of the Northern United States, sixth edition, second issue.

We have endeavored to make it as complete and as free from errors as possible; doubtful specimens having been submitted to John Macoun, M. A., F. L. S., F. R. S. C., Dominion Botanist, for positive identification.

Names of plants followed by (Craigie), (Logie) or (Buchan) are simply copied from lists previously published by these gentlemen.

Dr. Craigie, *Canadian Journal*, 1852. (We have not been able to obtain an original copy of this list.)

Judge Logie—"Flora of Hamilton." List of plants found growing in the neighborhood of Hamilton during the years 1859-61, including plants collected by Miss Kate Crooks: *Annals of the Botanical Society of Canada*.

J. M. Buchan, M. A.—"Flora Hamiltonensis." *Proceedings of the Canadian Institute*, 1883-84

### RANUNCULACEAE.

- Clematis Virginiana—L.
- " verticillaris—D. C.
- Anemone cylindrica—Gray.
- " Virginiana—L.
- " Pennsylvanica—L.
- " nemorosa—L.
- " var. quinquefolia.
- Hepatica triloba—Chaix.
- " acutiloba—D. C.
- Anemonella thalictroides—Spach.
- Thalictrum dioicum—L.
- " polygamum—Muhl.
- " purpurascens—L.

- Ranunculus aquatilis—L., var. trichophyllus—Gray.  
 " multifidus—Pursh.  
 " Flammula—L., var. reptans—E. Meyer.  
 " pusillus—Poir. (Logie.)  
 " abortivus—L.  
 " sceleratus—L.  
 " recurvatus—Poir.  
 " fascicularis—Muhl.  
 " repens—L.  
 " Pennsylvanicus—L. f.  
 " bulbosus—L.  
 " acris—L.

- Caltha palustris—L.  
 Coptis trifolia—Salisb.  
 Aquilegia Canadensis—L.  
 Delphinium *Consolida*—L.  
 Cimicifuga racemosa—Nutt.  
 Actea spicata—L., var. rubra—Ait.  
 " alba—Bigelow.

## MAGNOLIACEAE.

- Liriodendron Tulipifera—L.

## MENISPERMACEAE.

- Menispermum Canadense—L.

## BERBERIDACEAE.

- Berberis *vulgaris*—L.  
 Caulophyllum thalictroides—Michx.  
 Podophyllum peltatum—L.

## NYMPHÆACEAE.

- Nymphaea odorata—Ait. (Logie).  
 " reniformis—D. C.  
 Nuphar advena—Ait. f.

## SARRACENIACEAE.

- Sarracenia purpurea—L.

## PAPAVERACEAE.

- Sanguinaria Canadensis—L.

Chelidonium *majus*—L.  
 Papaver *Argemone*—L. (Buchan).

## FUMARIACEAE.

Adlumia *cirrrosa*—Raf. (Logie).  
 Dicentra *Cucullaria*—D. C.  
 “ *Canadensis*—D. C.  
 Corydalis *glauca*—Pursh.  
 Fumaria *officinalis*—L. (Logie).

## CRUCIFERAE.

Dentaria *diphylla*—L.  
 “ *laciniata*—Muhl.  
 “ *heterophylla*—Nutt. (Buchan.)  
 Cardamine *rhomboidea*—D. C.  
 “ “ *var. purpurea*—Torr.  
 “ *rotundifolia*—Michx.  
 “ *pratensis*—L.  
 “ *hirsuta*—L.  
 “ *Pennsylvanica*—Muhl.  
 Arabis *hirsuta*—Scop.  
 “ *laevigata*—Poir.  
 “ *Canadensis*—L.  
 Draba *Caroliniana*—Walt.  
 Alyssum *calycinum*—L.  
 Camelina *sativa*—Crantz.  
 Nasturtium *officinale*—R. Br.  
 “ *sylvestre*, R. Br. (Buchan.)  
 “ *palustre*—D. C.  
 “ “ *var. hispidum*.  
 “ *Armoracia*—Fries.  
 Barbarea *vulgaris*—R. Br. (Craigie.)  
 Erysimum *cheiranthoides*—L.  
 Sisymbrium *canescens*—Nutt.  
 “ *officinale*—Scop.  
 Brassica *Sinapistrum*—Boiss.  
 “ *nigra*—Koch.  
 Capsella *Bursa-pastoris*—Moench.  
 Thlaspi *arvense*—L.

- Lepidium Virginicum—L.  
 “ intermedium—Gray. (Logie.)  
 “ ruderale—L.  
 “ campestre—Br.

Cakile Americana—Nutt.

Raphanus *Raphanistrum*—L.

CAPPARIDACEAE.

Polanisia graveolens—Raf.

CISTACEAE.

Helianthemum Canadense—Michx.

Lechea minor—L.

VIOLACEAE.

- Viola palmata, var. cucullata—Gray.  
 “ sagittata—Ait.  
 “ Selkirkii—Pursh.  
 “ palustris—L.  
 “ blanda—Willd.  
 “ “ —var. renifolia—Gray.  
 “ lanceolata—L.  
 “ pubescens—Ait.  
 “ Canadensis—L.  
 “ striata—Ait. (Logie.)  
 “ rostrata—Pursh.  
 “ canina—L., var. Muhlenbergii—Gray.  
 “ tricolor—L.  
 “ “ var. arvensis.

CARYOPHYLLACEAE.

- Dianthus barbatus—L.  
 Saponaria officinalis, L.  
 “ Vaccaria—L.  
 Silene Cucubalus—Wibel.  
 “ antirrhina—L.  
 “ noctiflora—L.  
 Lychnis Githago—Lam.  
 Arenaria serpyllifolia—L.  
 “ Michauxii—Hook, f.  
 “ lateriflora—L.

- Stellaria media*—Smith.  
 “ *longifolia*—Muhl.  
 “ *longipes*—Goldie. (Buchan).  
*Cerastium viscosum*—L.  
 “ *vulgatum*—L.  
 “ *nutans*—Raf.  
 “ *arvense*—L.  
 “ “ *var. oblongifolium*—Hall and Britt.

## PORTULACACEAE.

- Portulaca oleracea*—L.  
 “ *grandiflora*—Hook. (Buchan).  
*Claytonia Virginica*—L.  
 “ *Caroliniana*—Michx. (Logie).

## HYPERICACEAE.

- Hypericum Kalmianum*—L. (Logie)  
 “ *ellipticum*—Hook.  
 “ *perforatum*—L.  
 “ *maculatum*—Watt.  
 “ *mutilum*—L. (Buchan).  
 “ *Canadense var. minimum*—Chois.

- Elodes campanulata*—Pursh.

## MALVACEAE.

- Malva rotundifolia*—L.  
 “ *sylvestris*—L.  
 “ *moschata*—L.  
*Callirrhoe digitata*.—Nutt.  
*Abutilon Avicenna*—Gaertn.

## TILIACEAE.

- Tilia Americana*—L.

## LINACEAE.

- Linum Virginianum*—L.  
 “ *usitatissimum*—L.

## GERANIACEAE.

- Geranium maculatum*.—L.  
 “ *Robertianum*—L.  
 “ *pusillum*—L.

*Erodium cicutarium*—L'Her. (Logie & Buchan).

*Oxalis corniculata* var. *stricta*—Sav.

*Impatiens pallida*—Nutt.

“ *fulva*.—Nutt.

RUTACEAE.

*Xanthoxylum Americanum*—Mill.

ILICINEAE.

*Ilex verticillata*—Gray.

*Nemopanthes fascicularis*—Raf.

CELASTRACEAE.

*Celastrus scandens*—L.

*Euonymus atropurpureus*—Jacq. (introduced).

“ *Americanus*, var. *abovatus*—Torr. & Gray.

RHAMNACEAE.

*Rhamnus alnifolia*—L'Her. (Logie).

*Ceanothus Americanus*—L.

VITACEAE.

*Vitis Labrusca*—L. (Buchan).

“ *cordifolia*—Michx.

“ *riparia*—Michx.

*Ampelopsis quinquefolia*—Michx.

SAPINDACEAE.

*Aesculus Hippocastanum*—L.

*Acer spicatum*—Lam.

“ *saccharinum*—Wang.

“ *dasycarpum*—Ehrh.

“ *rubrum*—L.

*Negundo aceroides*—Moench. (introduced)

*Staphylea trifolia*—L.

ANACARDIACEAE.

*Rhus typhina*—L.

“ *Toxicodendron*—L.

POLYGALACEAE.

*Polygala paucifolia*—Willd.

“ *polygama*—Walter.

- Polygala Senega—L.  
 “ “ “ var. *latifolia*—Torr. & Gray.  
 “ *sanguinea*—L. (Logie & Buchan).  
 “ *fastigiata*—Nutt. (Craigie).  
 “ *verticillata*—L.

## LEGUMINOSAE.

- Baptisia tinctoria—R. Br. (Craigie).  
 Lupinus perennis—L.  
 Trifolium *arvense*—L.  
 “ *pratense*—L.  
 “ *repens*—L.  
 “ *hybridum*—L.  
 “ *procumbens*—L.  
 “ *incarnatum*.  
 Melilotus *officinalis*—Willd.  
 “ *alba*—Lam.  
 Medicago *sativa*—L.  
 “ *lupulina*—L.  
 Robinia Pseudacacia—L.  
 “ *viscosa*—Vent.  
 Astragalus *Canadensis*—L.  
 “ *Cooperi*—Gray.  
 Desmodium *nudiflorum*—D. C.  
 “ *acuminatum*—D. C.  
 “ *rotundifolium*—D. C.  
 “ *cuspidatum*—Torr. & Gray.  
 “ *Dillenii*—Darlingt. (Craigie.)  
 “ *paniculatum*—D. C.  
 “ *Canadense*—D. C.  
 Lespedeza *procumbens*—Michx. (Logie.)  
 “ *violacea*—Pers.  
 “ *polystachya*—Michx. (Logie.)  
 “ *capitata*—Michx.  
 Vicia *sativa*—L.  
 “ “ var. *angustifolia*—Seringe.  
 “ *hirsuta*—Koch. (Logie).  
 “ *Caroliniana*—Walt.

- Vicia Americana—Muhl. (Craigie).  
 “ *sepium*—L.  
 Lathyrus maritimus—Bigelow.  
 “ ochroleucus—Hook.  
 “ palustris—L.  
 “ “ var. myrtifolius—Gray.  
 “ *pratensis*—L. (Logie).  
 Apios tuberosa—Moench.  
 Strophostyles angulosa—Ell.  
 Amphicarpaea monoica—Nutt.  
 Gleditschia triacanthos—L.

## ROSACEAE.

- Prunus Americana<sup>1</sup>—Marshall  
 “ Pennsylvanica—L. f.  
 “ Virginiana—L.  
 “ serotina—Ehrh.  
 “ *Cerasus*—L.  
 Spiraea salicifolia—L.  
 “ tomentosa—L.  
 Physocarpus opulifolius—Maxim  
 Gillenia trifoliata—Moench.  
 Rubus odoratus—L.  
 “ triflorus—Richardson.  
 “ strigosus—Michx.  
 “ Occidentalis—L.  
 “ villosus—Ait.  
 “ Canadensis—L.  
 “ hispidus—L. Aut.  
 Dalibarda repens—L.  
 Geum album—Gmelin.  
 “ Virginianum—L. (Craigie).  
 “ strictum—Ait.  
 “ rivale—L.  
 Waldsteinia fragarioides—Tratt.  
 Fragaria Virginiana—Mill.  
 “ “ var. Illinoensis—Gray.  
 “ vesca—L.

- Potentilla arguta—Pursh.  
 “ Norvegica—L.  
 “ supina—L.  
 “ *recta*—L.  
 “ argentea—L.  
 “ palustris—Scop.  
 “ Anserina—L.  
 “ Canadensis—L.  
 Agrimonia Eupatoria—L.  
 Poterium *Sanguisorba*—L.  
 Rosa blanda—Ait.  
 “ Carolina—L.  
 “ lucida—Ehrh.  
 “ humilis—Marsh.  
 “ *micrantha*—Smith. (Logie).  
 “ *rubiginosa*—L.  
 “ *cinnamomea*—L.  
 Pyrus *Malus*—L.  
 “ *communis*—L.  
 “ coronaria—L.  
 “ arbutifolia var. *melanocarpa*—Hook.  
 “ *aucuparia*—Gaertn.  
 Crataegus *oxyacantha*—L.  
 “ *coocinea*—L.  
 “ *tomentosa*—L.  
 “ *punctata*—Jacq.  
 “ *Crus-galli*—L.  
 Amelanchier *Canadensis*—Torr. & Gray.  
 “ “ var. *oblongifolia*—Torr. & Gray.

## SAXIFRAGACEAE.

- Saxifraga *Virginicensis*—Michx.  
 Tiarella *cordifolia*—L.  
 Mitella *diphylla*—L.  
 “ *nuda*—L.  
 Chrysosplenium *Americanum*—Schwein.  
 Parnassia *Caroliniana*—Michx.  
 Ribes *Cynosbati*—L.

- Ribes rotundifolium*—Michx.  
 " *oxyacanthoides*—L. (Logie.)  
 " *lacustre*—Poir.  
 " *prostratum*—L'Her. (Logie.)  
 " *floridum*—H'Her.  
 " *rubrum*—L., var. *subglandulosum*—Maxim. (Logie.)

## CRASSULACEAE.

- Penthorum sedoides*—L.  
*Sedum ternatum*—Michx. (Buchan.)  
 " *acre*—L.  
 " *Telephium*—L.

## DROSERACEAE.

- Drosera rotundifolia*—L.

## HAMAMELIDEAE.

- Hamamelis Virginiana*—L.

## HALORAGACEAE.

- Myriophyllum spicatum*—L. (Buchan.)  
 " *verticillatum*—L. (Logie.)  
 " *heterophyllum*—Michx. (Logie.)  
 " *tenellum*—Bigelow (Logie.)  
*Hippuris vulgaris*—L.

## LYTHRACEAE.

- Decodon verticillatus*—Eill.

## ONAGRACEAE.

- Epilobium angustifolium*—L.  
 " *hirsutum*—L.  
 " *lineare*—Muhl.  
 " *strictum*—Muhl. (Logie.)  
 " *coloratum* (?)—Muhl.  
 " *adénocaulon*—Haussk.  
 " *palustre*—L.  
*Oenothera biennis*—L.  
 " " var. *grandiflora*—Lindl.  
 " *pumila*—L.

- Circaea* *Lutetiana*—L.  
 “ *alpina*—L.

## CUCURBITACEAE.

- Sicyos angulatus*—L. (Logie).  
*Echinocystis lobata*—Torr. & Gray.

## FICOIDEAE.

- Mollugo verticillata*—L.

## UMBELLIFERAE.

- Daucus Carota*—L.  
*Angelica atropurpurea*—L.  
*Conioselinum Canadense*—Torr. & Gray.  
*Heracleum lanatum*—Michx.  
*Pastinaca sativa*—L.  
*Thaspium aureum*—Nutt.  
*Pimpinella integerrima*—Benth & Hook.  
*Cryptotaenia Canadensis*—D. C.  
*Sium cicutaeifolium*—Gmelin.  
*Carum Carui*—L.  
*Cicuta maculata*—L.  
 “ *bulbifera*—L.  
*Osmorrhiza brevistylis*—D. C.  
 “ *longistylis*—D. C.  
*Hydrocotyle Americana*—L.  
*Sanicula Marylandica*—L.  
 “ “ *var. Canadensis*—Torr.

## ARALIACEAE.

- Aralia racemosa*—L.  
 “ *nudicaulis*—L.  
 “ *quinquefolia*—Decsne. & Planch.  
 “ *trifolia*—Decsne. & Planch.

## CORNACEAE.

- Cornus Canadensis*—L.  
 “ *florida*—L.  
 “ *circinata*—L'Her.  
 “ *stolonifera*—Michx.

*Cornus paniculata*—L'Her.

“ *alternifolia*—L. f.

CAPRIFOLIACEAE.

*Sambucus Canadensis*—L.

“ *racemosa*—L.

*Viburnum Opulus*—L.

“ *acerifolium*—L.

“ *pubescens*—Pursh.

“ *cassinoides*—L.

“ *Lentago*—L.

*Triosteum perfoliatum*—L.

*Linnaea borealis*—L.

*Symphoricarpos occidentalis*—Hook. (Logie).

“ *racemosus*—Michx.

“ “ var. *pauciflorus*—Robbins.

*Lonicera ciliata*—Muhl.

“ *hirsuta*—Eaton. (Buchan).

“ *Sullivantii*—Gray. (Logie).

“ *glauca*—Hill.

“ *Tartarica*—L.

*Diervilla trifida*—Moench.

RUBIACEAE.

*Cephalanthus occidentalis*—L.

*Mitchella repens*—L.

*Galium verum*—L.

“ *Aparine*—L.

“ *lanceolatum*—Torr.

“ *boreale*—L.

“ *trifidum*—L.

“ *asprellum*—Michx.

“ *triflorum*—Michx.

*Asperula arvensis*—L.

DIPSACEAE.

*Dipsacus sylvestris*—Mill.

COMPOSITAE.

*Eupatorium purpureum*—L.

“ *perfoliatum*—L.

- Eupatorium ageratoides*—L.  
*Liatris cylindracea*—Michx.  
*Solidago squarrosa*—Muhl.  
 “ *caesia*—L.  
 “ *latifolia*—L.  
 “ *bicolor*—L.  
 “ *humilis*—Pursh.  
 “ *stricta*—Ait. (Logie).  
 “ *puberula*—Nutt. (Craigie).  
 “ *speciosa*—Nutt.  
 “ *odora*—Ait. (Logie).  
 “ *pätula*—Muhl.  
 “ *rugosa*—Mill.  
 “ *ulmifolia*—Muhl (Buchan).  
 “ *arguta*—Ait.  
 “ *juncea*—Ait.  
 “ “ *var. scabrella*—Gray.  
 “ *serotina*—Ait.  
 “ “ *var. gigantea*—Gray.  
 “ *Canadensis*—L.  
 “ “ *var. scabra*.  
 “ *nemoralis*—Ait.  
 “ *rigida*—L.  
 “ *lanceolata*—L.  
*Aster corymbosus*—Ait.  
 “ *macrophyllus*—L.  
 “ *Novae-Angliae*—L.  
 “ *patens*—Ait. (Craigie).  
 “ *azureus*—Lindl.  
 “ *undulatus*—L.  
 “ *cordifolius*—L.  
 “ *sagittifolius*—Willd.  
 “ *laevis*—L.  
 “ *multiflorus*—Ait.  
 “ *dumosus*—L. (Craigie).  
 “ *diffusus*—Ait.  
 “ *Tradescanti*—L.  
 “ *paniculatus*—Lam.

- Aster salicifolius—Ait. (Buchan).  
 “ Novi-Belgii—L. (Craigie).  
 “ prenanthoides—Muhl. (Craigie).  
 “ puniceus—L.  
 “ umbellatus—Mill.  
 “ ptarmicoides—Torr. & Gray.  
 “ acuminatus—Michx. (Craigie).  
 “ tenuifolius—L.  
 Erigeron Canadensis—L.  
 “ annuus—Pers.  
 “ strigosus—Muhl.  
 “ hyssopifolius—Michx.  
 “ bellidifolius—Muhl.  
 “ Philadelphicus—L.  
 Antennaria plantaginifolia—Hook.  
 Anaphalis margaritacea—Benth & Hook.  
 Gnaphalium polycephalum—Michx.  
 “ decurrens—Ives.  
 “ uliginosum—L.  
 Inula *Helenium*—L.  
 Polymnia Canadensis—L.  
 Ambrosia artemisiaefolia—L.  
 Xanthium *spinosa*—L.  
 “ *strumarium*—L. (Logie).  
 “ Canadense—Mill.  
 Heliopsis laevis—Pers.  
 “ scabra—Dunal.  
 Rudbeckia laciniata—L.  
 “ hirta—L.  
 Helianthus giganteus—L.  
 “ divaricatus—L.  
 “ strumosus—L.  
 “ decapetalus—L.  
 Bidens frondosa—L.  
 “ connata—Muhl.  
 “ cernua—L.  
 “ chrysanthemoides—Michx.  
 “ Beckii—Torr.

- Helenium autumnale—L. (Logie).  
 Anthemis *Cōtula*—D. C.  
 Achillea Millefolium—L.  
 Chrysanthemum *Leucanthemum*—L.  
     " *Balsamitae*—L.  
 Tanacetum *vulgare*—L.  
 Artemisia Canadensis—Michx.  
     " Ludoviciana—Nutt. (Craigie).  
     " *Abrotinum*—L.  
     " *vulgaris*—L.  
     " biennis—Willd.  
     " *Absinthium*—L.  
 Petasites palmata—Gray.  
 Senecio *vulgaris*—L.  
     " lobatus—Pers. (Logie).  
     " palustris (?)—Hook. (Logie).  
     " aureus—L.  
     " *Jacobaea*—L.  
 Erechites hieracifolia—Raf.  
 Arctium *Lappa*—L.  
 Cnicus *lanceolatus*—Hoffm.  
     " altissimus var. discolor—Gray.  
     " muticus—Pursh.  
     " *arvensis*—Hoffm.  
 Onopordon *Acanthium*—L.  
 Centaurea *Cyanus*—L.  
     " *nigra*—L.  
 Lampsana *communis*—L. (Logie.)  
 Cichorium *Intybus*—L.  
 Tragopogon *porrifolius*—L.  
 Leontodon *autumnalis*—L.  
 Hieracium *aurantiacum*—L.  
     " *murorum*—L.  
     " Canadense—Michx.  
     " paniculatum—L.  
     " venosum—L.  
     " scabrum—Michx.  
     " Gronovii—L.

*Hieracium longipilum*—Torr. (Craigie & Logie.)

*Prenanthes alba*—L.

“ *serpentaria*—Pursh.

“ *altissima*—L.

*Taraxacum officinale*—Weber.

*Lactuca sativa*—L.

“ *Canadensis*—L.

“ *Floridana*—Gaertn. (Logie.)

“ *leucophæa*—Gray.

*Sonchus oleraceus*—L.

“ *asper*—Vill.

“ *arvensis*—L.

LOBELIACEAE.

*Lobelia cardinalis*—L.

“ *syphilitica*—L.

“ *puberula*—Michx (Craigie.)

“ *spicata*—Lam.

“ *inflata*—L.

“ *Dortmanna*—L.

CAMPANULACEAE.

*Specularia perfoliata*—A. DC.

*Campanula rapunculoides*—L.

“ *rotundifolia*—L.

“ *aparinoides*—Pursh.

“ *Americana*—L.

ERICACEAE.

*Gaylussacia resinosa*—Torr. & Gray.

*Vaccinium stamineum*—L.

“ *Pennsylvanicum*—Lam.

“ *vacillans*—Solander.

“ *corymbosum*—L.

“ *macrocarpon*—Ait.

*Chiogenes serpyllifolia*—Salisb.

*Gaultheria procumbens*—L.

*Cassandra calyculata*—Don.

*Kalmia glauca*—Ait.

*Ledum latifolium*—Ait.

- Chimaphila umbellata*—Nutt.  
 " *maculata*—Pursh (Craigie).  
*Moneses grandiflora*—Salisb.  
*Pyrola secunda*—L.  
 " *elliptica*—Nutt.  
 " *rotundifolia*—L.  
 " " var. *asarifolia*—Hook.  
 " " " *uliginosa*—Gray.  
 " " " *incarnata*—DC.  
*Pterospora Andromedea*—Nutt. (Logie).  
*Monotropa uniflora*—L.  
 " *Hypopitys*—L. (Logie).

## PRIMULACEAE.

- Trientalis Americana*—Pursh.  
*Steironema ciliatum*—Raf.  
*Lysimachia quadrifolia*—L.  
 " *stricta*—Ait.  
 " *thyrsiflora*—L.  
*Anagallis arvensis*—L.  
*Samolus Valerandi*—L., var. *Americanus*—Gray (Buchan.)

## OLEACEAE.

- Fraxinus Americana*—L.  
 " *sambucifolia*—Lam.  
*Ligustrum vulgare*—L.

## APOCYNACEAE.

- Apocynum androsaemifolium*—L.  
 " *cannabinum*—L.

## ASCLEPIADACEAE.

- Asclepias tuberosa*—L.  
 " *incarnata*—L.  
 " *Cornuti*—Decaisne.  
 " *phytolaccoides*—Pursh.  
 " *variegata* (?)—L. (Logie).  
 " *quadrifolia*—L.

## GENTIANACEAE.

- Gentiana crinita*—Froel.

- Gentiana *Amarëlla*—L. (Logie).  
 “ *quinqueflora*—Lam. (Craigie)  
 “ *Andrewsii*—Griseb.  
 “ *alba*—Muhl.  
*Frasera Carolinensis*—Walt.  
*Halenia deflexa*—Grisebach.  
*Menyanthes trifoliata*—L.

## POLEMONIACEAE.

- Phlox divaricata*—L.

## HYDROPHYLLACEAE.

- Hydrophyllum Virginicum*—L.  
 “ *Canadense*—L.  
 “ *appendiculatum*—Michx.

## BORRAGINACEAE.

- Cynoglossum officinale*—L.  
*Echinosperrnum Virginicum*—Lehm.  
 “ *Lappula*—Lehm.  
*Myosotis palustris*—Withering.  
 “ *laxa*—Lehm.  
 “ *arvensis*—Hoffm.  
 “ *verna*—Nutt.  
*Lithospermum arvense*—L.  
 “ *canescens*—Lehn.  
 “ *angustifolium*—Michx.  
*Onosmodium Carolinianum*—DC.  
*Symphytum officinale*—L.  
*Echium vulgare*—L.

## CONVOLVULACEAE.

- Convolvulus spithameus*—L.  
 “ *sepium*—L.  
 “ var. *repens*—Gray.  
 “ *arvensis*—L.  
*Cuscuta Gronovii*—Willd.

## SOLANACEAE.

- Solanum Dulcamara*—L.  
 “ *nigrum*—L.

- Physalis Virginiana—Mill.  
 Nicandra *physaloides*—Gaertn.  
 Lycium *vulgare*—Dunal.  
 Datura *Stramonium*—L.  
     " *Tatula*—L.  
 Nicotiana *rustica*—L.

☉ SCROPHULARIACEAE.

- Verbascum *Thapsus*—L.  
     " *Blattaria*—L.  
 Linaria *vulgaris*—Mill.  
 Scrophularia *nodosa*—L., var. *Marilandica*—Gray.  
 Chelone *glabra*—L.  
 Pentstemon *pubescens*—Solander.  
 Mimulus *ringens*—L.  
 Gratiola *Virginiana*—L.  
     " *aurea*—Muhl.  
 Ilysanthes *riparia*—Raf (Buchan).  
 Veronica *Anagallis*—L.  
     " *Americana*—Schweinitz.  
     " *scutellata*—L.  
     " *officinalis*—L.  
     " *serpyllifolia*—L.  
     " *peregrina*—L.  
     " *arvensis*—L.  
     " *Buxbaumii*—Tenore.  
 Gerardia *pedicularia*—L.  
     " *flava*—L.  
     " *quercifolia*—Pursh.  
     " *laevigata*—Raf. (Logie).  
     " *purpurea*—L. (Logie).  
     " *tenuifolia*—Vahl, var. *asperula*—Gray.  
 Castilleja *coccinea*—Spreng.  
 Pedicularis *Canadensis*—L.  
 Melampyrum *Americanum*—Michx.

OROBANCHACEAE.

- Epiphegus *Virginiana*—Bart.  
 Conopholis *Americana*—Wallroth (Logie).

*Aphyllon uniflorum*—Gray.

LENTIBULARIACEAE.

*Utricularia vulgaris*—L.

“ *intermedia*—Hayne.

PEDALIACEAE.

*Martynia proboscidea*—Glox.

VERBENACEAE.

*Verbena urticaefolia*—L.

“ *hastata*—L.

*Phryma leptostachya*—L.

LABIATAE.

*Teucrium Canadense*—L.

“ *occidentale*—Gray.

*Ajuga reptans*—L.

*Collinsonia Canadensis*—L.

*Mentha viridis*—L.

“ *piperita*—L.

“ *Canadensis*—L.

*Lycopus Virginicus*—L.

“ *sinuatus*—Ell.

*Pycnanthemum muticum*—Pers.

\* “ *incanum* (?)—Mich. (Craigie & Logie.)

*Satureia hortensis*—L.

*Calamintha Clinopodium*—Benth.

*Hedeoma pulegioides*—Pers.

*Salvia officinalis*—L.

*Monarda didyma*—L.

“ *fistulosa*—L.

“ “ *var. mollis*—Benth.

“ *punctata*—L. (Logie.)

*Lophanthus nepetoides*—Benth.

*Nepeta Cataria*—L.

“ *Glechoma*—Benth.

*Scutellaria lateriflora*—L.

“ *parvula*—Michx.

“ *galericulata*—L.

\*Doubtful; probably refers to *muticum*.

- Brunella vulgaris*—L.  
*Marrubium vulgare*—L.  
*Leonurus Cardiaca*—L.  
*Lamium amplexicaule*—L. (Logie).  
     " *album*—L.  
*Galeopsis Tetrahit*—L.  
*Stachys palustris*—L.  
     " *aspera*—Michx.

## PLANTAGINACEAE.

- Plantago major*—L.  
     " *Rugelii*—Decaisne.  
     " *lanceolata*—L.  
     " *media*—L.

## AMARANTACEAE.

- Amarantus hypochondriacus*—L.  
     " *paniculatus*—L.  
     " *retroflexus*—L.  
     " *albus*—L.

## CHENOPODIACEAE.

- Chenopodium album*—L.  
     " *urbicum*—L. (Craigie).  
     " *hybridum*—L.  
     " *glaucum*—L.  
     " *Bonus-Henricus*—L.  
     " *capitatum*—Watson.  
     " *Botrys*—L.  
     " *ambrosioides*—L.

- Atriplex patulum*—L.  
     " " *var. hastatum*—Gray.  
     " " " *littorale*—Gray.

## PHYTOLACCACEAE.

- Phytolacca decandra*—L.

## POLYGONACEAE.

- Rumex Britannica*—L.  
     " *verticillatus*—L.  
     " *crispus*—L.

- Rumex *obtusifolius*—L. (Buchan.)  
 “ *Acetosella*—L.  
 “ *Acetosa*—L.  
 Polygonum *aviculare*—L.  
 “ *erectum*—L.  
 “ *tenue*—Michx.  
 “ *lapathifolium*—L., var. *incarnatum*—Watson.  
 “ *Pennsylvanicum*—L.  
 “ *amphibium*—L.  
 “ *Muhlenbergii*—Watson (Buchan).  
 “ *Persicaria*—L.  
 “ *hydropiperoides*—Michx.  
 “ *Hydropiper*—L.  
 “ *acre*—H B K.  
 “ *Virginianum*—L.  
 “ *arifolium*—L.  
 “ *sagittatum*—L.  
 “ *Convolvulus*—L.  
 “ *dumetorum*—L., var. *scandens*—Gray.  
 Fagopyrum *esulentum*—Moench.

## ARISTOLOCHIACEAE.

Asarum *Canadense*—L.

## LAURACEAE.

Sassafras *officinale*—Nees.

Lindera *Benzoin*—Blume.

## THYMELAEACEAE.

Dirca *palustris*—L.

## ELAEAGNACEAE.

Shepherdia *Canadensis*—Nutt.

## SANTALACEAE.

Comandra *umbellata*—Nutt.

## EUPHORBIACEAE.

Euphorbia *polygonifolia*—L.

“ *maculata*—L.

“ *Preslii*—Guss. (L. & B.)

“ *corollata*—L. (Craigie).

Euphorbia obtusata—Pursh. (Logie).

“ *platyphylla*—L.

“ *Helioscopia*—L.

“ *Cyparissias*—L.

“ *Peplus*—L.

Acalypha Virginica—L.

## URTICACEAE.

Ulmus fulva—Michx.

“ *Americana*—L.

“ *racemosa*—Thomas.

Cannabis *sativa*—L.

Humulus Lupulus—L.

Urtica gracilis—Ait.

Laportea Canadensis—Gaud.

Pilea pumila—Gray.

Boehmeria cylindrica—Willd.

## PLATANACEAE.

Platanus occidentalis—L.

## JUGLANDACEAE.

Juglans cinerea—L.

“ *nigra*—L.

Carya alba—Nutt.

“ *porcina*—Nutt.

“ *amara*—Nutt.

## MYRICACEAE.

Myrica Gale—L.

“ *asplenifolia*—Endl.

## CUPULIFERAE.

Betula lenta—L.

“ *lutea*—Michx. f.

“ *papyrifera*—Marshall.

Alnus incana—Willd.

Corylus rostrata—Ait.

Ostrya Virginica—Willd.

Carpinus Caroliniana—Walter.

- Quercus alba—L.  
 “ macrocarpa—Michx.  
 “ Muhlenbergii—Engelm.  
 “ rubra—L.  
 “ coccinea, var. tinctoria—Gray.  
 Castanea sativa—Mill, var. Americana.  
 Fagus ferruginea—Ait.

## SALICACEAE.

- Salix nigra—Marsh.  
 “ “ var. falcata—Torr.  
 “ lucida—Muhl.  
 “ alba—L.  
 “ longifolia—Muhl.  
 “ rostrata—Richardson.  
 “ discolor—Muhl.  
 “ humilis—Marsh.  
 “ tristis—Ait. (Logie).  
 “ viminalis—L.  
 “ cordata—Muhl.  
 Populus alba—L.  
 “ tremuloides—Michx.  
 “ grandidentata—Michx.  
 “ balsamifera—L.  
 “ monilifera—Ait.

## CERATOPHYLLACEAE.

- Ceratophyllum demersum—L.

## CONIFERAE.

- Pinus Strobus—L.  
 Picea nigra—Link.  
 “ alba—Link.  
 Tsuga Canadensis—Carr.  
 Abies balsamea—Miller.  
 Larix Americana—Michx.  
 Thuya occidentalis—L.  
 Juniperus communis—L.  
 “ Virginiana—L.  
 Taxus Canadensis—Willd.

HYDROCHARIDACEAE.

- Elodea Canadensis*—Michx.  
*Vallisneria spiralis*—L.

ORCHIDACEAE.

- Calypso borealis*—Salisb. (Logie)  
*Aplectrum hiemale*—Nutt.  
*Corallorhiza innata*—R. Br.  
 " *odontorhiza*—Nutt. (Buchan).  
 " *multiflora*—Nutt.  
*Spiranthes cernua*—Richard.  
*Goodyera repens*—R. Br.  
 " *pubescens*—R. Br.  
 " *Menziesii*—Lindl.  
*Pogonia ophioglossoides*—Nutt (Logie).  
*Orchis spectabilis*—L.  
*Habenaria tridentata*—Hook.  
 " *virescens*—Spreng.  
 " *bracteata*—R. Br.  
 " *hyperborea*—R. Br.  
 " *dilatata*—Gray (Logie).  
 " *Hookeri*—Torr.  
 " *orbiculata*—Torr.  
 " *leucophaea*—Gray.  
 " *lacera*—R. Br.  
 " *psycodes*—Gray.  
 " *fimbriata*—R. Br. (Logie)  
*Cypripedium parviflorum*—Salisb.  
 " *pubescens*—Willd.  
 " *spectabile*—Salisb.  
 " *acaule*—Ait.

IRIDACEAE.

- Iris versicolor*—L.  
*Sisyrinchium angustifolium*—Mill.  
 " *anceps*—Cav.

AMARYLLIDACEAE.

- Hypoxis erecta*—L.

## DIOSCOREACEAE.

*Dioscorea villosa*—L.

## LILIACEAE.

*Smilax herbacea*—L.

“ *bispida*—Muhl.

*Allium tricoccum*—Ait.

*Muscari botryoides*—Mill.

*Hemerocallis fulva*—L.

*Polygonatum biflorum*—Ell.

“ *giganteum*—Dietrich.

*Asparagus officinalis*—L.

*Smilacina racemosa*—Desf.

“ *stellata*—Desf.

“ *trifolia*—Desf.

*Maianthemum Canadense*—Desf.

*Streptopus roseus*—Michx.

“ *amplexifolius*—DC.

*Disporum lanuginosum*—Benth. & Hook.

*Clintonia borealis*—Raf.

*Uvularia perfoliata*—L.

“ *grandiflora*—Smith.

*Erythronium Americanum*—Ker.

*Lilium Philadelphicum*—L.

“ *superbum*—L.

“ *Canadense*—L.

*Medeola Virginiana*—L.

*Trillium erectum*—L.

“ *grandiflorum*—Salisb.

“ “ var. (?) *viridescens*—Peck.

“ *cernuum*—L.

*Tofieldia pubens*—Ait. (Craigie.)

## PONTEDERIACEAE.

*Pontederia cordata*—L.

*Heteranthera graminea*—Vahl.

## JUNCACEAE.

*Juncus effusus*—L.

“ *Balticus*—Dethard, var. *littoralis*—Engelm.

- Juncus tenuis*—Willd.  
 “ *bufonius*—L.  
 “ *alpinus*—Villars, var. *insignis*—Fries.  
 “ *acuminatus*—Michx.  
 “ *nodosus*—L.  
 “ “ var. *megacephalus*—Torr.  
*Luzula vernalis*—DC.  
 “ *campestris*—DC.

## TYPHACEAE.

- Typha latifolia*—L.  
*Sparganium eurycarpum*—Engelm.  
 “ *simplex*—Huds.  
 “ “ var. *angustifolium*—Engelm.

## ARACEAE.

- Arisaema triphyllum*—Torr.  
*Calla palustris*—L.  
*Symplocarpus foetidus*—Salisb.  
*Acorus Calamus*—L.

## LEMNACEAE.

- Spirodela polyrrhiza*—Schleid.  
*Lemna trisulca*—L.  
 “ *minor*—L.  
*Wolffia Columbiana*—Karsten.  
 “ *Brasiliensis*—Weddell.

## ALISMACEAE.

- Alisma Plantago*—L.  
*Sagittaria variabilis*—Engelm.  
 “ *graminea*, Michx.

## NAIADACEAE.

- Potamogeton natans*—L.  
 “ *amplifolius*—Tuckern.  
 “ *heterophyllus*—Schreb.  
 “ *Zizii*—Mert & Koch.  
 “ *lucens*—L. (Logie).  
 “ *perfoliatus*—L.  
 “ *zosteræfolius*—Schum.

Potamogeton pauciflorus—Pursh.  
 “ pectinatus—L.

## ERIOCAULEAE.

Eriocaulon septangulare—Withering

## CYPERACEAE.

Cyperus diandrus—Torr.  
 “ Schweinitzii—Torr.  
 “ filicalmis—Vahl.  
 “ strigosus—L.  
 Dulichium spathaceum—Pers.  
 Eleocharis ovata—R. Br.  
 “ palustris—R. Br.  
 “ tenuis—Schultes  
 “ acicularis—R. Br.  
 Scirpus pungens—Vahl.  
 “ lacustris—L.  
 “ fluviatilis—Gray.  
 “ atrovirens—Muhl.  
 Eriophorum cyperinum—L.  
 “ Virginicum—L.  
 “ polystachyon—L.  
 “ gracile—Koch.  
 Carex intumescens—Rudge.  
 “ lupulina—Muhl.  
 “ “ var pedunculata—Dewey.  
 “ Tuckermanni—Dewey.  
 “ retrorsa—Schwein.  
 “ lurida—Wahl.  
 “ Schweinitzii—Dewey.  
 “ hystricina—Muhl.  
 “ Pseudo-Cyperus—L. var. Americana—Hochst.  
 “ scabrata—Schwein.  
 “ riparia—W. Curtis.  
 “ stricta—Lam.  
 “ prasina—Wahl.  
 “ crinita—Lam.  
 “ gracillima—Schwein.

- Carex granularis*—Muhl.  
 " *laxiflora*—Lam.  
 " " " var. *striatula*—Carey (Buchan).  
 " " " " *latifolia*—Boott.  
 " " " " *patulifolia*—Carey (Buchan)  
 " *digitalis*—Willd.  
 " *laxiculmis*—Schwein.  
 " *platyphylla*—Carey.  
 " *plantaginea*—Lam.  
 " *Saltuensis*—Bailey.  
 " *aurea*—Nutt.  
 " *pedunculata*—Muhl.  
 " *varia*—Muhl.  
 " *Novae-Angliae*—Schwein (Buchan).  
 " *Pennsylvanica*—Lam.  
 " *polytrichoides*—Muhl.  
 " *stipata*—Muhl.  
 " *teretiuscula*—Gooden.  
 " *vulpinoidea*—Michx.  
 " *tenella*—Schk.  
 " *rosea*—Schk.  
 " *sparganioides*—Muhl.  
 " *cephalophora*—Muhl.  
 " *echinata*—Murray, var. *microstachys*—Boeckl.  
 " *trisperma*—Dewey.  
 " *bromoides*—Schk.  
 " *tribuloides*—Walp.  
 " " var. *cristata*—Bailey.  
 " *scoparia*—Schk.  
 " *straminea*—Willd.

## GRAMINEAE.

- Panicum glabrum*—Gaudin.  
 " *sanguinale*—L.  
 " *capillare*—L.  
 " *xanthophysum*—Gray.  
 " *latifolium*—L.  
 " *depauperatum*—Muhl.

- Panicum dichotomum—L.  
   " Crus-galli—L.  
   " " var. hispidum.  
 Setaria verticillata—Beauv.  
   " glauca—Beauv.  
   " viridis—Beauv.  
   " Italica—Kunth.  
 Cenchrus tribuloides—L.  
 Leersia Virginica—Willd.  
   " oryzoides—Swartz.  
 Zizania aquatica—L.  
 Andropogon furcatus—Muhl.  
   " scoparius—Michx.  
 Chrysopogon nutans—Benth.  
 Phalaris Canariensis—L.  
   " arundinacea—L.  
 Anthoxanthum odoratum—L. (Logie.)  
 Oryzopsis melanocarpa—Muhl.  
   " asperifolia—Michx.  
 Milium effusum—L.  
 Muhlenbergia glomerata—Trin.  
   " Mexicana—Trin.  
   " sylvatica—Torr. and Gray.  
   " diffusa—Schreber (Logie).  
 Brachyelytrum aristatum—Beauv.  
 Phleum pratense—L.  
 Alopecurus geniculatus—L., var. aristulatus—Torr.  
 Sporobolus asper—Kunth.  
   " vaginaeflorus—Vasey.  
   " cryptandrus—Gray.  
 Agrostis alba—L.  
   " var. vulgaris—Thurb.  
   " perennans—Tuckerm.  
   " scabra—Willd.  
 Cinna arundinacea—L.  
 Calamagrostis Canadensis—Beauv.  
   " confinis—Nutt.  
 Holcus lanatus—L.

- Deschampsia flexuosa—Trin.  
 Avena striata—Michx.  
     " *fatua*—L.  
 Danthonia spicata—Beauv.  
 Cynodon *Dactylon*—Pers.  
 Bouteloua oligostachya—Torr.  
 Eleusine *Indica*--Gaertn (Logie).  
 Phragmites communis—Trin.  
 Munroa squarrosa—Torr.  
 Eatonia Pennsylvanica—Gray.  
 Eragrostis *minor*—Host.  
 Dactylis *glomerata*—L.  
 Poa *annua*—L.  
     " *compressa*—L.  
     " *nemoralis*—L.  
     " *serotina*—Ehrhart.  
     " *pratensis*—L.  
     " *debilis*—Torr.  
 Glyceria Canadensis—Trin.  
     " *elongata*—Trin.  
     " *nervata*—Trin.  
     " *pallida*—Trin.  
     " *grandis*—Watson.  
     " *fluitans*—R. Br.  
 Festuca tenella—Willd.  
     " *ovina*—L.  
     " *nutans*—Willd.  
     " *elatior*—L., var. *pratensis*—Gray.  
 Bromus Kalmii—Gray.  
     " *secalinus*—L.  
     " *ciliatus*—L.  
 Lolium *perenne*—L. \*  
 Agropyrum repens—Beauv.  
     " *caninum*—R. & S.  
 Elymus Virginicus—L.  
     " *Canadensis*—L.  
         " " var. *glaucifolius*--Gray.  
     " *striatus*—Willd.

*Asprella Hystrix*—Willd.

## EQUISETACEAE.

- Equisetum arvense*—L.  
 " *pratense*—Ehrh.  
 " *sylvaticum*—L.  
 " *palustre*—L.  
 " *limosum*—L.  
 " *hyemale*—L.  
 " *variegatum*—Schleicher.  
 " *scirpoides*—Michx.

## FILICES.

- Polypodium vulgare*—L.  
*Adiantum pedatum*—L.  
*Pteris aquilina*—L.  
*Pellaea gracilis*—Hook.  
 " *atropurpurea*—Link.  
*Woodwardia Virginica*—Smith.  
*Asplenium Trichomanes*—L.  
 " *thelypteroides*—Michx.  
 " *Filix foemina*—Bernh.  
*Camptosorus rhizophyllus*—Link.  
*Phegopteris hexagonoptera*—Fee.  
 " *Dryopteris*—Fee.  
*Aspidium Thelypteris*—Swartz.  
 " *Noveboracense*—Swartz.  
 " *spinulosum*—Swartz.  
 " " " var. *intermedium*—  
 D. C. Eaton.  
 " " " " *dilatatum*—Hook  
 (Logie).  
 " *Boottii*—Tuckerm.  
 " *cristatum*—Swartz.  
 " " " var. *Clintonianum*.  
 " *Goldianum*—Hook.  
 " *marginale*—Swartz.  
 " *acrostichoides*—Swartz.  
*Cystopteris bulbifera*—Bernh.  
 " *fragilis*—Bernh.

No  
 Michx.

- Onoclea sensibilis—L.  
 “ Struthiopteris—Hoffman.  
 Dicksonia pilosiuscula—Willd.  
 Osmunda regalis—L.  
 “ Claytoniana—L.  
 “ cinnamomea—L.

## OPHIOGLOSSACEAE.

- Botrychium ternatum—Swartz, var. lunarioides—(Buchan).  
 “ “ “ “ obliquum.  
 “ Virginianum—Swartz.

## LYCOPODIACEAE.

- Lycopodium lucidulum—Michx.  
 “ annotinum—L.  
 “ obscurum—L.  
 “ clavatum—L.  
 “ complanatum—L.

## SELAGINELLACEAE.

- Selaginella apus—Spring.

## SALVINIACEAE.

- Azolla Caroliniana—Willd. (Buchan.)

## MARCHANTIACEAE.

- Marchantia polymorpha—L.

Note error in local *additions* : *Lithospermum angustifolium*—  
 Michx. (*L. longiflorum*—Spreng.) was reported by Judge Logie.

**\*LIST OF LOCAL FOSSILS NOT PREVIOUSLY REPORTED  
IN THE JOURNAL OF PROCEEDINGS.**

PREPARED BY COL. C. C. GRANT.

**NIAGARA FOSSILS.**

**SPONGIDAE.**

| <i>Genera and Species.</i>         | <i>Authority and Reference.</i> |
|------------------------------------|---------------------------------|
| Stromatopora concentrica . . . . . | Goldfuss, 1820, Germ. Pet.      |
| Caunopora Walkeri . . . . .        | Spencer, 1882, Niag. Fossils    |
| “ mirabilis . . . . .              | “ “ “                           |
| Cornostoma constellatum . . . . .  | Hall, 1852, Pal. N. Y.          |
| “ botryordea . . . . .             | Spencer, 1882, Niag. Fossils    |
| Dictyostoma reticulata . . . . .   | “ “ “                           |
| Astylospongia præmorsa . . . . .   | Goldfuss, 1880, Germ. Pet.      |
| “ (species.)                       |                                 |
| Aulocopina Granti . . . . .        | Billings, 1875, Can. Nat.       |

Large numbers undetermined yet, sent to Dr. Head and  
Prof. Rauff, who named a few.

**HYDROZOA.**

|                                 |                              |
|---------------------------------|------------------------------|
| Phyllograptus dubius . . . . .  | Spencer, 1882, Niag. Fossils |
| Dendrograptus ramosus . . . . . | “ “                          |
| “ simplex . . . . .             | “ “                          |
| “ Dawsoni . . . . .             | “ “                          |
| “ frondosus . . . . .           | “ “                          |
| “ pregracilis . . . . .         | “ “                          |
| “ spinosus . . . . .            | “ “                          |
| Callograptus Granti . . . . .   | “ “                          |
| “ Niagarensis . . . . .         | “ “                          |
| “ (Dendrograptus) multicaulis   | “ “                          |
| “ minutus . . . . .             | “ “                          |

\* The Association purpose preparing, during the coming session, a list of all  
palaeontological specimens contained in the museum.

| <i>Genera and Species.</i>       | <i>Authority and Reference.</i>     |
|----------------------------------|-------------------------------------|
| Dictyonema retiforme.....        | Hall, 1852, Pal. N. Y.              |
| “ gracilis.....                  | “ “                                 |
| “ Websteri.....                  | Dawson, 1868, Acad. Geol.           |
| “ tenellum.....                  | Spencer, 1878, Can. Nat.            |
| Calyptograptus cyatheformis..... | “ “                                 |
| “ subretiformis.....             | “ “                                 |
| “ } micronematodes.....          | Spencer, 1882, Can. Nat.            |
| “ radiatus.....                  |                                     |
| Rhizograptus bulbosus.....       | Spencer, 1878, Can. Nat.            |
| Acanthograptus Granti.....       | “ “                                 |
| “ pulcher.....                   | 1882                                |
| Inocaulis plumulosa.....         | Hall, 1852, Pal. N. Y.              |
| “ bella.....                     | Hall and Whitfield, 1874, Pal. Ohio |
| “ Walkeri.....                   | Spencer, 1882, Niag. Foss.          |
| “ problematica.....              | “ “ “                               |
| “ diffusa.....                   | “ “ “                               |
| “ ramulosa.....                  | “ “ “                               |
| “ Corsicornis.....               | “ “ “                               |
| “ phyardes.....                  | “ “ “                               |
| Thamnograptus Bartonensis.....   |                                     |
| “ multiformis.....               |                                     |
| Ptilograptus foliaceus.....      | Spencer, 1878, Can. Nat.            |
| Cyclograptus rotadentatus.....   | “ “ “                               |

About 400 specimens in Washington, sent to Dr. Gurley for description, including several new species.

ACTINOZOA.

|                               |                                  |
|-------------------------------|----------------------------------|
| Favosites Niagarensis.....    | Hall, 1852, Pal. N. Y., Vol. II. |
| “ favosa.....                 | Goldfuss, 1826, Germ. Pet.       |
| Astrocerium constrictum.....  | Hall, 1852, Pal. N. Y., Vol. II. |
| Syringolites nuronensis.....  | Hinde, 1879, Geol. Mag.          |
| Cladopora multipora.....      | Hall, 1852, Pal. N. Y., Vol. II. |
| Striatopora flexuosa.....     | “ “ “                            |
| Halysites Catenularia.....    | Linn, 1767, Sys. Nat.            |
| Syringopora verticillata..... | Goldfuss, 1826, Germ. Pet.       |
| “ rugosa.....                 | “ “                              |
| Cyathophyllum radiculum.....  | Rominger, 1876                   |

*Genera and Species.**Authority and Reference.*

- Omphyma Stokesi . . . . . Milne Edwards, 1876  
 Petrea Streptelasma Calycula . . . . . Hall, 1852, Pal. N. Y., Vol. II.  
 Asteroidea Petraster bellulus . . . . . Billings, 1865

## TABULATA.

- Chonophyllum Niagarensis . . . . . Hall, Pal. N. Y., Vol. II., Niag. Gp.

## ECHINODERMATA.

- Crinoidea and Cystoidea . . . . .  
 Lyriocrinus Dactylus . . . . . Hall, 1852, Pal. N. Y., Vol. II.  
 Thysanocrinus lilliformis . . . . . " " "  
 Eucalyptocrinus decorus . . . . . Phillips, 1829, Murch. Sil. Fossils  
 Stephanocrinus angulatus . . . . . Conrad, 1842  
 Caryocrinus ornatus . . . . . Say, 1825  
 Eucalyptocrinus Crassus . . . . . Hall, 1863, Vol. IV., Niag. Group.

## POLYZOA.

- Ceramopora foliacea . . . . . Hall, Pal. N. Y., 1852, Vol. II.  
 Fenestella elegans . . . . . " " "  
 Lichenalia concentrica . . . . . " " "  
 Trematopora ostiolata . . . . . " " "  
 Clathropora gracilis . . . . . Spencer, 1882, Niag. Fossils  
 Polypora Fenestella Albionensis . . . . . " 1880, "

## BRYOZOA AND POLYZOA.

- Retepora asperatostriata . . . . . Hall, 1852, Pal. N. Y., Vol. II.  
 Lichenalia . . . . . Hall (many species undescribed yet)  
 Cladopora . . . . . " " "  
 Saganella elegans . . . . . Hall

## BRACHIOPODA.

## SPIRIFERA.

- Crispa . . . . . Hisinger, 1826, Acad. Nat. Sc.  
 Niagarensis . . . . . Conrad, 1842, Jour. Nat. Sc.  
 Radiata . . . . . Hisinger, 1857, Pet.  
 Sulcata . . . . . Sowerby, 1825, Min. Conch.  
 Plicitella, var. radiata . . . . . Hall, 1867, 20th Report, N. Y.  
 Atrypa Reticularis . . . . . Linn, 1767, Sys. Nat.  
 Athyris Meristina nitida . . . . . Hall, 1852, Pal. N. Y., Vol. II.

## RHYNCHONELLIDÆ.

| <i>Genera and Species.</i>          | <i>Authority and Reference.</i>                |
|-------------------------------------|--|
| R. neglecta . . . . .               | Hall, Pal. N. Y., Vol. II.                     |
| obtusiplicata . . . . .             | " " " "  |
| var. . . . .                        | " " " "  |
| rugosa . . . . .                    | " " " "  |
| Pentamerus oblongus . . . . .       | Vannuxen, 1842, Pal. N. Y.                     |
| Stricklandinia Canadensis . . . . . | Billings, 1859, Can. Nat.                      |
| R. pesum . . . . .                  | Hall and Whitefield, 1875, Ohio Pal., Vol. II. |
| Indianensis . . . . .               | Hall, Vol. 4, Niag. group                      |
| Whitii . . . . .                    | Hall (pre-occupied)                            |
| cuneata . . . . .                   | Dolman, 1827                                   |
| acinus . . . . .                    | Hall, 1863, Niag. group, Vol. 4                |
| Eichwoldia reticulata . . . . .     | Billings, 1858                                 |
| Retzia (not R. evax.)               |  |

## STROPHOMENIDÆ.

|                                    |                                  |
|------------------------------------|----------------------------------|
| Strophomena profunda . . . . .     | Hall, 1852, Pal. N. Y., Vol. II. |
| " rhomboidalis . . . . .           | Wallenburg, 1821                 |
| Stropodonta semifosciata . . . . . | Hall, 1863                       |
| Striptyrynchus tenuis . . . . .    | " 1859                           |
| Leptena transversalis . . . . .    | Dolman, 1827                     |
| Orthis elegantula . . . . .        | "                                |
| " flabellum . . . . .              | Hall, 1843                       |
| " porcata . . . . .                | McCoy, 1846, Sil. Foss.          |
| Strophomena Leda . . . . .         | Billings, Can. Geol., Vol. V.    |
| Stroph. subplana . . . . .         | Conrad, 1842, Vol. VIII.         |
| Strophodonta striata . . . . .     | Hall, 1843                       |

## CRANIDÆ.

|                            |                            |
|----------------------------|----------------------------|
| Crania Anna . . . . .      | Spencer, 1882, Niag. Foss. |
| Crania Siluriana . . . . . | Hall                       |
| 2 Crania—undescribed.      |                            |

## DISCINIDÆ.

|                                  |                                  |
|----------------------------------|----------------------------------|
| Discina tenuilamellata . . . . . | Hall, 1852, Pal. N. Y., Vol. II. |
| " clara . . . . .                | Spencer, 1882, Niag. Foss.       |

## LINGULIDÆ.

|                          |                            |
|--------------------------|----------------------------|
| Lingula ingens . . . . . | Spencer, 1882, Niag. Foss. |
|--------------------------|----------------------------|

*Genera and Species.**Authority and Reference.*

- Lingula ingens oblonga.....Conrad, 1839, Ann. Rep. N. Y.  
 " lamellata.....Hall, 1852, Pal. N. Y., Vol. II.

## LAMELLIBRANCHIATA.

- Avicula emacerata.....Conrad, 1849, Jour. Nat. Sc.  
 Pterinea brisa.....Hall, 1867, 20th Rep., N. Y.  
 Posidonomya rhomboidea.....Hall, 1852, Pal. N. Y., Vol. II.  
 Modiolopsis subulata....." " "  
 Avicula undata....."  
 " subplana....."

## GASTEROPODA.

- Platyostoma Niagarensis.....Hall, 1852  
 Loxonema leda.....Hall, 1867, 20 Rep. N. Y.  
 Pleurotomaria clipeiformis.....Spencer, 1882, Niag. Fossils  
 Platyostoma plebea.....Hall, 28th Rep. Pal. N. Y.  
 Pleurotomaria solarioides..Hall, 1852, Pal. N.Y., Barton and Guelph  
 Murchisonia.....3 species

## PTEROPODA.

- Conularia Niagarensis.....Hall, 1852, Pal. N. Y., Vol. II.  
 " magna.....Spencer, 1879, Can. Nat.  
 " rugosa....." " 1852, Niag. Foss.

## CEPHALOPODA.

- Orthoceras virgatum.....Sow., 1839, Murch. Sil. Syst.  
 " annulatum.....Sow., 1818, Min. Conch.  
 " simulator.....Hall, 1876, 28th Rep., Pal. N. Y.  
 " crebescens....." 1867, 20th, " "  
 " Bartonense.....Spencer, 1882, Niag. Fossils  
 Cyrtoceras reversum....." " "  
 Lituites Niagarensis....." " "  
 Cyrtoceras.....3 not determined yet

## ANNELIDA.

- Cornulitus flexuosus.....Hall, 1852, Pal. N. Y., Vol. II.  
 " bellastrata.....Hall  
 " species, allied to Styliola spica....."  
 " Species undetermined....."

CRUSTACEA.

TRILOBATA.

| <i>Genera and Species.</i>        | <i>Authority and Reference.</i>   |
|-----------------------------------|-----------------------------------|
| Illænus barriensis.....           | Murch., 1838, Sil. Syst.          |
| Encrinurus ornatus.....           | Hall, 1852                        |
| Sphærexochus Vomingeri.....       | Hall, 1867, 20th Rep., Pal. N. Y. |
| Calymene Blumenbachii.....        | Brogniart, 1822, Nat. His.        |
| Homalonotus delphinocephalus..... | Green, 1832                       |
| Dalmanites limulurus.....         | " "                               |
| Lichas Boltoni.....               | Bigsby, 1825, Jour. Nat. Sc.      |
| Acidaspis Halli.....              | Spencer, 1880, Niag. Foss.        |
| Dalmania Verrucosa.....           | Hall                              |
| Dalmania vigilans.....            |                                   |
| Acidaspis—3 species.....          |                                   |

EURIPTERIDÆ.

|                             |                         |
|-----------------------------|-------------------------|
| Pterygotus Canadensis ..... | Dawson, 1879, Can. Nat. |
|-----------------------------|-------------------------|

PLANTS.

|  |        |
|--|--------|
| Buthotrephis Granti.....   | Dawson |
| - Three others undescribed—two from Barton and one from<br>Pentamerus bed, Hamilton. |        |

CLINTON FOSSILS, HAMILTON, ONT.

| <i>Genera and Species.</i>     | <i>Reference.</i>      |
|--------------------------------|------------------------|
| Buthotrephis gracilis.....     | Hall, Pal. N. Y., 1852 |
| "    var. crassa.....          | " " " "                |
| "    var. palmata.....         | " " " "                |
| Roots, various Algæ.....       | " " " "                |
| Stromatopora Sp.               |                        |
| Conophyllum Niagarense.....    | " " " "                |
| Zaphrentis bilateralis.....    | " " " "                |
| Graptolithus Clintonensis..... | " " " "                |
| Reteolites venosus.....        | " " " "                |
| Helopora fragilis.....         | " " " "                |
| Clathropora frondosa.....      | " " " "                |
| Polypora incepta.....          | " " " "                |

| <i>Genera and Species.</i>                                    | <i>Reference.</i>           |
|---|-----------------------------|
| Retepora angulata.....  | Hall, Pal. N. Y., 1852      |
| Trematopora tuberculosa.....                                  | " " " "                     |
| Merista cylindrica.....                                       | " " " "                     |
| Athyris (Meristella) naviformis.....                          | " " " "                     |
| Lingula oblata.....   | " " " "                     |
| Posidonia alata.....  | " " " "                     |
| Posidonomya rhomboidea.....                                   | " " " "                     |
| Platystoma Niagarensis.....                                   | " " " "                     |
| Orthoceras claratum.....                                      | " " " "                     |
| Oncoceras subrectum.....                                      | " " " "                     |
| Conularia Niagarensis.....                                    | " " " "                     |
| Tentaculites distans.....                                     | " " " "                     |
| Rusignites bilobatus.....                                     | " " " "                     |
| Monticulipora lycoperdon.....                                 | Say 1847                    |
| Palaeaster Granti.....  | Spencer Niag. Fossils, 1847 |
| Fenestella bicomis.....                                       | " " " "                     |
| Rhinopora vanosa.....   | " " " "                     |
| Eucalyptocrinus decorus.....                                  | Phillips, 1839              |
| Fenestella prisca.....  | Lonsdale, 1839              |
| Strophomena rhomboidalis.....                                 | Wahlenberg, 1821            |
| Orthis elegantula.....  | Dolman, 1837                |
| Lingula oblonga.....  | Conrad, 1839                |
| Ichnites—4 undetermined species.                              |                             |
| Arthropycus Harlani.  |                             |
| Rusophycus (Hall) = Rusignites (Dawson); Buthotrophis (Hall). |                             |
| Main stem absent (may be detached branches).                  |                             |

## STAR FISHES.

Two or three (if Prof. Elliott's proves to be a new species, as we think it is).

## CYSTOIDEA CRINOIDEA.

A Cystid, recently sent to G. S. C., Ottawa.

A Crinoid, since obtained, not differing much from a Lower Silurian, one described by the late E. Billings (a new genus, perhaps).

It bears a close resemblance to another Crinoid (much smaller),

I sent to Prof. Billings many years since.

Glyptocrinus plumulosus.

## GASTEROPODA.

- 1852 Pleurotomaria—new species, probably—undescribed.  
 “ Murchisonia—2 species—undescribed.

## LAMELLIBRANCHIATA.

- “ Tellinomya curta (Hall).  
 “ “ elliptica (Hall).  
 “ Pterinea brisa (Hall).

## BRACHIOPODS.

- “ Streptorynchus tenuis (Hall).  
 “ Orthis calligramma var. Davidsoni (Hall)  
 “ sp. (with finer Striae), undescribed perhaps.  
 “ Lingula perovata.  
 “ new species (Hall); var. *L. oblata* (Dawson).  
 847 Crania—undescribed, probably.  
 847 Tentaculites neglectus (Nicholson).  
 “ Ichnites—several described and figured by Dawson.  
 839 Arthroclema—new species, probably.

## MEDINA FOSSILS, HAMILTON, ONT.

*Genera and Species.**Reference.*

- Arthropycus Harlani.... Hall, 1853, Pal. N. Y., Vol. II. Locality  
 Grimsby.  
 Paleophycus species..... Hamilton and Grimsby  
 Zaphrentis bilateralis.... Hall, Pal. N. Y., Vol. II., 1852. Hamil-  
 ton and Grimsby.  
 Atrypa oblata..... Hall, 1852, Pal. N. Y., Vol. II. Hamilton  
 and Grimsby.  
 Modiolopsis orthonota.. Conrad, Ann. Report, N.Y., 1839. Hamilton  
 “ species..... Dundas, Hamilton and Grimsby  
 Murchisonia subulata..... Conrad, 1842, Nat. Science Journal  
 Hamilton.  
 Murchisonia conoidea... Hall, 1852, Pal. N. Y., Vol. II. Locality  
 Hamilton and Grimsby.  
 Pleurotomaria litorea.... Hall, 1852, Pal. N. Y., Vol. II. Locality  
 Hamilton and Grimsby.



**HONORARY MEMBERS****OF THE HAMILTON ASSOCIATION.**

- 1881 Grant, Lt.-Col. C. C., Hamilton.
- 1882 Macoun, John, H. A., Ottawa.
- 1885 Dawson, Sir Wm., F. R. S., F. G. S., F. R. C. S., Montreal.
- 1885 Fleming, Sanford, C. E., C. M. G., Ottawa.
- 1885 Farmer, William, C. E., New York.
- 1885 Ormiston, Rev. William, D. D., Gladstone, Los Angeles, Cal.
- 1886 Small, H. B., Ottawa.
- 1886 Charlton, Mrs. B. E., Hamilton.
- 1887 Dee, Robert, M. D., New York.
- 1887 Keefer, Thomas C., C. E., Ottawa.
- 1890 Burgess, T. J. W., M. D., F. R. S. C., Montreal.
- 1891 Moffat, J. Alston, London.

**CORRESPONDING.**

- 1871 Seath, John, M. A., Toronto.
- 1881 Clark, Chas. K., M. D., Kingston.
- 1881 VanWagner, Lieut.-Col. P. S., Stoney Creek.
- 1881 Spencer, J. W., B. Sc., Ph. D., F. G. S., Savannah, Ga.
- 1882 Lawson, A. C., M. A., California.
- 1884 Bull, Rev. Geo. A., M. A., Niagara Falls South.
- 1885 Frood, T., Sudbury.
- 1889 Yates, Wm., Hatchley.
- 1889 Kennedy, Wm., Austin, Tex.
- 1891 Hanham, A. W., Quebec.
- 1892 Woolverton, L., M. A., Grimsby.

**LIFE.**

- 1885 Proudfoot, Hon. Wm., Q. C., Toronto.

## LIST OF EXCHANGES.

## I.—AMERICA.

## (1) CANADA.

|   |                  |
|---|------------------|
| Astronomical and Physical Society.....          | Toronto.         |
| Canadian Institute.....                         | "                |
| Natural History Society of Toronto.....         | "                |
| Department of Agriculture.....                  | "                |
| Library of the University.....                  | "                |
| Public Library.....                             | "                |
| Geological Survey of Canada.....                | Ottawa.          |
| Ottawa Field Naturalists' Club.....             | "                |
| Ottawa Literary and Scientific Society.....     | "                |
| Royal Society of Canada.....                    | "                |
| Department of Agriculture.....                  | "                |
| Entomological Society.....                      | London.          |
| Kentville Naturalists' Club.....                | Kentville, N. S. |
| Murchison Scientific Society.....               | Belleville.      |
| Natural History Society.....                    | Montreal.        |
| Library of McGill University.....               | "                |
| Nova Scotia Institute of Natural Science.....   | Halifax.         |
| Literary and Historical Society of Quebec.....  | Quebec.          |
| L'Institut Canadien de Quebec.....              | "                |
| Natural History Society of New Brunswick.....   | St. John.        |
| Manitoba Historical and Scientific Society..... | Winnipeg.        |
| Guelph Scientific Association.....              | Guelph.          |
| Queen's University.....                         | Kingston.        |

## (2) UNITED STATES.

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| Kansas Academy of Science.....             | Topeka, Kan.     |
| Kansas University Quarterly.....           | Lawrence, Kan.   |
| Psyche.....                                | Cambridge, Mass. |
| American Academy of Arts and Sciences..... | Boston, Mass.    |
| Library of Oberlin College.....            | Oberlin, Ohio.   |

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| American Association for Advancement of Science  | Salem, Mass.        |
| National Academy of Sciences                     | Cambridge, Mass.    |
| Museum of Comparative Zoology                    | " "                 |
| American Dialect Society                         | " "                 |
| United States Department of Agriculture          | Washington, D. C.   |
| Biological Society of Washington                 | " "                 |
| Philosophical Society of Washington              | " "                 |
| Smithsonian Institution                          | " "                 |
| United States Geological Survey                  | " "                 |
| American Society of Microscopists                | Buffalo, N. Y.      |
| Buffalo Society of Natural Sciences              | " "                 |
| California Academy of Sciences                   | San Francisco, Cal. |
| California State Geological Society              | " "                 |
| Santa Barbara Society of Natural History         | " "                 |
| University of California                         | Berkley, Cal.       |
| Minnesota Academy of Natural Sciences            | Minneapolis, Minn.  |
| Academy of Natural Sciences                      | Philadelphia, Pa.   |
| Academy of Sciences                              | St. Louis, Mo.      |
| Missouri Botanical Gardens                       | " "                 |
| American Chemical Society                        | New York City.      |
| New York Microscopical Society                   | " "                 |
| The Linnean Society                              | " "                 |
| American Astronomical Society                    | " "                 |
| American Geographical Society                    | " "                 |
| New York Academy of Sciences                     | " "                 |
| Terry Botanical Club                             | " "                 |
| Central Park Menagerie                           | " "                 |
| Cornell Natural History Society                  | Ithaca, N. Y.       |
| Johns Hopkins University                         | Baltimore, Md.      |
| Kansas City Scientist                            | Kansas City, Mo.    |
| Wisconsin Academy of Science, Arts and Letters   | Madison, Wis.       |
| Society of Alaskan Natural History and Ethnology | Sitka, Alaska.      |
| University of Penn                               | Philadelphia, Pa.   |
| Franklin Institute                               | " "                 |
| War Department                                   | Washington.         |
| Field Columbian Museum                           | Chicago.            |
| Academy of Sciences                              | Chicago.            |
| Agricultural College                             | Lansing, Mich.      |

- Colorado Scientific Society..... Denver, Col.  
 Museum of Natural History..... Albany, N. Y.  
 Rochester Academy of Sciences..... Rochester, N. Y.

## (3) WEST INDIES.

- Institute of Jamaica..... Kingston, Jamaica.

## (4) SOUTH AMERICA.

- The Royal Agricultural and Commercial Society  
 of British Guiana..... Georgetown.

## II.—EUROPE.

## (1) GREAT BRITAIN AND IRELAND.

*England.*

- Bristol Naturalists' Club..... Bristol.  
 Literary and Philosophical Society of Leeds..... Leeds.  
 Conchological Society..... "  
 Royal Society..... London.  
 Royal Colonial Institute..... "  
 Society of Science, Literature and Art..... "  
 Geological Society..... "  
 Manchester Geological Society..... Manchester.  
 Mining Association and Institute of Cornwall..... Camborne.  
 Cardiff Photographic Society..... Cardiff.

*Scotland.*

- Glasgow Geographical Society..... Glasgow.  
 Philosophical Society..... "

*Ireland.*

- Royal Irish Academy..... Dublin.  
 Royal Geological Society of Ireland..... "  
 Naturalists' Field Club..... Belfast.

## (2) AUSTRIA-HUNGARY.

- Anthropologische Gesellschaft..... Vienna.  
 K. K. Geologische Reichsanstalt..... "  
 Trentschin Scientific Society..... Trentschin.

THE HAMILTON ASSOCIATION.

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(3) BELGIUM.

Société Géologique de Belgique.....Liége.

(4) DENMARK.

Société Royal des Antiquaires du Nord.....Copenhagen.

(5) FRANCE.

Académie Nationale des Sciences, Belles Lettres  
et Arts.....Bordeaux.

Académie Nationale des Sciences, Arts et Belles-  
Lettres.....Caen.

Académie des Nationale Science, Arts et Belles-  
Lettres.....Dijon.

Société Geologique du Nord.....Lille.

Société Géologique de France.....Paris.

(6) GERMANY.

Naturwissenschaftlicher Verein.....Bremen.

Naturwissenschaftlicher Verein.....Carlsruhe.

(7) RUSSIA.

Comité Géologique.....St. Petersburg.

Russisch-Kaiserliche Mineralogische Gesellschaft.. “

III.—ASIA.

(1) INDIA.

Asiatic Societies of Bombay and Ceylon.

Asiatic Society of Bengal.....Calcutta.

Geological Survey of India..... “

(2) STRAITS SETTLEMENTS.

The Straits Branch of the Royal Asiatic Society..Singapore.

(3) JAPAN.

Asiatic Society of Japan.....Tokyo.

IV.—AFRICA.

(1) CAPE COLONY.

South African Philosophical Society.....Cape Town.

## V.—AUSTRALIA.

## (1) AUSTRALIA.

|   |            |
|---|------------|
| The Australian Museum.....              | Sydney.    |
| Royal Society of New South Wales.....   | “          |
| Linnean Society of New South Wales..... | “          |
| Australian Natural History Museum.....  | Melbourne. |
| Public Library of Victoria.....         | “          |
| Royal Society of Queensland.....        | Brisbane.  |

## (2) NEW ZEALAND.

|                            |             |
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| New Zealand Institute..... | Wellington. |
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## (3) TASMANIA.

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| Royal Society of Tasmania..... | Hobartown. |
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