JOURNAL AND PROCEEDINGS

OF THE

Hamilton Association

FOR SESSION OF 1894-95.

NUMBER XI.

CONTENTS.

PRINTED FOR THE HAMILTON ASSOCIATION BY THE TIMES PRINTING COMPANY.

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AUTHOR O

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ABSTRACT OF MINUTES

OF THE PROCEEDINGS OF THE

Hamilton Association

DURING THE

SESSION OF 1894-95.

THURSDAY, NOVEMBER 8th, 1894.

OPENING MEETING.

The meeting was called to order by the late President, Mr. Alexander, who at once introduced to the members the newly elected President, Mr. Briggs.

The President in his inaugural address presented the aims and advantages of the Association, closing with an earnest request for the active co-operation of the members in the work of the coming session.

Applications for membership were received from Mrs. Thomas Beasley and Mrs. Carey.

The medals won in the photographic contest were then presented by Mr. D. B. Charlton and the President, as follows: The Charlton Gold Medal, A. H. Baker; Silver Medal, the gift of the Photographic Section, J. R. Moodie.

In accordance with the custom of previous years, the meeting was then given over to a display of the work of the various sections. This included exhibits in Botany, Microscopy, Geology, Chemistry, Electricity, and Pneumatics.

During the evening a short programme of music was rendered through the kindness of Prof. Aldous.

It was estimated that over five hundred members of the Association and others availed themselves of the opportunity of viewing the work of the various sections.

THURSDAY, DECEMBER 13th, 1894.

The President, S. Briggs, in the chair.

The minutes of the last regular meeting were read and confirmed.

An application for membership was received from Mr. J. M. Dickson, chemist.

Mrs. Carey and Mrs. Thomas Beasley were elected ordinary members of the Association.

The President then introduced Dr. P. E. Jones, Indian Agent, to read a paper on the "Early History of the Indians north of the St. Lawrence and the Great Lakes."

The doctor began his paper with a short description of the condition of the Indian inhabitants previous to the coming of the French settlers. Passing to the location of the various tribes at this early date, the speaker stated that two great nations of Indians originally occupied Canada, the Algonquins and the Hurons. The Algonquins occupied the land north of the St. Lawrence River and Lake Ontario. Before the French came they had been the most powerful of all the tribes, and were considered the masters of this part of Canada. They were described as having the mildest aspect and the most polished manners of all the Indian tribes. The remains of this once powerful nation are now the Ojibways, the Ottawas, the Western Algonquins and the Menomonies. The Hurons occupied a tract of land about 25 miles wide, along Lake Huron, and were remarkable for their industry. The Neuter nation, occupying the banks of the Niagara and the peninsula between Lake Erie and Ontario, were a small tribe. Very little is known of them, and they have long been extinct. Taking up the subsequent history of these once powerful nations, the speaker went on to show how, after the coming of the white settler, a deadly warfare had broken out between them and the more powerful Iroquois at the south of the St. Lawrence and Lake Ontario.

At the conclusion of the paper a vote of thanks was tendered to its author, and by a unanimous vote of the members the doctor was enrolled as a corresponding member of the Association. Chief Cheechalk, of the Ojibways, was also present, and gave a short address and a song in his native tongue. A large number

of the members embraced the present opportunity by asking the doctor a number of questions relative to Indian history, which were satisfactorily explained. At the close of the meeting the doctor placed on exhibition a number of very rare Indian relics, concerning the use of which there is still much doubt among antiquarians.

THURSDAY, JANUARY 24th, 1895.

SPECIAL MEETING.

President S. Briggs in the chair.

Minutes of former meeting were read and confirmed.

Mr. J. M. Dickson was elected an ordinary member of the Association.

Rev. J. H. Long, M. A., LL. B., was then introduced to read a paper entitled "Europe during the Past Thirty Years." The lecturer treated his subject under the three following heads: The Origin of the German Empire; The Rise of the Kingdom of Italy; The Decay of the Turkish Power. In connection with this section, the lecturer predicted that the day was not far distant when the sick man of Turkey would disappear from the map of Europe, and when Constantinople would become the possession of the White Czar.

An interesting discussion followed, in which a large number took part, and complimented the lecturer on the learned research displayed in his paper.

FRIDAY, FEBRUARY 15th, 1895.

President Briggs in the chair.

The President announced that on account of the nature of the evening's programme the regular order of business would be dispensed with.

Mr. J. B. Tyrrell, C. E., was then introduced to read a paper entitled "A Two Thousand Mile Tour to the Land of Perpetual Ice and Snow." The lecture was illustrated throughout with oxy-calcium views, under the direction of J. R. Moodie, which added greatly to an appreciation of the many difficulties encountered by the young explorers on their hazardous journey. In describing the companions of his trip the lecturer said: "Our party comprised the following: J. B. Tyrrell, geologist; myself, topographer and Eskimo interpreter;

three Iroquois from Caughnawaga, Quebec, and one half-breed from Prince Albert. Several days were spent at Edmonton, where we found our supplies awaiting us, and by the morning of May 27th our outfit was loaded upon waggons and sent off upon the northern trail leading to Athabasca Landing. On the first day the weather was showery and the trail in many places very soft, but later in the day the weather cleared and permitted us to enjoy the lovely country through which we were passing. The soil was chiefly a rich black loam, well covered, even at this early season, by the rich prairie grass. Farther on the country became more hilly, the soil more sandy and covered by the most beautiful park-like forests of jack pine."

The party reached Athabasca Landing on the evening of the 30th of May. The town was described as consisting of six log buildings, situated in the deep valley of one of the greatest rivers in America, an important station of the Hudson's Bay Company, and the point from which all supplies for the many northern posts are shipped. The lecturer stated that for about one hundred miles up stream and fifteen hundred miles to the Arctic ocean, this great northern waterway, excepting at two rapids, is regularly navigated by large river steamers. The lecturer then continued a description of the trip down the Athabasca river and easterly through Lake Athabasca into Black Lake, from which point the journey extended north and east until Hudson Bay was reached. In connection with this part of the lecture many photographs were shown on the canvas, illustrating the wild and picturesque nature of the scenes passed on the way.

The lecturer closed his paper with a graphic account of the hardships encountered in the last few hundred miles of the journey, when overtaken by the early returning winter in this northern land. "On Oct. 14th," he said, "as we advanced, the ice became so heavy and extended so far out to sea, that in order to clear it we could not see land. Towards evening we began to look about for some opportunity of going ashore, but nothing could be seen but the sea and a field of ice, with occasional boulders protruding. We pushed on, hoping to find some bluff, point or channel of water by which we might be able to reach the shore, but the appearance of things did not change. We stood up, vainly hoping to get at least a glimpse of land. Soon the shades of night began to fall about us;

we tried our utmost to reach the shore, but failing, resolved to await the time of high tide, which was 10 p. m. Ten o'clock came, however, and we were still in the same condition, and so could do nothing but remain where we were. The hours of that night were the longest that I ever experienced. My brother was nearly frozen, having been obliged to sit or lie in icy water all night. One of our men had both his feet frozen, and several others were badly used up. At last, however, the day returned, but still we were in the same position. We could not hold out much longer; we must either gain the shore or perish. At the time of high tide, the ice being somewhat loosened, our canoes were thrust into the pack, and by great exertion we succeeded about one o'clock in reaching solid ice, and, for the last time, hauled out our noble little crafts. We had been in them just 30 hours, battling with the ice, exposed to a chilling winter blast, our clothing frozen, and our bodies faint and numb with starvation and cold." The lecturer then briefly outlined the subsequent journey of the two guides to Fort Churchill on foot through ice and snow, and the rescue of the party by a number of dog trains sent out from that point. A brief discussion followed the reading of the paper.

Mr. Garner, the celebrated investigator of language in the lower animals, who was present during the early part of the meeting, also gave an interesting account of his recent investigations in Africa into the nature of the language of the various monkey tribes.

THURSDAY, MARCH 7th, 1895.

SPECIAL MEETING.

The Association met in the rooms of the Hamilton Art School, President Briggs in the chair.

This being a special meeting the usual order of business was dispensed with.

The President introduced Prof. R. L. Garner in his lecture entitled "An Investigation of the Speech of the Lower Animals."

Mr. Garner began with an account of the circumstances leading him to undertake an investigation of the conditions of speech in the lower animals. He next outlined the results of his experiments among the animals confined in the zoological gardens of America.

These investigations were carried on, for the most part, by means of the phonograph, which was made use of to record the sounds of certain animals and then give them forth to others of the same species, whereupon the actions and sounds given in reply were noted in like manner.

The lecturer next gave the main circumstances connected with his African journey, which was undertaken that he might be able to pursue his investigations under more favorable conditions. This portion of the lecture not only set forth many facts relating to the habits and speech of the lower forms of animal life, but also threw much light on the character and customs of the inhabitants.

A spirited discussion followed.

WEDNESDAY, MARCH 20th, 1895.

President Briggs in the chair.

The Curator announced the donation by Mr. A. E. Walker of a valuable collection of fossils, representing the work of thirty years in that direction. The thanks of the Association were tendered Mr. Walker for his valuable donation.

Applications for membership were received from Messrs. Alex. McLagan, John Knox and H. P. Coburn.

Inspector J. H. Smith was then introduced and read a paper entitled "The Early History of Wentworth County."

Beginning with a short account of the early history of Upper Canada, the paper traced in a clear and instructive manner the main events relating to the early settlement and development of this part of the province by the sturdy and patriotic United Empire Loyalists. The paper was replete throughout with interesting incidents relative to the religious, intellectual and social habits of the early settlers.

A lengthy discussion followed the reading of the paper.

WEDNESDAY, APRIL 10th, 1895.

President Briggs in the chair.

The Corresponding Secretary announced the receipt of a number of exchanges.

Messrs. John Knox, Alex. McLagan and H. P. Coburn were elected ordinary members of the Association.

The Corresponding Secretary was then called on to read the papers of the evening; the first of which, entitled "The Idyl of a Rambler," was from the pen of Mr. H. B. Small, of Ottawa.

Mr. Small, in his paper, set forth the many aspects of joy and beauty in which nature is wont to display herself even to the casual student of her varied phases.

The second paper, which gave an accurate account of the events prior to and connected with the Battle of Stoney Creek, was written by Mr. Douglas Brymner, Dominion Archivist at Ottawa. The facts narrated were for the most part based on original documents contained in the Dominion Archives, copies of which were attached to the paper.

At the conclusion of the reading of the papers Mr. Small was elected to represent the Association at the annual meeting of The Royal Society of Canada.

TUESDAY, APRIL 30th, 1895.

SPECIAL MEETING.

President Briggs in the chair.

The programme for the evening consisted of an exhibit of lime-light views by the members of the Photographic Section.

The views, which were all relative to Canadian scenery, were much enjoyed by the large number of members and visitors present.

THURSDAY, MAY 9th, 1895.

President Briggs in the chair.

The Curator announced the donation by Dr. Gaviller of an Indian arrow from Arizona.

The annual meeting was then held, and the following reports read and adopted.

Report of the Council, by the Secretary.
" " " Curator, by Alex. Gaviller.
" " " Geological Section, by A. T. Neill
" " " Biological Section, by H. S. Moore.
" " " Photographic Section, by Wm. White.

The following officers were elected for the ensuing year:

President,	S. Briggs.
First Vice-President,	A. T. Neill.
Second Vice-President,	A. E. Walker.
Corresponding Secretary,	Rev. J. H. Long, M. A., LL. B.
Recording Secretary,	S. A. Morgan, B. A.
Treasurer,	J. M. Burns.
Curator,	Alex. Gaviller.
Asst. Secretary and Curator,	Walter Chapman.
Auditors,	Geo. Black and F. Hansel.

Council: P. L. Scriven, J. E. P. Aldous, B. A., W. H. Elliott, B. A., Ph. B., Thos. Morris, Jr., Major McLaren.

As the report of the Treasurer had not been audited, it was resolved to adjourn the Annual Meeting, subject to the call of the Secretary.

FRIDAY, JULY, 5th, 1895.

Adjourned Annual Meeting.

President S. Briggs in the chair.

The report of Treasurer and Auditors, showing a balance of $206.10, was read and adopted.

President Briggs announced that through personal considerations it would be impossible for him properly to perform the duties of President for the coming session, and asked that a successor be appointed. In accepting the resignation, the meeting expressed regret that Mr. Brigg's private duties did not permit him to retain the office he had so ably filled for the past session.

The election of a new President resulted in the promotion of Mr. A. T. Neill, 1st Vice-President, to the office of President, T. W. Reynolds, M. D., being elected to the office of 1st Vice-President rendered vacant by the promotion of Mr. Neill.

The newly elected President announced that a section for the study of Microscopy would be organized at the opening of the session of 1895-96.

REPORT OF THE COUNCIL.

Your Council have pleasure in submitting their report for the session of 1894-5.

Since the last annual meeting the Council has held five meetings, the proceedings of which are duly recorded in the minute book of the Council.

The general meetings of the present session—eight in number—have been marked by the increased interest of the members and public generally, as evinced by the large numbers in attendance and the hearty discussions which have followed the reading of all the papers.

Following is a list of the titles and authors of the papers read:

1894.

Nov. 8th.—"The Purpose of the Association," President S. Briggs.

Dec. 13th.—"Early History of the Indians North of the Great Lakes," Dr. P. E. Jones.

1895.

Jan. 24th.—"Europe during the Past Thirty Years," Rev. J. H. Long, M. A., LL. B.

Feb. 15th.—"A Two Thousand Mile Tour to the Land of Perpetual Ice and Snow," J. B. Tyrrell, C. E.

March 7th.—"Speech in Lower Animals," Prof. R. L. Garner.

March 20th.—"Early History of Wentworth County," Inspector J. H. Smith.

April 10th.—"Idyl of a Rambler," H. B. Small.

April 10th.—"Battle of Stoney Creek," Douglas Brymner.

April 30th.—Lantern Slides, Photographic Section.

The membership has been increased by the addition of six ordinary members and one corresponding member, while none have withdrawn.

Through the kindness of the members and other friends of the Association a number of valuable donations to the Museum have been made during the present year, and the Council would take this opportunity of publicly tendering their thanks for the same.

At the annual meeting of the Royal Society of Canada, held at

Ottawa in May of last year, your Society was ably represented by H B. Small, Esq., and the same gentleman has been appointed as our representative at the approaching meeting of the Society.

In conclusion, we would urge upon the members the necessity of each applying himself, as far as possible, during the coming recess, to the work of his particular department, so that all may return with some new facts as material for the work of the coming session.

All of which is respectfully submitted.

S. BRIGGS,
President.

S. A. MORGAN, B. A.,
Secretary.

EARLY INDIAN HISTORY.

Read before the Hamilton Association December 13th, 1894.

BY DR. P. E. JONES.

When, in 1524, just 370 years ago, the first settlers from France laid the foundations of civilization in what is now this fair Dominion of Canada, they expected to find the aboriginal inhabitants a mere race of savages, meagre and starving wretches, whose constant exertions were only employed in attempting to escape the famine with which they, they supposed, were perpetually threatened. The discoverers were therefore surprised to find a proud race of dignified men, terrible in war and mild in peace, led by able warriors, statesmen and orators, capable of maintaining order without the restraints of law, and uniting by the closest ties the members of the same band. They found a wild but noble race, *in peace*, wandering over these beautiful hills and dales, securing easily a subsistence from the abundant game, or in their swift canoes gliding over these magnificent lakes and rivers, often meeting together as they now occasionally do in Grand Council, when the assembled people would sometimes enliven the proceedings by dancing or athletic sports, giving rise not seldom to merry peals of laughter. They were numerous, powerful, wise and happy, and nothing but the weight of many years bore them down to the grave. The Indian mother could then rear a large family of healthy and happy children; the Indian corn grew tall and rank round their villages; the old men made their feasts and smoked their pipes; the young men and women danced; the medicine men applied from nature's store such simple remedies as then sufficed to drive away the grim monster Death. These were happy days of sunshine and calm to the red sons of the forest.

But *in war* these Frenchmen found them different. Instead of the merry laugh the hills rang again with the fierce war-whoop, and the merry dance was changed to the savage war-dance. The pipe of

peace was buried, and every brave, with tomahawk and scalping knife in hand, was ready to sell his life for his liberty.

There were two great nations of Indians originally occupying Canada, the Algonquins and the Hurons. The Algonquins occupied all the land north of the St. Lawrence River and Lake Ontario. Shortly before the French came they had been the most powerful of all the tribes and were considered the masters of this part of America. They are described as having the mildest aspect and the most polished manners of all the Indian tribes. The remains of this once powerful nation are now the Ojibways, the Ottawas, the Western Algonquins or Lenape, and the Menomonies. The Hurons occupied a tract of land about 25 miles wide along Lake Huron and were remarkable for their industry. There was also a small tribe called the Neuter Nation, occupying the banks of the Niagara, and the peninsula between Lakes Erie and Ontario, who were called by the Hurons Attiwondawonks. Very little is known of them and they have long been extinct.

The Iroquois or Five Nations, who occupied the country south of the St. Lawrence and Lake Ontario, have always been, more or less, connected with the history of this country. Their confederacy was composed of the following nations: The Mohawks, Oneidas, Onondagas, Cayugas, and Senecas. They were never found waging war against each other, and usually combined when attacked.

In 1608 the French sent an exploring party up the St. Lawrence, under Samuel Champlain, and passing up the river he fixed upon a high hill, richly clothed with vines and walnut trees, as the place to winter. This hill was called by the Indians, Quebeio or Quebec, and the city since built upon it has retained the name. Here he formed a settlement and built store houses, and next spring he pushed further up the river. When about 25 leagues above Quebec he met the chiefs of the Algonquins, and with them made his first treaty with Canadian Indians, which bound him and them to make war together upon the Five Nations south of the river. Going south with the Algonquins, he twice met the Iroquois in battle on the borders of a large lake, which he named after himself Lake Champlain. The Five Nations were soon put to flight with some loss by the use of fire-arms, something they had never before heard of or seen.

After this Champlain returned to France, but in 1615 again

came to Canada with a new company, among whom were four Roman Catholic priests, the first missionaries to the Indians of Canada. The following year Champlain, accompanied by Algonquins to the number of 2,500, made another formidable raid upon the Five Nations, but this time they had to return after accomplishing very little. About 1620 a treaty of peace was entered into between the Iroquois and Hurons, in which Champlain and a Huron Chief named Wolf-stag took an active part. This treaty, however, was of short duration, for three years only passed when the Five Nations were again at deadly warfare with the French and Hurons. But just about this time, war having broken out between France and England, Sir David Kirk sailed with a fleet to the St. Lawrence and forced Champlain with his colony to surrender. Kirk sent his French prisoners to England, but by the treaty of peace in 1632 they were sent back and the Colony became again the property of France, which in the following year sent out enough new colonists to make the total white population about 6,000. Champlain died in about 1636, and in the meantime the Iroquois had been fighting fiercely with the Hurons and Algonquins, the latter of whom they completely subdued.

Montmorency, who followed Champlain as governor, succeeded in making peace between the hostile tribes. The Roman Catholic missionaries at the same time were actively at work, and no less than 3,000 of the Hurons are said to have been baptized at one time. But in 1648 the Five Nations again arose in war and attacked the French settlements with desperate fury, killing alike priests, women and children. They attacked the Hurons, who had of late been peaceful and flourishing, and filled the land with horror and blood. The Hurons fled to supposed places of safety, but their enemy pursued and killed them till at last they had reduced that once powerful nation to a little tribe of about 300 souls. This small remnant of the nation, with downcast heads and heavy hearts, wandered through the thickest forests to evade their savage enemies until at last they were able to throw themselves upon the charity of the French at Quebec. A little station called Sillery was there provided for them, which in a few years' time saw the last of the Hurons.

The Iroquois now lorded it over Canada, and they were continually attacking the French settlements, until in 1653 they, of their own accord, made overtures of peace. But while one part of them

would make peace another would carry on hostilities, till in 1663 war raged with greater fury than ever. The Five Nations during all this time continually extended their territories, and having seen the powerful effects of fire-arms they procured them from the Dutch and English. They now attacked the Ottawas, who, as I have before mentioned, were a *part* of the Algonquins. They inhabited the northern part of Canada, and did not make even an attempt at resistance, but sought refuge among the marshes or on the islands of Lake Huron. They completely subdued the great Cat nation, and it is reckoned that the Five Nations held undisputed sway over a country 500 miles in extent. The very sight of one of them struck terror into the neighbouring tribes, and on the side of New England the cry of "A Mohawk! A Mohawk!" echoed from hill to hill, and all who heard it were filled with fear. To add fresh consternation to the people, Canada was at this time visited by a succession of earthquakes, which lasted for half a year, recurring two or three times a day.

In 1665 France sent out detachments of soldiers to protect her colony and subdue the Five Nations. Courcelles, who was governor at this time, built a number of forts and three of the Five Nations sued for peace. The fierce Mohawks and Oneidas, however, stood back and still kept up the conflict, although the French troops and forts kept them at a distance from the settlements. In 1667 Courcelles pushed the power of France farther westward, and commenced the building of a fort near Kingston, but he was recalled to France and succeeded by Frontenac, who finished building the fort and called it Fort Frontenac. The Roman Catholic clergy at this time succeeded in preventing the sale of spirituous liquors to the Indians, though they were opposed by Frontenac, who thought that fire-water was useful to him in his military and commercial dealings with the Indians. Frontenac was recalled to France in 1682, and M. de la Barre was sent out as the new Viceroy.

Canada was now in a critical state. The fine Hudson Bay Territory, which had been heretofore in possession of the Dutch, now fell into the hands of the English, and they laid claim to all the country occupied by the Iroquois. The Hudson Bay Company had pushed their agencies south as far as Lake Superior and were making friendly dealings with the Iroquois, and trying to stir them up against

the French. As the English gave the highest price for furs, the Five Nations began to deal with them, and even bought up those that were intended for the French market. Barre met the chiefs of the Five Nations upon the north shore of Lake Ontario and endeavoured to frighten them into having nothing to do with the English of Hudson's Bay, but the Iroquois insisted on doing as they pleased in the matter. The English reproached the Five Nations for not having gone to war with the French, but they replied in the same noble and determined manner. "Barre," they said, "is our father," "Corlaer," as they called the governor of New York, "is our brother, "but neither of them is our master. He who created the world gave "us the land we occupy; we are free. We respect both, but neither "has the right to command us, and no person ought to take offence "that we prevent the earth from being troubled."

Barre, on account of his unsuccessful negotiations with the Indians, was recalled to France and succeeded by Denonville, a brave and active officer, who immediately took steps to extirpate the Indians if he could not reduce them to subjection. He opened his campaign with a measure most iniquitous and unjustifiable that could well be conceived. Having invited a number of Chiefs to meet him on the banks of Lake Ontario, he treacherously put them in irons and sent them to France. There could now be nothing but war to the utmost extremity. He marched against the Iroquois with 800 French regulars, and 1,300 Algonquins, but the expedition accomplished nothing worthy of note, except the building of Fort Niagara. On the return of the French they found Lake Ontario and the Upper St. Lawrence alive with the canoes of the Iroquois, who blockaded forts Niagara and Cataraqui and razed the former to the ground. They afterwards made a sudden descent upon the Island of Montreal, which they laid waste with fire and sword, and carried off two hundred prisoners without any resistance. They also blew up the fort at Cataraqui. In 1689 Count Frontenac was again sent out from France, for the purpose of putting a stop to the war, or if that could not be done to carry it on with more vigor.

After finding that it was useless to try to win the Iroquois from the English, he sent out several expeditions against the English settlements of what is now New York State, killing a number of the defenceless inhabitants and making the Iroquois still more bitter

against the French. The English of New York and Boston retaliated by sending out two expeditions against Canada, but both returned without accomplishing anything. The Iroquois continued to harass the colony until 1694, when they made overtures of peace, which had the effect of suspending hostilities for two years. In 1696 Frontenac prepared the largest expedition against the Five Nations that had yet been attempted, but it turned out to be an act of heroic folly, accomplishing nothing but the destruction of some wooden cabins and some grain. The Indians did not show themselves till the expedition was retreating, when they followed and harassed the rear. The war continued till Frontenac died in 1698, but two years after peace was made with the Iroquois by his successor De Calleries.

After three years of peace, the English, who were now at war with France, determined to take possession of the whole of the northern part of America. To do this they called upon the Five Nations to assist them, but the Indians were very reluctant to take up arms. De Vaudreuil, who had meanwhile succeeded De Calleries, was able by good management to keep the British forces back, and they soon abandoned the attack, the Iroquois having done nothing to help them. During the interval of repose that ensued, both English and French were preparing for another great struggle, each endeavoring to gain the assistance of the Five Nations. The French succeeded in getting the assistance of the Senecas and Onondagas, but in the west the French had to meet a new enemy, the Foxes, whom they nearly exterminated.

In 1710 the English again sent out an expedition against Canada, partly by land and partly by water. That part going by water was wrecked at the mouth of the St. Lawrence, and the rest hearing of the disaster retired to New York. In 1713 occurred a change in the English ministry, followed by the famous Treaty of Utrecht, which closed the war in Canada. France gave up Acadia and Newfoundland, and surrendered all her claims to the sovereignty of the Five Nations, an empty concession by which she gave up that which she never possessed, and England acquired a nominal right which she could not enforce.

Now followed a period of 42 years of profound peace for Canada, during which several French governors ruled with more or less wisdom, and French settlements sprang up by the St. Lawrence with great

rapidity. More attention was paid to agriculture, and the fur trade was carried on extensively, while Quebec reached a population of 8,000 souls. Charlevoix, a French traveller and writer, made a trip in a birch bark canoe, from Quebec up the St. Lawrence, along the south side of Lake Ontario and the Niagara river, along the north shore of Erie and up the St. Clair and Detroit rivers into Lake Huron and got as far as Mackinaw. In his splendid account of the trip he describes the country about Sarnia and the Detroit River as the most beautiful and lovely part of Canada. During all this time the Indians of Canada remained at peace, little change taking place in their affairs.

EUROPE DURING THE LAST THIRTY YEARS.

Read before the Hamilton Association, Jan. 24th, 1895.

BY REV. J. H. LONG, M. A., LL. B.

The world of to-day is very different from that of thirty years ago. The changes have been so gradual that they have, in many cases, escaped notice. But, could we suddenly be set down in the world as it was thirty or thirty-five years ago, we should scarcely be able to recognize our own identity. The great civil war on this continent was then at its height: the issue still lay in the future. Iron-clads, breech-loading rifles, and Maxim guns, were but in embryo; dynamite was virtually unknown; the Atlantic cable was an experiment; the telephone, the electric light, the electric railway, the bicycle, had never been thought of for practical purposes; while baccili and microbes were in indisputed possession of the physiological field. The Dark Continent was, then, not a name, but a reality; the Suez Canal was unbuilt; no Transcontinental Railway joined the Atlantic to the Pacific; slavery existed in civilized lands; Central Asia was unexplored; the Pope sat upon his temporal throne; there was no German empire, and France was ruled by Napoleon the Third. Truly, we should not recognize our surroundings could the hand be put back on the dial-plate of Time!

But it is not of all these things—it is not of scientific progress that I wish to speak: it is of the political changes that these years have brought about in Europe—changes fraught with the most momentous consequences to Europe and the whole world. In considering this matter it will be sufficient to confine our thoughts to three movements: the rise of the German Empire, the unification of Italy, and the decadence of the Turkish Power. There have been, it is true, other political movements: Spain has had her civil wars, England and Holland have had their colonial wars. But the reconstruction of the map of Europe has depended upon the three changes just mentioned. Let us take them in order.

First—the creation of the German Empire. In the northern

part of Central Europe there is a little land that is now known chiefly for the excellence of its dairy produce, but which, from old Viking days, has played no unimportant part in history. I need scarcely say that I refer to Denmark. In the year 1863 the King of Denmark ruled not only over what is now Denmark, but also over the two provinces Schleswig-Holstein and Lauenburg. These lay to the south of the Province of Jutland, thus adjoining German territory; they were, moreover, the most valuable part of Denmark. The people of these provinces were very largely German in language and sentiment. They had, in fact, a double allegiance, being connected politically with both Germany and Denmark. This produced such friction between the Danish Government and the pro-German party in the Provinces—a friction increased by various other matters, *e. g.*, the question of the language to be used in the schools—that war broke out in 1864 between Denmark and the Germanic Confederation. "The Germanic Confederation," for, at this time, Germany was a loose league, at the head of which were the two rivals, Prussia and Austria. Following these at a respectful distance were certain kingdoms (Hanover, Saxony, Wurtemburg, Bavaria) and about forty principalities and duchies. The capital was Frankfort-on-the-Main. This war could have but one termination: two millions could not stand against seventy millions. After a heroic struggle Denmark succumbed: the territory in dispute was wrested from her rule. The question now arose: What shall be done with it? Upon this question Prussia and Austria could not agree. This disagreement and various old differences resulted in the war of 1866. This is sometimes known as "the seven weeks' war," and it ended by the Treaty of Prague. By the terms of that treaty Austria—the lineal successor of the Holy Roman Empire, and, still farther back, of the Empire of the Cæsars—was removed from her post as leader in the Germanic Confederation, and Prussia was installed in her stead. The rise of the Kingdom of Prussia from the little duchy of Brandenburg is one of the most important events in history, and shows how a determined and united people, under able rulers, can overcome apparently unsurmountable obstacles. For Prussia *had* had able rulers—the Hohenzollerns; and, as the founder of her greatness, that Frederick who, in the preceding century, had given her a military system such

that she defied a Continent in arms. At the time of which I am now speaking (1866) Prussia was ruled by a worthy scion of this house—the late Emperor William, whose son, the late Emperor Frederick (called affectionately by his people "Unser Fritz") greatly distinguished himself in this, as in the later Franco-Prussian war. In addition to these men, Prussia had three who were veritable towers of strength: in statecraft, Bismarck; in strategy, Von Moltke; in finance, Von Roon. More than this: her army was furnished with the breech-loading rifle ("the needle-gun"), while the Austrians used the old muzzle-loader. These and other circumstances explain the result of a campaign unexampled in history—the Bohemian campaign of 1866, ending in the great fight at Sadowa. At one blow, then, the ancient house of the Hapsburgs, which had held sway for 600 years, was hurled from its position as arbiter of Germany, to make way for a power whose very name was first heard but yesterday in the councils of Europe. But Prussia, although young, was very swift in action and very stern in dealing with conquered foes. She deposed Hanover from her position as a kingdom because she had sided with Austria [North Germany had generally sided with Prussia and South Germany with Austria]; and her ultimatum to her enemy was, that she should withdraw from German affairs, should pay a large war indemnity, and should give to Italy, who had helped Prussia, and whom the Austrians very easily disposed of, the old Italian territory of Venetia. But William was only King of Prussia after all—not Emperor of Germany. A further step must be taken before "manifest destiny," as the Prussians termed it, should be fulfilled. The old score with France must be settled. Prussia went on, therefore, quietly perfecting her army, obtaining information as to France and her defences, uniting the North-German people, and in general preparing for the struggle which she felt must some day come, and which she determined should come when she was best and France worst prepared. France was at this time an empire, under the rule of Napoleon III., nephew of the great Napoleon. The people were, to a certain extent, restless—they had not forgotten the *coup d' état* by which the Emperor had reached the throne. Yet they were proud of the military successes they had won under his rule—the victories of the Crimea, of Algeria, of the Austrian campaign. They were proud, also, of their progress in the arts of

peace, of the extension of their commerce, of the embellishment of their capital. A little cloud, however, hung in the sky. Germany had not forgotten that the legions of the great Napoleon had once laid waste her smiling valleys and her vine-clad hills. She had allowed to stand the monuments which the invaders had set up, that these monuments might be a perpetual reminder to her sons of the duty of avenging the dishonor offered to the Fatherland. But France, light-hearted, careless France, had closed her eyes to the present, and lived wholly in the glamor of the past. To her Germany was still the somewhat uncouth neighbor across the Rhine, whose growing aggressiveness it would some day be necessary to curb. The opportunity soon presented itself. The Spanish throne became vacant, and the provisional government elected Prince Leopold, a scion of the Hohenzollern dynasty. France at once objected, alleging that this was German intrigue, a deliberate scheme to extend Prussian influence over Spain, France's nearest neighbor to the south. She called upon Prussia, therefore, to disallow the act. Prussia refused, somewhat brusquely, and war was declared by Napoleon in July, 1870. The old passion for war, "the furor celticus," at once burst into a flame. "On to Berlin!" was the rallying cry; and the soldiers boasted that within a month they would sing the Marseillaise along her streets. But France had calculated without her host. Silently, but with wonderful rapidity, the German armies (for the South German States had joined Prussia) were mobilized upon the frontier, and, before the echoes of the boasts of the boulevards had died away, they were on French soil, their faces turned toward Paris. France discovered, when it was too late, that her army was largely on paper, that the German officers knew more about France than Frenchmen did, and that it was a question, not of taking the enemy's territory, but of holding their own. Then followed in rapid succession Verdun, Gravelotte, Mars-la-Tour, Woerth, and many another blood-stained field; with the sieges of Strassburg and Metz, and the fateful day of Sedan, ending in Napoleon's capture, State imprisonment, and death. But Germany had not done with her ancient foe. Paris must surrender. In vain were made overtures of peace. Inch by inch the invading host crept nearer, until, with famine stalking through her streets, the victorious legions entered her gates; and then, in the battle-hall of the

French kings, and surrounded by the trophies of French arms, William, King of Prussia, was crowned the Emperor of United Germany. The French Empire had now fallen, and the Commune reared its ensanguined head. Frenchmen fought with Frenchmen. The spirit of '93 again burst forth with lurid glare. Again Notre Dame was desecrated; again the capital became the sport of the fickle, frenzied mob; once more her streets ran red with blood. The Commune crushed, Germany demanded her pound of flesh. The terms were: $1,000,000,000 in money; the support of an army until that sum was paid; and the cession, with all their fortresses, of Lorraine and French Alsace. How that debt was paid is one of the marvels of history. Day by day cars laden with bullion crossed the frontier, until, with the recuperative power she has so often shown, France stood once more before the world, no foeman's foot upon her soil. A stable republic, she set herself calmly and determinedly to profit by the errors of the past. In 1878, and again in 1889, she gave the grandest expositions the world had seen; her empire has extended itself in Farther India, in Madagascar, in Africa, to a degree undreamt of before; her army is larger than that of Germany; her navy second only to that of Britain; her school system in certain respects is the best in the world; and she stands to-day far stronger than when her troops set out so boastfully to cross the German Rhine.

Let us now turn to the second great movement of the last thirty years. There is no more wonderful page in recent history than that which describes the rise of the Kingdom of Italy. The story can be told in a few words. For hundreds of years before the middle of this century, Italy had been merely what Napoleon had called it, "a geographical expression." But there had never died out in the people's heart a desire for unification, a longing for the day when the flag of a united nation should wave "from the base of the Alps to the shores of the sea." The memories of Rome in ancient days, of Florence and Pisa, of Venice and Genoa, in modern days, fired the Italian heart; and the cry of "Italy, one and free," never entirely died away. Fortunately there was, at the time of which I am now speaking, in the province of Savoy [Savoy which lies just beneath the shadows of the Alps back of Genoa], a royal house fit to undertake this patriotic task. Fortunately, also, Italy was rich in great men: the King, Cavour, Mazzini, and the lame lion of Caprera—Garabaldi.

Indeed, more than thirty years ago, this house of Savoy had accomplished much of this task, for in 1860 it had acquired Naples, Tuscany, and other minor states; and, in the war of 1859, it had wrested from Italy's hereditary foe, Austria, the rich plains of Lombardy, with its capital Milan. But there were two important divisions to be gained: the Pontifical States, *i. e.* the city of, and the country round about Rome; and Venetia, the land of Venice and her lagoons, of Padua, "whence Portia came," and of "fair Verona." The latter of these, Venetia, Italy obtained, as we have seen, from Austria, as a result of the war of 1866. But it was felt that there could be no real national unity so long as the Pontifical States were not sharers therein. Turin was only a provincial capital—the real capital must be Rome. It was deemed necessary, therefore, that the Pope should yield up his temporal sovereignty, and that his States should be added to the Italian Kingdom. Whether the Pope was entitled to such secular sovereignty or not is a disputed question, into a discussion of which I shall not enter. It was decided in Italy by the sword. Notwithstanding aid given to the pontifical cause by various organizations, *e. g.*, the Canadian Papal Zouaves, Rome opened her gates to the Italian army, and the City of Tiber became the capital of a United Italy. The year 1870 was a memorable year in Papal annals. It saw the assembling of the Oecumenical Council, which proclaimed the doctrine of the infallibility of the Pope when speaking "ex cathedra;" it saw the withdrawal of the French troops from Rome, which withdrawal led to the fall of the Pope's temporal power; and it saw the defeat of France, the eldest daughter of the church. The changes which the last thirty years have accomplished in Italy are incredible. Commerce has gone forward by leaps and bounds; a Colonial Empire has been founded in Africa; the navy is large and well equipped; the army large and well drilled; the cities have made wonderful progress in sanitary and municipal matters, and many of them have grown with great rapidity, Rome's growth offering a parallel to that of the western cities of this continent; the Italian people have become accustomed to constitutional government; and an excellent educational system has been established. In a word, Italy, which, 30 years ago, was regarded somewhat as Portugal or Greece is now, to-day ranks among the great powers of Europe. It is true, this has not been brought about without great

cost. The taxation has been enormous; and, as a result, emigration has been excessive. The financial condition of the Kingdom is, therefore, anything but satisfactory. But this is a mere passing phase; and, before many years, Italian finances will be put upon a sound basis. The second great movement in Europe during the epoch which we are considering is, then, the unification of Italy.

To study the third we must turn to the extreme East, to Russia and the Balkan Peninsula, the head and front of "the Eastern Question," which, like a great sea serpent, periodically rears its head and agitates the waters of international diplomacy and journalism. Thirty years ago Russia had but recently recovered from the Crimean war. This war very rudely dispelled the belief which had prevailed in Russian military circles since Napoleon's retreat from Moscow, that the army of the Czar was invincible. It also shattered for a time the dream upon which the Russian heart has always been set, viz., the conquest of Constantinople and of the Balkan Peninsula. In the extreme south-east of Europe is to be found the only nation that has remained non-Christian in religion, and Asiatic in custom, language, and blood: non-Christian in religion, for the Turks are Mohammedans; Asiatic in blood, language and custom, for they are Mongolian by blood, Turanian in speech, and polygamous in marriage relationships. The only race of any size in Europe that resembles them to-day is the Hungarian, or Magyar race; but this people long ago laid aside its most distinctive Eastern manners, and accepted the Cross of Christ. Its peculiar Turanian speech, composite or agglutinate in structure, and, therefore, allied to the Turkish language, it still retains. It is not in place to trace the early history of the Turks in Europe. We remember that in 1453 the Sultan, Mohammed II., forced the gates of Constantinople, changed the Church of St. Sophia into the Mosque of Omar, and put an end to the Greek division of the Roman Empire. We remember that the invading Moslems carried their crescent northward to the walls of Vienna. Hurled back by Sobieski, the Pole, they took refuge behind the Balkan mountain ridges, seizing Greece, Bulgaria, Roumania, Servia, and what are now other independent states, along with what is Turkey proper to this day. From the time of the conquest the most bitter hatred existed between the invaders and the old inhabitants of the land. Differing in language,

race, and religion—for the latter were of the Greek Church—there was, from the first, rebellion on the one side and oppression on the other. In the early part of this century the first successful revolt was inaugurated, the extreme south wresting its independence from Turkey and forming the Kingdom of Greece. This was an inspiration to the other States. They, too, dreamed of liberty, either as separate, autonomous powers or else as members of a vast Slavonic Union under the aegis of Russia, Turkey's ancient foe. For Russia was drawn to their side by sympathy and interest: by sympathy, arising from community of blood and faith; by interest, because she had never forgotten the old prophecy that some day the white Czar shall water his charger in the Bosphorus, and that he who is master of Constantinople shall be master of Europe and Asia. But, although the Great Powers sympathized with these Christian provinces as against Turkey, yet they did not wish to see Russia absorb Turkey. This for various reasons: because they mistrusted Russia's kindly solicitude; because they wished to preserve the so-called balance of power; and because Russia at Constantinople would be dangerously near certain possessions of their own, *e. g.*, Malta and the Ionian Islands. Therefore, when in 1854 Russia interfered in the affairs of Moldavia and Wallachia (now the kingdom of Roumania), she found herself confronted by the Allied Powers; and the Crimean War, ending in the defeat of Russia, broke out. The result of this war was that she was checked in her advance towards the Bosphorus, that she was shut out from the Dardanelles and the Black Sea, that certain provisions were made for the better treatment of the Balkan peoples, and that, to some of them, was granted a limited independence. Nothing was heard, therefore, of the Eastern question for some years. After a time, however, it began to be whispered that Turkey was disregarding her obligations, and that Russia had ambitious designs. So, in 1876, the Servians, Montenegrins, and Bosnians rose against Turkish rule; in 1876 the Bulgarian atrocities were committed by Ottoman soldiers; and in 1877 Russia declared war. Now the Turks have this peculiarity: when others can be got to fight for them—as in the Crimean War—they show little disposition to fight for themselves, but when they must fight alone, they are among the best troops in the world. In 1877-8 they had no allies, and their defence against the overwhelming forces of Russia is one

of the most brilliant chapters in military story. The names of Plevna and the Shipka Pass have shed a never-dying glory upon Turkish arms. But even the valor of desperation must yield to numbers. One by one the lines of defence were broken, and the Russian troops found themselves at the gates of Constantinople. The prize was within their grasp, when a British fleet passed the Dardanelles, and Admiral Seymour sent a message to the Russian commander, that the taking of Constantinople would mean the opening of his guns upon the invading camp. The Russians, therefore, halted their troops without the city gates, and the Treaty of San Stephano was signed: a treaty amplified by that of Berlin. By the terms of these treaties further protection was guaranteed to the Christian subjects of the Sultan; Austria obtained Bosnia, and England the Island of Cyprus; while an enlarged measure of self-government was granted to various of the Balkan States. The results, then, of the events of the last 30 years in this quarter of Europe are these. The Ottoman Empire, while still preserving her Asiatic possessions, has been cut down in her European possessions from a population of 15 to one of 4 millions; and there have arisen several new Christian states, allied to Russia by interest and sympathy, but somewhat suspicious of her as having designs on their independence. These states have, since 1878, made great advances in military strength and general civilization, and their existence has given a new turn to the yet unsolved Eastern Question.

Let us now consider the probable political future of Continental Europe. And (1): There is the possibility that the present status may be preserved, *i. e.*, that there may be no great war. Since 1878 there has been no such war, and many persons are becoming dubious of this terrible cloud which is supposed to be forever hanging over Europe. Possibly it may not be a war-cloud; it may be that the volcano, said to be ever upon the point of eruption, is only an extinct volcano. On the other hand, there are many elements of danger; there is much inflammable material ready for a conflagration. There are dynastic jealousies; there are religious and race feuds, centuries old; there is the newly-awakened longing for nationality on the part of rising states; and there are the standing armies. A word as to this last point. There is, I think, a good deal of exaggeration about the excessive war establishments and the unbearable taxation. As a

matter of fact, Germany's war expenditure is not so large as that of the United States; and the time spent in the army—two years, shortened, in certain cases, to one year—is not lost time, by any means. The results are seen in the improved physique of the people, in the lowered death-rate, and in the increased national health. There can be devised no system for the thorough training of a people, for their all-round development—schools, libraries and other means of mental instruction are attached to continental army-stations—there can be devised no system for such training, and for training in habits of obedience, promptness, and thoroughness, that can compare with compulsory military service for a reasonable term. Therefore, as has often been said, were there no danger of war, conscription would, in all probability, still be maintained. On the other hand, the existence of large bodies of armed men is a provocative of war. The officers desire promotion; the men become restless in inaction; the rulers (whether Emperor or Parliament) wish to test the efficiency of their military system. Taken altogether, then, it may be reasonably assumed that, sooner or later, Europe will be plunged into a great conflict.

The disturbing cause will be one of two: The Franco-German quarrel and the Eastern Question. As to the first. It does seem almost incredible that a nation so highly civilized as is France can deliberately and avowedly prepare for a war of revenge: a war which shall deluge two lands, possibly a whole continent, in innocent blood. This shows how backward, according to our ideas of right and wrong, France is. But there are many countervailing considerations. We must not forget that the French believe Prussia to have intrigued and provoked the war of 1870; that her terms to the conquered were of unexampled severity; and that France had no opportunity in the war of showing her real strength. We must not forget that she lost two provinces which had been in her possession for more than 200 years; and that the people of these provinces, even yet, would much prefer French rule. At any rate, right or wrong, that a nation in many things the foremost in the world, a nation of whom it was said in times of old, "Deus omnia per Francos"—"God does all things through the Franks"—that such a nation shall lie prostrate before this rude upstart from northern forests; that her battle-flags, which have waved in victory in

every quarter of the world, shall be trailed in the dust—these are things never to be thought of, not to be entertained for a single moment, by a true-born son of France. I fear, therefore, that she is but biding her time; when she is sufficiently strong she will strike the blow. And the France of to-day is very different from the France of 1870. She has laid aside much of the boastful spirit that came from the victorious campaigns of Louis XIV. and the Great Napoleon. She has learned wisdom by defeat. What shall be the result of that war between giants (for Germany has not been inactive since 1870, she is quite aware of the designs of France): what the result shall be, time alone can tell. But, unless other nations interfere, the war will be waged to the death. For, if France be the victor, she has the old score of 1815 and 1870 to wipe off; and she has a good deal of the Latin love of vengeance. If Germany be the victor, then, as Bismarck once said, "Future generations will ask, Where is the country which was once called France?"

The second disturbing cause is to be found in the Eastern Question—the persistent determination of Russia to absorb Turkey, and her encroachments in Central Asia. Now, if Russia were a civilized nation in the true sense—a nation in whose pathway freedom and justice walk—there would be no such antipathy felt toward her as is now felt by other nations. But Poland, Siberia, and Finland forbid that belief. Moreover, on many occasions she has broken her pledged word, *e. g.*, in the case of the navigation of the Dardanelles and the Black Sea a few years ago. It is considered unwise, therefore, by Great Britain and the other powers to allow her to move toward Constantinople. Not that they love Turkey more, or indeed at all, but that they love Russia less.

My own belief is, that the time-honored policy of Great Britain is unwise. It is true that Russia is faithless, that she has silently and ruthlessly advanced her posts through Central Asia towards the Afghan frontier. Great Britain is, therefore, amply justified in acting as she does, as far as ground of action is concerned. But I do not believe that Russia in Constantinople would be more dangerous to the Suez Canal, Egypt, Cyprus, Malta, or any of the other points in that chain of fortresses and stations which guard Britain's pathway to India, than she is now. She will never be satisfied until she reaches an open southern sea. If she does not reach it at Constantinople, she will elsewhere. If she were allowed to do this without

interference, we should hear much less of attempts upon India. The two supreme powers in the east are Russia and Britain. It would be the wise policy, I believe, on Britain's part, to acknowledge that, like her own, the Russian Empire must increase year by year, and to leave to Time, the great magician, the softening and ennobling of the Muscovite nature. The one and only strong argument against this is the loss of Britain's prestige among the Mohammedans of India if she failed to check Russia's advance or to support Turkey in holding Constantinople.

In conclusion, I am going to do a rash thing, to attempt a forecast of the political map of Europe—a rash thing, because one should not prophesy until after the event. It seems to me that the present conditions point to the following results: (1) If France and Germany go to war they will be so evenly matched that it will be necessary for other nations to interfere in order to avert mutual destruction. From such interference disarmament will naturally ensue. (2) The Austrian Empire is the least homogeneous of all European states. Its discordant elements are held together, in fact, by the respect and love for the good Emperor Francis Joseph, and by fear of foreign attack. Before many years, in all probability, the German part will join the German Empire, and the other parts will be attracted by race affinities to surrounding nations, or else will form independent states. (3) Italy will acquire the long-coveted strip of Italian territory on the Adriatic Sea, with the great seaport of Trieste, and the reproach of *L'Italia Irredenta* will have lost its sting. (4) Russia will reach Constantinople, and "the sick man of the east," Turkey, will at last really die, as far as Europe is concerned.

These are, at any rate, the directions in which recent movements have pointed, *viz.*, the unification of scattered nationalities, and the drawing of lines of cleavage based on race distinctions.

What effect on political Europe the accession of the young Czar, who is said to be of a somewhat progressive mind, will have, or what effect the Armenian atrocities will have, it is too early to attempt to judge. But, whether these or any of these prognostications shall come true, one thing is reasonably certain, that far in the future is the dawn of universal peace, and that not soon shall the dove return with the olive branch from her weary wanderings o'er Europe's troubled sea.

THE BATTLE OF STONY CREEK.

Read before the Hamilton Association, April 10th, 1895.

BY DOUGLAS BRYMNER, DOMINION ARCHIVIST, OTTAWA.

At the opening of the campaign of 1813, in the war of 1812, the United States had determined to abandon their ambitious attempt to take possession of the whole Continent of America, and to concentrate their efforts on the capture of Upper Canada. On the frontier between Prescott and Lake Erie there were only 2,100 British troops all told. To attack this force and reduce Upper Canada 6,000 men were to be sent by the United States. And by this numerical superiority the capture of Ogdensburg by the British forces was soon offset by the taking and occupation of York. This, with the naval superiority acquired by the United States on Lake Ontario, placed Upper Canada in the most critical position. The number of the United States troops was fully five times that of those for the defence of Upper Canada, and they were in possession of the most important points, either for attack or defence.

It was doubtful if a battle could be risked by the force under Vincent at Burlington Heights, and in event of a retreat being determined on, there were no means of carrying off the few field pieces remaining, or even the wounded. Should it be thought prudent to risk a battle the quantity of ammunition Vincent had was only ninety rounds, so that the position of that part of Upper Canada seemed desperate. To make assurance doubly sure, two brigades, under Chandler and Winder, with dragoons and a strong detachment of artillery, were ordered down to secure the complete defeat and capture of the regular British force, and with it the possession of Upper Canada.

This was the position of Vincent's command previous to the battle of Stony Creek. Nothing seemed open to him but a retreat, leaving the wounded and the field pieces in possession of the enemy, and had Vincent taken this course few could have blamed him. But

he would not give up without a struggle. One of the first acts of the United States reinforcement, after encamping, was to drive in the British advanced posts at Davis', eight miles from Burlington Heights, towards Forty-mile Creek, the picket consisting of the light company of the 49th regiment. The attacking party then took camp at Stony Creek. On hearing of this Vincent sent off Lieut.-Col. Harvey, the Deputy Adjutant General, to reconnoitre. On his return he recommended a night attack on the enemy's camp, whose force consisted of 3,500 men, that of the British 704, being five companies of the King's (that is, the 8th) Regiment, 280 in number, and the 49th, 424, a total of 704, or, as stated in Harvey's original letter, 700. Vincent agreed to the proposal, and in the most noble manner entrusted the command of the expedition to Harvey, although he accompanied it himself. In his official report Vincent says: "To Lieut.-General Harvey, the Deputy Adjutant General, my obligations are particularly due. From the first moment the enemy's approach was known he watched his movements and afforded me the earliest information. To him, indeed, I am indebted for the suggestion and plan of operations."

The night of the 5th June was unusually dark; at half-past eleven the march began; strict silence was ordered and enforced; the light companies of the King's and 49th in front, the 49th in the centre and the King's as a reserve. "In conformity," says Harvey, "with directions I had given, the sentries at the outskirts of the enemy's camp were bayonetted in the quietest manner, and the camp immediately stormed."

The matter of fact statement that the sentries were quietly done to death by the bayonet makes us forget to think of the grief stricken homes to which these men may have belonged, just as we read with nerves unmoved the "butchers' bill" after every battle, feeling mechanically that the dead and wounded were but machines, forgetting that they were human beings like ourselves, and connected by ties of love with others who were watching with anguish for the return of their loved ones. Not with much pathos, but with natural feeling, the French girl in the song says to her conscript lover:

> Oh! if I were Queen of France, or still better Pope of Rome,
> I'd have no fighting men abroad, no weeping maids at home;
> All the world should be at peace, and if kings must show their might,
> Why let them that make the quarrels be the only ones to fight.

And if kings should fight equally so should the rulers of republics.

The surprise was only "tolerably" complete. A few muskets were fired in spite of orders, and the charge being made across the line of camp fires, the small number of the attacking force was plainly seen, and the enemy gaining courage posted themselves on the heights and poured in a destructive fire of musketry, but the bayonet dislodged them, took possession of the field pieces, and in less than three-quarters of an hour the Americans were in full retreat, having abandoned the guns and everything else, including the two Brigadiers Chandler and Winder, other officers and 100 rank and file. Before dawn, as previously arranged, the victorious force of 700 against 3,500 retired in perfect order to Burlington Heights, with Vincent and Harvey leading.

The stories of Vincent having lost his head, and of Harvey being obliged to take command, of Vincent having wandered in the woods and being found two days afterwards, and of the disorderly flight of the attacking force are completely and absolutely contradicted by the official and other reports. The work was carried out as previously arranged, and Vincent, so far from being lost, wrote his official report at Burlington Heights on the very day the action took place. Other stories, such as that Harvey entered the camp at Stony Creek in the disguise of a quaker selling potatoes and taking notes, are equally contradicted, as are some of the incorrect statements which have obtained currency in the received histories. The value of this night attack does not appear to have been sufficiently realized. In itself, perhaps, not of great importance as an isolated expedition, the result was to clear the frontier of a formidable enemy and greatly to discourage him. The enemy retreated to seek shelter at Fort George, which was garrisoned by 5,000 men, but so great was the alarm caused by the success of Vincent that even Fort George, strongly as it was fortified, was not considered secure, and the great bulk of the American baggage was sent across the river to Fort Niagara.

It was the most important movement, in that respect, of the whole war.

On the 8th June, two days after the attack, Vincent wrote to Sir George Prevost, and I copy the letter from the original among the Canadian Archives (Series C., Vol. 679, p. 53):

BURLINGTON BAY, 8th June, 1813.

SIR: In consequence of our attack on the enemy's camp on the morning of the 6th inst., they have made a movement to their rear and retired back to the Forty-mile Creek, which has given me an opportunity of pushing out my patrol to their late camp.

I have had the honor to receive your letter of the 2nd inst., with a memorandum enclosed. The fleet are this moment reported. I am, therefore, confident I am perfectly secure in this post as long as we have the lake open to us. I have this morning made a change of position to a place named Coots' Paradise, on which I am throwing up a strong fortification in my front; all other parts are so strong as to secure themselves from an attack of an enemy. In this situation I am determined to hold out if their whole force of 12,000 is brought against me. Col. Harvey and Capt. McDonall will write very fully on the subject of their new situation to Col. Baynes.

I have to report the arrival of Sir James Lucas Yeo. He informs me that he cannonaded a camp at the Forty-mile Creek, which he dispersed with some bateaux. I had hardly given orders for the detachment of the 8th being disembarked, when I received a private express from the Forty-mile Creek that in consequence of our fleet being up the lakes the enemy struck their tents and are retiring to Fort George. I have, therefore, sent this detachment back to the Forty-mile Creek with the Commodore, and I have pushed forward my outposts with some Indians to co-operate with our fleet and take up their quarters this night at the Forty as my advanced post.

I can assure Your Excellency that a troop of dragoons will be of the greatest service in this country.

I have the honor, etc.,

JOHN VINCENT, *Brig. Gen.*

His Excellency Lieut.-Gen. Sir George Prevost, Bart., Etc.

A letter from Col. Harvey to Col. Baynes, dated the 11th June, copied from the original, among the Canadian Archives (Series C., Vol. 679, p. 76), is of some interest. An extract is given:

FORTY-MILE CREEK, 11th June, 1813.

MY DEAR COLONEL: General Vincent has desired me to forward to you the enclosed report from Lieut.-Col. Evans and accom-

panying return from Lieut.-Col. Nichol, Q. M. G. of Militia, who have been actively and usefully employed here for this day or two. The panic of the American army, you will perceive, has been most complete, and had the whole of this division been at hand to take advantage of it, doubtless very many prisoners might have been taken, and probably some more guns; but I am not aware that any further results could have rationally been hoped for. It was quite impossible, however, for us to know to what a degree the panic prevailed, and even if we had, to have moved sufficiently rapidly with all the troops to take advantage of it. What we could do was, however, done, and I think you will be of that opinion when you know that the enemy only retired from his post at 12 o'clock on the morning of the 8th, and our advanced troops (amounting to 400 men) were in possession of it, and advanced from it after the enemy by seven of the same evening. The distance is 20 miles from our position at the head of the Lake.

The principal objects Gen. Vincent has had in view in making a forward movement with the greatest part of the troops to this place are to communicate with and give every support and assistance in his power to Sir James Yeo and the fleet, to be at hand to take advantage of the success we sanguinely anticipate from his approaching recontre with De Chauncey, to give encouragement to the militia and yeomanry of the country, who are everywhere rising against the fugitive Americans, making them prisoners and withholding all supplies from them, and lastly, and perhaps chiefly, for the purpose of sparing the resources of the country in our rear, and drawing the supplies of the army, as long as possible, from the country immediately in the enemy's vicinity. Our position here secures all these important objects, and so long as our fleet is triumphant, it is a secure one. Should any disaster (which God forbid) befall that, we have no longer any business here or in this part of Canada.

Enclosed is the report sent by Major Evans, dated 10th June, of which the following is a copy:

FORTY-MILE CREEK, 10th June, 1813.

SIR: Conformable to the wish of Brigadier General Vincent, commanding, I herewith transmit a concise and connected narrative of the late operations of the detachment with which he honored me

with the command. In consequence of your order given immediately after my arrival on 8th June, I embarked in company with Sir James L. Yeo and proceeded for the squadron, then lying off the mouth of Burlington Bay, which on our reaching was ordered by signal to weigh and stand for the Forty-mile Creek. A steady breeze soon enabled us to gain and come to an anchor close in with the enemy's position, with which we had a brush (on passing in the morning). By the excellent arrangements of the Commodore, the whole of my detachment, composed of about 220 of the King's, was on shore and in possession of the enemy's encampment at half-past seven p. m., little more than three hours after receiving my instructions. Lieut.-Colonel Dennis, with the detachment ordered on by land, joined me soon after, and the Indians quickly followed. The enemy's flight and terror is best evidenced by the precipitate manner in which he abandoned everything which was valuable or could be called to constitute his equipment for field operations. Aware from the nature of the country that a further co-operation of the naval force could not be expected, I lost no time in taking measures for a close pursuit by the Indians, detaching Lieut.-Colonel Dennis with the Grenadiers of the 49th and part of a company of the 41st to the Twenty, with directions for that officer to push his dragoons and Indians just to the skirts of Fort George. These movements, though not coming up to my expectations, by the capture of the enemy's cannon, were otherwise productive of the most beneficial results. Many prisoners were taken, the spirit of the loyal part of the country aroused, the little remaining baggage of the enemy destroyed, his panic increased and confirmed, and what is of the utmost consequence, certain information received of all his movements. On the evening of the 9th the enemy set fire to and abandoned Fort Erie, withdrew his forces from Fort Chippawa and Queenston, concentrating them at Fort George, and hastily began throwing up field works, either there to defend himself or cross the river by means of boats, which he holds in a constant state of readiness according to circumstances. Yesterday I had information of the militia having taken a depot of arms in the neighborhood of Queenston, and in the evening had actually possessed themselves of the town.

I have everything to say in praise of the good conduct of my men and officers, but have most particularly to remark the zeal,

spirit and ability with which Lieut.-Colonel Dennis conducted his share of the operations.

I have the honor, etc.,

THOS. EVANS, *Lieut.-Colonel.*

Lieut.-Col. Harvey, *Deputy Adjutant General.*

The contents of these letters I might have thrown into a narrative, but I have preferred to give them as they are, to prove how little dependence can be placed on the accounts given by United States writers of the operations during the War of 1812. A comparison of the preceding letters, with that from General Dearborn, addressed to the United States Secretary at War, will still further prove the distortion of truth in the reports which form the groundwork for the histories of that war written by United States authors. It may be remarked that, contrary to what Dearborn says, there were no Indians with the expedition which attacked the camp at Stony Creek, and it should further be borne in mind that all the events which followed—the flight of the United States troops, the occupation of the camps they had held, the evacuation of the posts, were all visible and so well known that no successful contradiction is possible.

HEADQUARTERS, FORT GEORGE, June 6th.

SIR: I have received an express from the head of the Lake this evening, with intelligence that our troops commanded by Brigadier General Chandler, were attacked at 2 o'clock this morning by the whole of the British and Indian forces; and by some strange fatality, though our loss was but small (not exceeding 30), and the enemy completely routed and driven from the field, both Brigadiers Chandler and Winder were taken prisoners. They had advanced to ascertain the situation of a company of artillery when the attack commenced. General Vincent is reported to be among the killed of the enemy. Col. Clark was mortally wounded and fell into our hands, with 60 prisoners of the 49th British regiment. The whole loss of the enemy is 250. They sent in a flag, with a request to bury their dead. General Lewis, accompanied by Brigadier General Boyd, goes on to take the command of the advanced troops.

I have the honor, etc.,

HENRY DEARBORN.

Hon. General John Armstrong, *Secretary at War.*

Such a ludicrous travesty of events has scarcely ever been placed on record. It is not to be wondered at, that with official reports of this nature to draw from, historical writers of the United States should fall into the most egregious errors in their accounts of the War of 1812. The loss on the British side is given as 250. The casualty return shows that of killed, the total was 23, namely, 1 officer, 3 sergeants and 19 rank and file; wounded 136, namely, 12 officers, 9 sergeants, 2 drummers and 113 rank and file; and of missing, 3 sergeants and 52 rank and file, many of whom subsequently found their way back to headquarters. As to the loss of the United States troops given by Dearborn as 30, the number of prisoners alone, besides the two Brigadiers, was 100; the number of those killed does not appear. It is unnecessary to criticise the other statements in General Dearborn's letter, which are sufficiently refuted by the clearly ascertained facts.

The flight of Proctor from Moravian Village left the Niagara frontier open to the enemy, and led to the following proposal, addressed to Noah Freer, Military Secretary to Sir George Prevost (Canadian Archives, Series C., Vol. 680, p. 322.)

SIR: I beg leave to acquaint you for the information of His Excellency the Governor-General, that having taken a step of an extraordinary nature, I think it my duty to make my designs and motives known to his Excellency. The country between Stony Creek and Fort George being abandoned to the enemy, I have presumed (induced by personal ambition and a desire to be of service to my country), to select a township in the neighborhood of Fort George and erect it into an independent district *pro tempore*, and declare it in a state of neutrality; in this manner to prevent the marauding of the enemy, and to organize it so that when our army advances in the spring I shall be able to join it with two or three hundred men. When that happens the nominal and temporary independence will of course cease. Should it happen (which Heaven forbid), that that part of the country is to be totally abandoned to the enemy, I hope to continue its independence, and by forming an English party make the possession of the country never cease to be a thorn to the Government of the United States; by this means I am confident I can be of more service to myself and country than if

I remained a humble subaltern without a name and without distinction.

I remain, etc.,

JAS. M. CARDWELL, *late Ens. 100th Reg.*

Stony Creek, 26th October, 1813.

N. Freer, Esq., Etc.

What was done in reference to this proposal, or whether the letter was ever answered, does not appear on record.

AN IDYL OF A RAMBLER.

Read before the Hamilton Association, April 10th, 1895.

BY A. B. SMALL, OTTAWA.

When Man was banished from the Garden of Eden he received the dread sentence that "the ground should be cursed for his sake," and that "in sorrow should he eat of it all the days of his life." But we are all aware that this language, though true in its general application, is not to be understood in a literal and exclusive sense. Man was told that the earth should "bring forth thorns and thistles," but it also produces flowers to gratify and fruits to nourish him. The Infinite Being has said that "the days of our life shall be marked with sorrow," and they are; but the afflictions to which we are subject are attended with blessed antidotes. Moral sources of enjoyment are given us, as fruits and flowers, for the Soul, and the teachings of interest should lead us to consider with attention those gifts which enlarge the capacities of the spirit, and call forth wonderment at the mighty workings of all bounteous Nature. For instance, who is insensible to the beauties of the rising or the setting of the summer sun? Who can behold the moonbeams reflected from silent river, lake or sea, and not feel happy in the sight? None, I believe, in early life. But, when hardened in the ways of the world and of man; when the chief end pursued is the accumulation of wealth, acquisition of power, or pursuit of pleasure, then mankind loses sight of the beauties of Nature. Were the inherent love of them cherished by early education, how seldom would it be destroyed or become dormant, as it too often is. But the student of Nature finds in every sphere of existence a means of rational enjoyment—a pleasure so fascinating when grasped at, that the mind for the time forgets the ills of life, and the glories of Eden spring up in imagination through the mists of troubles; for in every bank and woodland, and running stream, in every bird among the boughs, and every cloud above his head, stores of interest abound, which enable him to

forget awhile himself and man, and all the cares of life, in the inexhaustible beauty and glory of Nature, and of the God who made and controls her.

Let us walk, side by side, in imagination, with a naturalist in his daily ramble; let us blend our mind with his, to receive those impressions which he feels, to share the train of reflection that comes crowding on his mind, as the affinities of objects lead his ideas to wander from the leafiness of the Temperate to the exuberant foliage of the Torrid Zone. We approach a woodland; how inspiriting are the odors that breathe from the upland turf, from the rock-hung flower, from the hoary and solemn pine. Deep, and dark, and still, are the shadows of the surrounding trees and bushes. The green leaves seem to infuse into our hearts a portion of their happiness as "they clap their hands in glee," and the joyous birds make melody all around. Here let us pause and gather a single blade of grass, and examine for a minute quietly, its narrow sword-shaped strip of fluted green. Ruskin says of this: "Nothing, as it seems, there, of goodness or beauty. A very little strength, and a very little tallness, and a few delicate long lines meeting in a point; not a perfect point, either, but blunt and unfinished; by no means a creditable or apparently much cared for example of Nature's workmanship; made, as it seems, only to be trodden on to-day, and 'to-morrow to be cast into the oven.'" And yet, think of it well, and judge, whether of all the gorgeous flowers that beam in summer air and of all strong and goodly trees, pleasant to the eyes, or yielding fruit, stately palm and pine, strong ash and oak, scented citron, or burdened vine, there be any by man so deeply loved, by God so highly graced, as that narrow point of feeble grass. And well does it fulfil its mission. Consider what we owe merely to the meadow grass, to the covering of the dark ground by that glorious enamel, by the companies of those soft and countless spears. The fields: follow forth but for a little time, the thought of all we ought to recognize in these words. All spring and summer is in them; the walks by silent paths, the rests in noonday heat; the joy of herds and flocks, the sunlight falling in emerald streaks and soft blue shadows, where else it would have struck upon the dark mould or scorching dust; pastures beside the babbling brooks; soft banks and knolls of hills, thymy slopes of down, overlooked by the blue line of the distant sea-crisp lawns, all

dim with early dew, or smooth in evening warmth of sunshine; all these are summed up in the simple words—"The Fields."

Whatever course our thoughts may take, we must remember that there is no plant, however humble, no flower or weed that springeth from the earth, but is an organized and living mystery. The secrets of the abyss are not more inscrutable than the work that is wrought in its hidden germ. The goings on of the Heavens are not more incomprehensible than the growth of a simple plant, as it waves in the summer breeze. The functions that constitute its growth, flower and fruit, the organs and affinities by which every part receives the material that answers its purpose, who can unfold or explain them? As the fruit of one year falls, the seed of centuries of growth is sown. By the mechanism of Nature, the stocking of the earth with every kind of growth, from the oak of a thousand years, to the weed of to-day, is carried on. The acorn falls into moist earth, and is trodden in by man or beast, to become an oak in course of years, whose timber may resound to and tremble under the roar of warfare on the ocean; berries are carried by birds, and dropped on ledges of rock in any handful of soil that may be there, to sprout and germinate and grow, and to reproduce in their turn, seeds for future growth. Winged seeds, such as those of the thistle, the dandelion, etc., are elevated by the winds till they stop in some favoured places; hooked seeds, such as are familiarly called "cleavers" or "burrs," entangled on the dress of the passer-by, or hanging to the hair or fleecy coverings of animals, may be carried miles away, and find their resting place in even other lands.

Whilst men, with due care, put seeds into the ground by millions, Nature plants and sows on a larger scale, surpassing man while he is busy, and going on with her work while he is sleeping or making holiday. For every tree that falls thousands are sown; for every flower that fades millions are provided. What we do with pains and care in our flower beds, is done silently all over the islands and continents of our globe. New life is provided before decay begins.

How beautifully are the lights and shadows thrown abroad, and the fine transparent haze diffused over the valleys and plains. The shadows play all day long at silent games of beauty; everything is double if it stands in light. The tree has an unrevealed and muffled self, lying darkly along the ground; the slender stems of flowers,

golden rod, wayside asters, meadow daisies and rare lilies, cast forth a dim and tremulous line of shadow, that lies long all the morning, shortening till noon, and creeping out again all afternoon, until the sun descends yon western horizon. Meanwhile, the clouds drop shadows like anchors, that reach the ground, but will not hold; every browsing creature, every flitting bird, every unconscious traveller writes itself along the ground in dim shadow. And, speaking of the clouds, let us pause a few moments while we look with admiration at the ever changing variety and beauty; at the gorgeous scenery of summer cloudland, the exquisite variety of tints, the graceful motions, and the changing shadows which flit over hill and dale. The finest dyes and most skilful looms can never equal the tapestry with which God decorates our earthly abode. These are pictures shut up in no secluded gallery, to be seen only by the rich, but they are spread alike before the lowly and the lofty, in the city, and in the remotest solitudes, where all may drink in their beauty, and discern the wisdom and skill of Him who made them. Even the child, as he gazes dreamily at the tiny white speck floating far away in the blue ether, has his little soul filled with interest, and when he sees dark masses of vapor come rolling up slowly and majestically, fold after fold, from the distant horizon, his imagination will transform those fantastic shapes into gigantic snow-capped mountains, towering peak upon peak, until he almost longs for wings to fly and explore their far-off summits. But, how comparatively few, children or adults, ever pause to give themselves a matter of fact explanation of the actual formation of clouds, the unerring laws of their creation or dispersion, or the vast beneficent part they take in the economy of Nature. The question may be asked why there are on some days clouds, and again on others none? The answer is, there are clouds always, although not always visible, or to be more correct, the material of which clouds are made is always there; for if the air is warmed by the shooting down of the sun's rays for days past, it holds in solution, invisible, the vapor it has imbibed. But let that air begin to cool, and it parts with its mass of moisture; in other words it deposits it in the shape of white vapor, being no longer able to retain it in an invisible form. This delicate little cloud, or mass of vapor, however, is of very precarious existence. One ray of bright sunshine, the faintest return of heat, would send it

back again from a state of visible vapor to invisible moisture. Its outward form would be gone, and although we know that its essence would still subsist, indeed, could never be destroyed, yet its apparent existence would be ended. It would thus vanish like many an infant at its very entrance into life, before accomplishing any specific purpose of its being; but, again, like the infant, it is only the outward form which sustains annihilation. But heat is not the only thing by which clouds are affected. Life is ever changing with them as with mortals; they are liable at any moment to be whirled into the most fantastic shapes by every fickle wind that passes. If the temperature of the atmosphere continues to lower, the delicate gossamer-like vapor (beautifully compared by Lamartine to the world's incense floating upwards to the Throne of God), will resolve itself into large dark masses of rolling clouds, and the mass of vapor, no longer able to poise itself in the air, descends to earth in grateful refreshing showers, and perhaps in the bosom of the cloud now passing overhead, are liquid treasures sucked up from swamps of Florida, to go and shower fertility and wealth on the plains of the far off West. Winter and summer "the clouds drop fatness." But they have other offices to perform, besides those of merely dispensing showers, of producing the rains, and of weaving mantles of snow for the protection of our fields. They have other commandments to fulfil, which, though less obvious, are not therefore the less benign in their influences or the less worthy of our notice. They moderate the extremes of heat and of cold; they mitigate the climate. They spread themselves out, preventing radiation from the earth and keeping it warm; at another time they interpose between it and the sun; they screen it from his scorching rays and protect the tender plants from his heat, the land from the drought. Having performed this, they are evaporated and given up to the sunbeam and the winds, to be borne on their wings, away to other regions which stand in need of their offices. And here I would say that I know of no subject more fit for profitable thought on the part of the knowledge-seeking student, than that afforded by the atmosphere. Of all parts of the physical machinery, of all the contrivances in the mechanism of the universe, the atmosphere with its uses and adaptations appears to be the most wonderful, sublime and beautiful. In its construction, the perfection of knowledge and

wisdom is involved, and, to turn to Holy Writ, how appropriately does Job burst forth in laudation of the latter, as God's handiwork, in the xxviii. chapter.

The sighing of the wind as it sways the branches of the forest, which now bend before the summer zephyr like courtiers doing homage, now bend before the fury of the storm like strong men in adversity, sounds to our naturalist as angels' whispers in its gentleness, or in its fury as the voice of One mightier than Manoah's son speaking in anger—"The voice of One who breaketh the cedars, yea, the cedars of Lebanon." But he will tell you this Nature's music is never still, never silent, though often varied; for each tree has its part—the surging of the oak, the whispering of the elm, the rustling of the beech, the laugh of the birch, the sighing of the willow, the moaning of the hemlock, the dirge of the cyprus. The pine alone remains constant to melody throughout the year. Every breeze that touches the pine in any season of the year wakes up myriads of fairy harps which, united, set the air trembling with the most moving harmony that Nature affords—the harp-music of Nature's orchestra. Even the aspect of the woodland itself: if thick with tangled underbrush, the unexplored impervious forests of the Amazon rise up to the imagination; or, if thick with fern and grass, it recalls visions of Australian fern-trees and wattles—fern-trees, now the only corresponding and connecting link to the fossil plants of the coal formation, beneath whose heavy coverts the Saurian monsters roamed, the giants in the earth of those days; monsters extinct and passed away, leaving their epitaph in stone to be deciphered only by the researches of science centuries after their existence.

Should the road lead by or near a pond, our naturalist shrinks not from the wet and swampy ground surrounding it, for the forget-me-not is there, with blossom blue as the sky of Heaven, and its golden eye bright as Hope itself; there is the calamus, or sweet-scented flag, the iris, the bulrush, heavy and swaying in the wind, the water-lily, rivalling in its blossom the magnolia of the southern climes, and harboring under its broad leaves the pike and the perch, the bass and the pickerel, those favorites of meek Walton's followers. The delicate whites and pinks and yellows and blues of the aquatic blossoms—how bewitching are they in the sunlight! Adhering to the pond weed, or slowly drawing their homes along with

them, are visible the water snails, amongst which is conspicuous the Planorbis, or Coil-Shell, a representative left us of the Ammonite, one of the most universal fossils of the secondary rocks ; shells whose proportions have dwindled down from their colossal size in days of yore, when their circumference equalled that of a wheel, to that of an ordinary small coin, contrasting in their diminution the present pigmy race of man with his predecessors. Here we see the dragon fly disporting on its gauzy wings, itself glittering with blue and green flashing back the sunshine, now hovering poised above the surface of the pool as if desirous of telling its kindred larvæ, who still remain below, and from one of which it lately sprung, the glorious beauty hereafter awaiting them when their transformation takes place ; but the watery element defies the advance of insect life, and between them there is a great gulf fixed. Fancy may lead us to picture to ourselves the Grub, preparatory to bursting his prison house by the water side and rising on glittering wings into the summer air, promising tidings to its fellows of the state it is about to enter, and the longings of those left behind to hear something of that state, dimly fancied by them, but unknown. We could fancy him returning amidst the transports of his wildest flights, ever and anon, to the precincts of that watery world which had once been the only world to him ; and thus divided, yet near, parted, yet united by love, he hovers about the barrier that lies between them, darting over the crystal water in the rapture of his new life.

Let us scoop up a handful of water from the pond, and carefully examine it. Our naturalist will tell us that there is in it a creature with neither arms nor legs, properly so called, but which catches animals more lively than itself, and twice its own size ; with no eyes, yet loving the sunshine : whose stomach can be turned inside out, apparently without hurting it, and which, if cut in two, will not die, but each part grow into a perfect creature. To inexperienced eyes it looks like a tiny piece of green sewing silk, about a quarter of an inch long, and a little untwisted at one end. This, however, is really a set of delicate limbs placed round the thicker end of the slender body of the little Hydra (for such is the name it goes by). These tentacles, or feelers, float in the water like fairy fishing lines. Little creatures, invisible to our unaided sight, that have been frisking round full of life and activity, are seized by them, and one tentacle

after another being wound around its prey, the process of digestion takes place. When we laugh at the idea of two or three Hydras growing out of one, if severed, we are told the reason is that the principle of life is diffused equally in all its parts; that any part can live without the rest, and, like the cutting of a plant having life in itself, it can grow into a perfect creature.

Journeying onward, he tells us of another animalcule provided with two hairy wheels upon its head, whirling continually around, producing a strong current towards its mouth placed between them, carrying in all lesser objects floating near, and like the rotary wheels of a steamboat, carrying him onward, unless desirous of a rest, he grasps with his prehensile tail some friendly water plant. With still greater surprise we hear that these animalcules each have shells, which in some places during the course of centuries, have formed thick layers of white fine earth, so fine, that on the shores of a lake near Urnea, in Sweden, the peasants have for many years mixed with their flour this so-called "mountain meal." When we come to think that the vast thickness of the chalk cliffs were all formed from the deposition of animalcular exuviæ, surely the mind of man is inadequate to count the myriads of ages through which this process was going on, a process still silently and invisibly working in the depth and darkness of the Atlantic.

Skirting the pond, which has thus engrossed our attention, we may see rocks now rising up precipitously in rugged masses, now sloping quietly to the water's edge, partly clothed with lichens and moss, here covering the stone to the depth of several inches, there clustering around some bare patch of rock. From this we learn how the first accumulation of soil took place, when order was first produced from chaos; soil, which year by year increasing from the decomposition of those rudiments of vegetable life, afforded depth and life for plants of a higher order and larger growth, to be in turn succeeded by a more luxuriant vegetation adapted for the support of animal life.

As we gaze upon the distant mountain range, what thoughts come crowding on our minds. How solemnly and majestically they raise their rugged peaks to heaven. Now, in token of their royalty crowned with a diadem of clouds, and now with every one of their cliffs gleaming in the sunlight like the pictures of a dream. For ages they have held communion with the mysteries of the midnight sky.

The earliest beams of the morning have bathed them in living light, and theirs too have been the kisses of departing day. Man and his empire have arisen and decayed, but they have remained unchanged, a perpetual mockery. Upon their summits Time has never claimed dominion. There, as of old, does the eagle teach her brood to fly, and the wild beast prowls after his prey. There do the waterfalls still leap and shout on their way to the dells below, even as when the tired hunter, centuries ago, bent him to quaff the liquid element. There, still, does the rank grass rustle in the breeze, and the pine, and the cedar, and the hemlock take part in the howling of the gale. Upon man alone falls the curse of Time. Nature has never sinned, therefore her glory is immortal. In such scenery we can understand the full meaning of the words—"The hills stand round about Jerusalem," and their unchanging aspect whispers into the ear of man that he is but the moth which flutters in the noontide air.

Again, the voice of Nature is perpetually singing the saddened strain, "farewell." It is in the sway of the boughs overhead, and by presentiment, when they shall stand bare and stark; the brook ripples already to think how soon it will be choked by frost into a subterranean gurgle; the mountains are beautifying themselves before they lay off their robes of beauty for a season; even the sea, with its gentle rise and fall, and swelling breast, is telling how its line of beach will soon be driven snow, and its sands no longer warm. What is there in life or Nature that says "farewell" more punctually and more sweetly than Nature herself. In Spring she sends the early flowers, her children, to foretell her coming, and in Autumn, instead of merely disappearing, she summons all her children and all her works, to stand in full array and make their tender adieu. The order of departure reverses that of coming. As Summer goes, she makes this presentation of herself and hers; then she sends the rest away one by one, lingering herself until the last in our memories of the bygone season.

There are certain things in Nature in which we can discern a human sympathy, a veritable kinship; and if we dismiss these things by referring them to a general fixed law, then the sympathy and the friendship are merely transferred to the law. How persistently and ingeniously she thrusts herself upon our senses, claiming our notice and beseeching our sympathy. There is nothing

unsightly of all the unsightly things in the world which she does not try to cover with her fresh growths; she greens over battle and ruin and wipes off the blackening of fire. We do our best to shut her out in our cities, but it is all in vain. She sends her little blades of grass to push themselves up beside the flagstone; her ivy climbs the stone churches and castles, hiding the ravages of time, and her trees are the fullest representation of herself; the agent of Him at whose fiat the world emerged from chaos.

But, to resume our walk: Abounding everywhere, and full of interest, are the birds we meet with in the deep solitudes of the woods; the lugubrious cawing of the crow grates upon the ear with hollow voice, which has for ages been an object of evil omen to the credulous and the ignorant; the monotonous sound of the distant wood-pecker, "tapping the bark of the hollow beech tree," or making the woods resound with his notes of laughter, takes up the tale; the bluebird, the titmouse, or "chicadee," that happy restless easy-going creature, who scorns to leave us for the snow of winter, and picks up a scanty living round the outhouses of the farm; the finch tribe with their never ceasing cry, make the very copse alive with their melody; whilst the bobolink on the wing, surveying the grassy plains below him, chants forth a jingling melody of short variable notes, with such confusion and rapidity that it appears as if a whole colony of birds were tuning their notes for some great gathering in Nature's concert hall. And, as he is so well known a bird, I cannot refrain from dwelling on his character a little while. Rivalling the European lark, he is the happiest bird of spring; he comes amidst the pomp and fragrance of the season, his life seems all sunshine, all song. He is to be found in the soft bosoms of the freshest and sweetest meadows, and is most in song when the clover is in bloom. Near by we may see a tyrant kingbird, poised on the topmost branch of some veteran tree, who now and then dashes down, assassin-like, upon some homebound honey-laden bee, and then with a smack of his bill, resume his predatory watch. Over the pool, the swifts, the martens and the swallows, seem to vie with each other in acrobatic flight; now skimming the surface of the water, now making with a touch of the wing a scarcely perceptible ripple.

Besides the birds, flicker and flit hither and thither the butterflies, small and large, white, grave and gay; grasshoppers are noisy

beside long stretches of green paths; improvident fellows who sing all through the livelong summer day, unmindful and heedless of coming storms and winter's stern array; and who would think, when looking on the painted butterfly, flashing its gaudy colors in the sunlight, that a few weeks ago it was a grovelling worm, an emblem of destruction, a caterpillar. How wondrous the change; how beauteous the transformation. How typical of the spirit of man, who, fettered to earth in the flesh, shall one day emerge from the chrysalis of death, and wing its flight to the Bowers of Eden.

Bounding through the highest tree tops in fearless leaps, light and graceful in form, with bright black eyes, and nimbleness in every movement, the squirrel enlivens the scene, who, after scrutinizing around some mossgrown branch for the disturber of his haunts, hies away from our gaze, with a defiant chattering that seems to say, "catch me if you can," to his nest in some hollow limb, where his booty of acorns, chestnuts or beech nuts is stored up for winter use; and, we think, when following his nimble movements, how some of our species might relieve our charitable societies of many of their cares if they would only take this provident little fellow as an example. But the lengthening shadows warn us to retrace our steps ere the dark pall of night settles over mountain, valley, tree and stream. The fogs are rising in the meadows; a thin, white line of vapor marks, with well-defined outline, the course of some stream flowing through them. Long before we reach home the curtain is raised that concealed the celestial host; those fires that glow forever, and yet are not quenched. There they move as they moved and shone when "the morning stars sang together, and the sons of God shouted for joy." It was the same blue spangled dome on high above old Rome, when she rioted in all her magnificence and luxury. The "Shepherds who watched their flocks by night;" the Magi, whose knowledge of the heavenly host was more enlarged than any others of their time, were warned to study that living page for a light to guide them to the expected Messiah. The Arab, as he travelled the boundless fields of sand with his trusty camel, the "ship of the desert," trusted of old to those burning orbs, for they alone were his chart and his compass. Beyond the grasp of poor frail man, they light him from the cradle to the sepulchre. Their beams are shed upon his monument, until that, too, has crumbled away, and no token

remains to point to the spot where his ashes lie. Could a voice be heard from their blue home, doubtless it would speak of a race that passed from this continent long ere the canvas of Columbus was furled on these shores; a race that preceded the Indian; a people whose remains are yet among us, but whose history lies deep in oblivion. All on earth has changed, but the glorious heavens remain unchanged; sun, moon, planet and satellite, stars and constellations, galaxy and nebulæ, still bear witness to the power, the wisdom and the love which placed them of old, and still sustains them where they are.

And now, our ramble over, we feel we have associated ourselves more closely with Nature, and her mighty Master, GOD. The materials with which that eternal power writes His name may vary, but the style of the handwriting is the same. And whether in illuminated characters he paints it in the field, or in the starry alphabet bids it flame forth from the face of the firmament: whether He works in the curious mosaic of a shell, or inscribes it in Hebrew letters on tables of stone, devotion recognizes its Heavenly Father's hand, and admires with reverence His matchless autograph.

In conclusion, let me impress upon the minds of all, how everything in Nature daily speaks to us in the plainest language, points out to us in its every phase something yet to come; a something yet unknown, a mighty hereafter.

As the swallows homeward fly, their young brood raised, their summer work accomplished, instinct points out to them an unknown land to which to betake themselves from the chills and storms and tempests of winter. Something, we know not what, tells them this is not their rest. As the leaves fall off withered and sere, having done their work in Nature's mighty laboratory, the tree lies dormant for a time, but only to gain strength to burst forth in fresh beauty at a future time; as the seed is committed to the ground, a dry, shrivelled object, to all appearance destitute of life, its future as the plant is provided for by Nature's hand; as the sun goes down behind the mountains, or is shrouded behind cloud, its light is hidden but for a time, to burst forth again resplendent. As the river flows travelling onward to mix its waters in the unknown depth of ocean, leaving as it were forever the hills from whence it sprung, it is but to assume the form of vapour to replenish those springs. As the reed-

bird builds its nest, a home for its little ones yet unborn, an unknown sweet voice of kindness bids it, she knows not why, thus look to the future. Yes, the river is rushing forward, the clouds are hurrying onward, the winds are sweeping past, because here is not their rest. Ask the river; ask the clouds; ask the winds where they go to. Another land! Ask the great sun as he descends out of sight, where he goes to. Another land! And when the appointed time shall come, man also must go; where? To that other land to which those voices of Nature have all along directed him: into the presence of Nature's God.

REPORT OF THE GEOLOGICAL SECTION.

Read before the Hamilton Association May 9th, 1895.

The Section, in submitting this report, desire to state that though the attendance of members has not been large, the usual interest in the work of the Section has been maintained by a few, so that at the end of another year we are able to report that considerable progress has been made towards making the geological part of the museum more complete, although it is yet far from perfect, and it is scarcely expected that the dream of the most sanguine will be reached for some time to come.

The result of last year's work has been the means of proclaiming to the geological student that the fossil fauna of the rocks in Hamilton and vicinity has not been exhausted. These rich stores have been drawn upon from time to time by our worthy and indefatigable Chairman, and distributed throughout the world. As the result, Hamilton is credited with three new genera of fossil sponges, and seven new species, and the end is not yet. This locality is also renowned for its rich stores of graptolites which have been attracting the attention of some of the most eminent men of graptolitic lore on this continent, as well as those of the European.

Mr. A. E. Walker presented to the section a very valuable collection of fossils, properly classified and named, being the result of forty years' collection. These fossils are representatives of the different formations, ranging from the Trenton up to the sub-carboniferous. There is a specimen in this collection obtained from the Utica-shale which requires particular notice because it reveals to the palæontological world an important discovery, now recorded, so far as is known, for the first time in that horizon.

This specimen referred to has a circular mass of spicules on its surface bearing a close resemblance to those found in the Niagara chert beds at Hamilton, and forms the connecting link which traces back

the glass rope sponges, or closely allied forms of to-day, to their predecessors in the far-off ages of the earth's history.

Mr. Walker's modesty would not allow him to claim this discovery, but we cheerfully proclaim him as the proper person who should receive credit for it.

The papers read at the meeting of the section have been of more than ordinary interest, especially to the local geologist, some of them dealing with questions of local importance, affording a stimulus to the novitiate, while others dealt with questions about which there is still some uncertainty because of insufficient data upon which to draw, so as to come to a definite conclusion.

The section has held seven meetings during the year, at six of which papers were read.

Following are the subjects treated in these papers, and the dates on which they were read :

May 25th, 1894.—"Geological Notes," by Col. C. C. Grant.

Nov. 2nd, 1894.—"Opening Address" by the Chairman.

Dec. 22nd, 1894.—"Notes on the Devonian Rocks," by Col. C. C. Grant.

Jan. 25th, 1895.—"Geological Notes Continued," by Col. C. C. Grant.

Feb. 22nd., 1895.—"Geological Notes Continued," by Col. C. C. Grant.

Mar. 22nd, 1895.—"The Glacial Man Controversy," by Col. C. C. Grant.

Apr. 22nd, 1895.—"Short Notes on Recent Discoveries," by Col. C. C. Grant.

All of which is respectfully submitted.

A. T. NEILL,
Secretary.

OPENING ADDRESS.

Read before the Geological Section, November 2nd, 1894.

BY COL. C. C. GRANT.

A good many new *Graptolites* have been obtained since the stone crusher has been at work in the corporation quarry here; several were forwarded, by request, to the Geological Survey Office, Ottawa, and a still greater number to the United States Survey, the authorities at Washington's intention being to publish a work on this class of organic remains. In a paper read to this section on a former occasion, I stated that there were about 76 in our local rocks undescribed by Dr. Spencer. I have now come to the conclusion that I then underestimated the number. This opinion I communicated to Dr. R. R. Gurley, F. C. S. A., of Washington, a leading authority on the graptolites, who has been selected to describe the Niagara ones. In many instances I succeeded in obtaining *the Radix*, or initial point, a circumstance of much importance.

Strange to say, the reticulated species, *Dictyonemæ* (Hall) are furnished, with bases widely differing—the cup-shaped—with a short stalklike process not unlike the shortened stem of a wine glass. It was probably buried in muddy sediment, and does not appear to have been attached to other objects, indeed, none of the graptolites here were obtained presenting this appearance, except in a few instances only.

The *Dictyonemæ* generally had spreading rootlets, *Inocaules* (Hall) and *Rhizograptus* (Spencer), bulbous ones; *Callograptus* and *Callyptograptus* slight single stems.

Since I forwarded my last parcel to Washington, I succeeded in obtaining a new species of the former by splitting the upper glaciated chert bed in which the base is well defined. The free graptolites, of course, display no attachment process. These are not unlike the forms described and figured by Hall, from Quebec, and were probably direct descendants, or at least closely allied varieties

of the more ancient ones, known at the time of publication as Lower Silurians.

The low swampy fields close to the Corporation Drain have contributed as usual some interesting specimens of what we may call flint flake fossils. I have already expressed astonishment at the inexhaustible supply turning up annually there. A new drain on the McVittie Farm throws considerable light on the matter since the swamp was drained many years ago. It appears clear enough now. That the plough has never penetrated deep enough to disturb the chert beds (in situ) underneath was Dr. Spencer's view. While admitting its probability, I felt inclined to believe the swamp water had rotted away the softer portion of the upper chert, leaving no impression on the hard part composed of silex (flinty matter.)

Both theories are quite erroneous. This new drain exposes the thin flakes, embedded, in countless numbers, in a white stiff clay, viz., the ground-up meal of local rocks, pulverized by the glacier. When it retreated, while it left *Moraines* in some localities adjacent, there it dropped what we now find resting on the chert beds below. This escaped observation when the Corporation Drain was first opened. When it was subsequently deepened, the layers removed would only hide more effectually the matter originally thrown out.

Water or *Weather-worn Greenstones* and *granites* are sometimes found with the *flint flakes*. Occasionally the latter occur below, displaying a similar conveyance as regards both. The *boulder clay* or *till* of Europe in many places exactly corresponds with the clay resting on our local chert beds, and underlying that ancient lake beach, known to us as the Burlington Heights.

The remarkable preservation noticeable to us in the beds at the top of the escarpment of the glacial *striae* is mainly owing to the resistance it offers to the penetration of surface water. The color proves it was little affected by the stagnant marsh which existed before the Corporation Drain was excavated, where *bog iron* penetrated and stained the flint red or yellow. It was absent, probably, when the workmen were cleaning out the drain a few years ago. I remarked the coloring was confined to isolated patches. I think, therefore, I cannot be far astray in arriving at this conclusion. Many of the large travelled Niagara boulders resting on the Barton Ridge beyond the drain, as well as the *till*, have been removed by the

farmers even since I arrived at Hamilton. I had no difficulty in recognizing that some few at least belonged to the same horizon as the upper glaciated *stromatopora* bed of the Carpenter Quarry at Lime Ridge.

The *Cryptazoon* I forwarded some years ago to the Redpath Museum was derived from some higher layer than the one above. I think no organic remains corresponding to it have been remarked in this upper layer, and it is impossible to estimate the thickness of the rock removed or ground down during the great ice age. I cannot claim the discovery of many new species (graptolites excepted), but I am enabled to add a few to the local list of Hamilton fossils, published by Dr. Spencer.* Some have already been discovered by Hall, and others are perhaps new to Canada, as I cannot find any record of their existence here.

Debarred as we have been for many years by the Grand Trunk Railway from our scientific pursuits, not only along the line, but even inside the fences, I am no longer enabled to contribute any specimens from the Bluff and Rock Cutting to the Hamilton Museum. The localities in question are unquestionably the most interesting about here to a collector. Seven Silurian Star-fishes were obtained at the former, together with the oldest colored *Brachipods* known (*Lingula*). The latter, which begins at Niagara Shale, lays bare the Crinoid beds of the series containing two species, *Eucalyptocrinus* and several heads of *Caryocrinus* and *Stephanocrinus*. Unfortunately no specimens of the former Crinoids are in possession of the Museum. The General Manager of the Railway alleges he has no option in the matter, as they are bound by a clause inserted in the Railway Act. I do not think it ever was the intention of our law makers to include men in pursuit of science with *ordinary tramps*. No civilized country throws obstacles in its way. When I mentioned the matter recently to a gentleman from the States he remarked "that is about the most contemptible thing I have heard for some time. But it may be only a stupid blunder on the part of ignorant officials. If it is as you say, the Act of the Legislature, why, sir, that only makes it the more disgraceful to Canada."

The Niagara Waterlime beds at Russeux Creek have afforded

*You will find the list appended.

nothing new, but the quarry at the Jolley Cut, worked by the Corporation, presented a remarkably fine *Fucoid* from the blue building limestones. I am inclined to think it an undescribed species of *Buthotrephis* (Hall). It may be a detached branch only, yet I believe now a species of the plant existed in the Palæozoic Sea which did not possess a main stem like *Buthotrephis Gracilis*. Hitherto I supposed some specimens were accidentally separated from the parent stock. I doubt whether this affords a satisfactory explanation; it may be so, in some instances, but decidedly not in all. I noticed recently in the waterlime beds above the Albion Mills, where the quarry-men had uncovered the "Erie Clay" or "Till" resting on the upper layer a few darker patches than I had previously remarked. Possibly they may represent vegetable remains pushed on by a glacier. The clay appeared undisturbed, containing rounded pebbles, both above and below. I doubt if modern trees could produce the appearance in question, even while admitting the roots sometimes strike deeply into the soil.

FOSSILS RECENTLY OBTAINED.

Buthotrephis—New species, perhaps.

Acidaspis tail—Not obtained hitherto. New species.

Dalmania Verricosa—Hall, not recorded in Hamilton List, Spencer.

Calymena Platys—Hall; omitted also in Spencer's List.

Cornulites Proprius—Hall; not recorded as occurring at Hamilton in the above.

Cornulites, Sp.—Undetermined yet.

Crania—Siluriana, Hall.

Crania—New species perhaps; this has a straight hinge line and raised upper valve not unlike a Bonnet Limpet (not known to Dr. Spencer). I believe there is no record of the other as occurring in Canada.

Several Bryozoons in the glaciated chert beds—*Fenistillidæ*, *Ptilodictyæ*, *Cladoporidæ*, omitted in Spencer's List, and not recorded by others as occurring in Canada.

Conularia—New species.

The Barton water lime furnishes a *Chetætes* or *Nauticulipora*, which may be new. It is better represented by one placed

in a side case of the Museum for determination. This was obtained from a base bed of the series Barton Niagaras. It also furnished a small *Cyrtoceras* probably unrecorded, a very slender *Graptolite*, and a *Brachiopod*, not well preserved, which may prove to be the one already discovered in the States and named by Dr. Jas. Hall *Anastrophia Intisplicata*. It does not appear among the Canadian organic remains recorded by the late Dr Nicholson.

BRIEF NOTES ON THE DEVONIAN ROCKS, ONTARIO.

Read before the Geological Section, December 24th, 1894.

BY COL. C. C. GRANT.

The Corniferous Limestones of Hagersville, in the neighborhood of Hamilton, are merely a portion of a great formation known to geologists as the Devonian system. They overlie the Upper Silurian. Murcheson and Sedgwick calculated the rocks deposited in the old world, so called, during that age had a thickness of nearly three miles. It appears to be a little more on this continent —however there appears to be no material difference. Whence was this great amount of sediment obtained? Evidently from the degradation of pre-existing "Archæan" and "Silurian" lands.

The limestones present many forms of marine life, especially corals in Ontario, but appear deficient in fish remains, which are so abundant elsewhere, that we frequently notice "the Devonian" called "the age of fishes." A few shark spines from the quarries at St. Mary's represent all I have seen, and on reference to Nicholson's work, Palæontalogy of Ontario, I am unable to find that the Toronto Professors were more successful than I have been in my researches.

Through the persevering efforts of the late Professor Hartt, Sir W. Dawson, Matthews and others in New Brunswick, Gaspe, etc., we are enabled to form an idea regarding the land vegetation of this age. The record, doubtlessly, is very incomplete, and it is only quite recently that anything was known respecting it. Flowerless plants (Acrogens) seem rather scantily represented in the Dominion. I have heard some highly interesting land plants have been discovered in the Devonian beds in the United States within the past few years. *Conifers* occur in Canada, and the late Dr. Newberry detected a well marked portion of a *Tree-fern* in the coniferous limestones of Ohio. The latter, probably, was brought down by a river in flood, which undermined the bank where it grew. It was only within the past quarter of a century that I learned that "the calamites" of the carboniferous had put in an appearance at an earlier period of this world's history in a geological point of view. I was once endeavor-

ing to give an incredulous friend a little insight regarding the coal measures of England, stating coal itself was nothing more or less than mineralized vegetable matter, the production of Paleozoic swamps, "lake basins" or "rafts," not widely differing from such as we now see in a great river on the American continent. He noticed near Edinburgh, that the miners had discovered a large tree in an erect position, the roots plainly recognized, partly imbedded in indurated sand or sandstone. How did it come there? was the question. The Duke of Argyle probably would have afforded a far more satisfactory explanation than American geologists, for who can doubt the universal deluge brought together land plants and sea shells, and buried both indiscriminately in the places where discovery is claimed? For such things, however, in the course of conversation I called my friend's attention to a small jointed plant growing in moist, swampy places, commonly called Mare's Tail, and informed him it was closely allied, if not a degraded descendant of a tree-like form some 50 or 60 feet long, which flourished in Paleozoic times, named *calamites*. Do you really mean that? "What, sixty feet!" he exclaimed, in astonishment. And then, after a brief pause—"Well, Charlie, it may not be a Mare's Tail, but a mare's nest that you and your stonebreaking friends have found."

The oldest air breathers—insects and land snails, were discovered by Hartt and Matthews in New Brunswick in the formation. The flora there, in Iceland, and Gaspe Bay leads us to infer that it enjoyed a warm and damp atmosphere, a tropical climate. Indeed, the numerous corals amount to positive proof of the latter.

Quitting this portion of the subject, let us proceed to investigate the organic remains in the limestones and shales, the sea or fresh water deposits. "Many parts of the coniferous limestones," remarks Nicholson, in Palæontology of Ontario, "are almost wholly made up of corals, and as these are silicified, they usually weather out from the softer matrix. In the shales (Hamilton) they are obtained free from adhering material. In both they are obtained in exquisite preservation." I conclude from the foregoing that the Professor discovered, as I did many years ago, the most likely place to procure perfect specimens was in fields, where the glacial drift was exposed on the surface, and not in quarries.

What first strikes the stranger in a Devonian district here is the

extraordinary number, as well as great variety of these *Zoophytes*. Nicholson and Hinde added some new species to 80 or 90 already known, and I am satisfied there are several still undescribed. The *Polyzoa* also are quite abundant. Perhaps owing to the condition in which they are usually found—fragments and very seldom complete—this class has been greatly neglected. Many of them are exceedingly small, and are calculated to escape observation altogether. The authors of Palæontology of Ontario added some new genera, and, I think, about 15 species to the ones previously determined, but the number may be largely increased if some one residing in a Devonian district could be induced to make these organic remains a particular object in collection. Let us imagine we are standing by the coniferous seashore, and looking down into the clear, warm waters of the great sea which then spread over a very large submerged portion of this continent. What a beautiful picture would have been presented to the Naturalist! Look on a coral reef in the tropics! Every bright and brilliant color that our gardens on land display, are there reproduced with added brilliancy and beauty. "In passing over these splendidly adorned grounds the boat seemed to float on air," remarks the German Naturalist, Schoph. On the clear bottom the spectator floats over groves of sea plants, gorgonas, corals, alcyoniums, sponges, burning red, intense blue, lively green, golden yellow, perpetually varying, they afford no less delight than the most exquisite garden on earth.

Now, if we reflect for a moment on the fossilized corals in our museum, and our cases are yet incomplete; if we restore the living creatures that built up the stony cells and reefs, Hagersville for example; clothe the various species with their varied tints and hues; add the sea anemones (*Actineæ*) which I consider undoubtedly existed, but left no record of such existence, as they do not secrete a calcareous skeleton, like the other members of the family; without taking into account a few matters, we may form a faint idea of the ancient sea and its living wonders, which no human eye has ever witnessed.

A recent traveller, Mr. Boyle, gives us a description of what he saw at Chaughi, near Singapore. During my military career I never had the good fortune to visit any one of the United Kingdom's Eastern possessions, but a near relative of mine is well acquainted with the locality, and has assured me the account is not exaggerated,

nor the picture he sketches too highly colored. I need not hesitate, therefore, to place before you the extract I have taken from an eloquent and interesting work recently published, bearing the title of "Odd Quarters." "The smooth sand below high water mark was a parterre of sponges, green and red, and purple-blue intermixed with coral. Corals! Imagine their beauty in the spot where Nature placed them, every lip and hollow on the cream white surface traced out in vividest pencillings of green, with the sea-flowers of sponge around them. After the first impulse of delight, one almost comes to overlook the charming foreground; for beneath the water lies a tangle and a maze of all things lovely, for shape and color, for growth and motion. Coral takes a hundred flowery forms, weeds branch like trees or wave like serpents. Sponges are cups of amethyst and ruby. One sees just as clearly into the depths below as into the air above, and almost as far as it seems there are corals shaped like an Egyptian lily and as white, three feet in diameter, in which a mermaid might take her bath; others in a thicket, have each branch covered with showy rosettes which bear a morsel of green velvet in their bosoms; small fish, as quick as hummingbirds and almost as gay, dart to and fro."

Such a scene as Mr. Boyle so eloquently describes may also have presented itself by the shore of the ancient Devonian Sea. If we except the fishes—the latter widely differ from their predecessors, but there is one in the North Pacific, *Monocentris Carinata*, possessing so many characteristics of the fossilized remains discovered in Paleozoic rocks, that research or accident may reveal its existence, also at the olden time, when the empire of the sea was fiercely contested by mail-clad fishes with bony armour, gigantic cuttles, and crustaceans whose size may be estimated not only by feet but yards. Its coat of scale mail is so hard as to resist the most powerful thrust of any sharp instrument, and this would insure its preservation in the stony sediment of the ancient seas, if it really existed then. Little was known of the Devonian fishes until Hugh Miller's discoveries in the old red sandstone of Scotland. Their prodigious abundance there now led Sir Archibald Geikie to infer that they were essentially inhabitants of lakes and rivers. "Some," he adds, "found their way to the sea, as indicated by the occurrence of the remains with the true marine fauna." The various colors so characteristic of the family in

modern times (the so-called parrot fish of the North Pacific, for instance) we may not expect to find, but the bone plated and bone scaled presented, perhaps, no less brilliant appearance than the *Lepidostens* (Garfish), which in the current at Fort Erie, looks as if it had been encased in silver scale armour. "The *Ganoids* in the Corniferous rocks, U. S. A.," remarks the late Dr. Newberry, "including the *Onychodus*, *Macropetalicthy*, greatly surpass the *Elasmo* branches in number and size, and I examined many thousand fish remains from these Devonian beds," he adds. Perhaps the most wonderful member of the family was the *Dinichtes* the lamented Palæontologist described, from the shale of Ohio, furnished with a head buckler three feet long, and provided with such formidable teeth that rendered it the equal of, if not superior to, any sharks then existing. It may be asked what reason was there for substituting the term Devonian for the older name—old red sandstone? Dr. Page and others could see no good grounds for the change either, but the old red sandstone of Hugh Miller merely represents a portion only of a vast series of beds, which attain a thickness of some 15,000 feet nearly three miles, and such a name could be hardly applicable to limestones, shales, etc.; but it is retained by general consent for the fresh water lake or lagoon deposits of the formation. Undoubtedly true, sea fishes are occasionally found embedded therein, but Newberry remarks: "The majority I examined on this continent very likely inhabited inland lakes, and, like the modern salmon and white trout, a few found their way there perhaps for spawning purposes." A similar opinion has been expressed by Sir A. Geikie since, when referring to specimens discovered in the red sandstones of Scotland, and among others which he thinks were inhabitants of inland lakes. These latter must have swarmed in the waters. Their bodies lie piled on each other, and so well preserved as to show they were suddenly killed. He attributes their destruction to earthquake shocks and escaping gasses, and alleges that some of the larger lakes in central Scotland were once marked active volcanoes that erupted lava and ashes 6,000 feet thick. We have evidence also of great disturbances on the American continent about the close of the age. Sir W. Dawson considers a portion of the Nova Scotia granite belongs to that period. You may recollect in a former paper I called attention to a remarkable discovery made by the Rev. M. Harvey in New-

foundland, viz., seals living in fresh water lakes away inland and breeding there. No doubt their predecessors occupied bays or reaches that had been cut off from the sea, and they gradually became accustomed to the brackish, and finally to fresh water. Now, such a circumstance may have also occurred in former times, and would afford an explanation how things in general got occasionally mixed up, and throws some light on the vexed question, viz., How can we account for crustaceous remains, *Pterygotus*, for example, occurring in fresh water deposits? The common cray fish is considered to be merely a degenerate descendant of the lobster, which accidentally had been cut off from the open sea, and contrived to increase and multiply despite its uncongenial surroundings.

There has been degeneracy as well as progress in life. Every geologist knows that. We frequently hear it stated, "God saw that it was good," or, as commentation explains, every living thing was perfect of its kind, as it came direct from the Creator's hand. Palæontologists know such to be a popular error. You may notice a marked capacity for improvement in the living descendants of the *Eucrinites*, or sea lilies even. The earliest *Trilobites* are also greatly inferior to their successors, and thus through the ages. We cannot ignore the unquestionable progress of the various families. Does Nature ever produce a perfect creation? was a question put by a city clergyman recently, and answered in the negative. All experience appears to be of the opinion expressed, and in accordance with Nature's law of development. Compare, for instance, the two figures (Crinoids) of the late E. Billings, Palæontologist, Canadian Geological Survey.

About two years ago a farmer from Hagersville brought a box of corals to the city for sale. Mr. Charlton requested me to take charge of it until called for, as he was leaving Hamilton for the season. On examining the contents I noticed the posterior half of a large shell, which I felt assured must be unknown. The part preserved displayed coarse ribbing, and was 9 inches across. As the beak and hinge were absent I felt it could not be restored. I requested the owner to be on the lookout for one in better preservation. Professor Whiteaves obtained a like specimen from St. Mary's. On examining the figure I found it agreed with the Corniferous one incomplete from Hagersville. It was named by the Palæontologist, *Paneuka Grandis*.

GEOLOGICAL NOTES IN CONTINUATION.

Read before the Geological Section, January 25th, 1895.

BY COL. C. C. GRANT.

No doubt many of the fossils found in this neighborhood may prove to be of more common occurrence in the higher portions of the formation elsewhere, still their appearance here, at or near the base of the Niagara, may be put on record. In the paper read on a late occasion, viz., 2nd November, I confined myself chiefly to pointing out organic remains in local beds that are rare, little, or altogether unknown. In the Palæontology of Ontario (Nicholson) eleven pages only are devoted to describing or naming the fossils found in the Medina, Clinton and Niagara rocks of the entire Province. Surely this must be insufficient to convey an adequate idea of the richness in organic remains contained in the entire Ontario series.

Dr. James Hall, of Albany, emphatically pronounced what now remains of our chert beds (12 feet) on the brow of the escarpment to be a most interesting sub-series of the middle Silurians, apparently of local occurrence. Yet I find we are not credited with possessing above half a dozen common *Brachiopods* and a single *Dictyonema* (D. Gracilis, Hall). The Barton, or Waterlime, subdivision, 85 feet in thickness, resting on the Niagara chert, with its once concealed treasures of Spencer, so rich in plants and corals, *Brachiopods*, was quite unknown to the Toronto professors. I cannot find even a characteristic mollusc of the beds referred to, since *Atrypa reticularis* occurs all through the formation, and even that is mentioned as being abundant at Thorold merely. Our cases are very incomplete as regards Barton specimens, and several of the more characteristic ones are unrepresented, viz., *Trochoceras desplainense;* a large *Cyrtoceras*, an *Avicula* found in a layer considerably above the former (a new species probably), and *Murchesoniæ*, which merely leave empty cast in a limestone bed. However, as the beds in which they were found are noted, we may expect to procure some, at least, for our cases yet. The new proprietor of the Albion quarry

expresses his intention of working the cement on a more extended scale, and he believes there will be an increased demand for it when it is better known.

The glacial grooves at the lime ridge (Carpenter's quarry), on the upper layer of the Bartons, known to us as the Stromatopora bed, in general are not so well defined as in the chert at the brow of the escarpment, but on a recent visit I noticed a very remarkable exception—the oversoil had been removed recently and a furrow underneath was exposed. Its dimensions exceeded any I have seen on this continent as yet, although larger grooves, I understand, have been observed in other parts of the Province. It was three feet broad and six or seven inches deep ; the stripping was too limited to afford me an opportunity of ascertaining how far it extended. A local glacier would probably (subsequent to the general retreat of the great ice sheet) obliterate some of the previous markings. The striæ, however, in this particular case corresponded, as regards direction, with the grooving of the underlaying chert at the escarpment. The adjoining rocks on both sides (same horizon) displayed merely scratches and a polished surface. We can scarcely conceive what appearance this locality presented at the beginning of the glacial age. This consideration appears to me to be frequently overlooked. Hundreds of feet of hard Niagara limestone must have been ground down and removed before the chert was exposed to the grinding process in the immediate vicinity of this city. We can hardly realize the vast changes, the different aspects, presented in the present and the past. Mr. A. E. Walker mentioned at the late meeting of the Geological Section how surprised a friend of his (a stranger) appeared to be when he pointed out to him the glacial markings near the Jolley Cut here, adding, "In the portion of the upper beds I examined in New York State there was little, if any, grooving, but polishing and scratches as far as my examination went." Well, such an experience strikes me as the one to be expected, for, as the great glacier travelled on southward, shod with or bearing frozen boulders, sand or gravel, is it not natural to suppose the former were the first to be loosened from the moving mass and to be detached closer to the source in valleys where they have been dropped? I am, unfortunately, unacquainted with the glacial Moraines, or glaciated areas, in New Jersey, Ohio. The localities at present are attracting con-

siderable attention since the publication of "Man and the Glacial Period." But while one may notice a difference of opinion among the able scientific men—the Wrights, Holmes, Leveretts, Claypoles, Salisburys, Uphams—on one point, all agree that the drift and boulders from the north were undoubtedly transported by land ice, and were derived originally from the Canadian Highlands. The writers above named have omitted to afford us information respecting the size of the Archæan rocks observed so far south in the boulder till. This term is seldom used by geologists on this continent. The stiff blue clay, charged with masses of stone of various weights, is known best in the Old Country by this name, and the material resting on the chert and underlaying the Burlington Heights sand gravel and water-worn shingle and boulders precisely agrees with the European boulder till so frequently mentioned by Sir A. Geikie.

In referring to "The Great Ice Age" at the conclusion of a paper read at the late meeting, I alluded to a local "Moraine" close to the Barton school-house and toll-gate that is merely one of a series of mounds irregularly parallel to the stone road, extending to the Kerr farm on the Glanford road, and perhaps beyond. The material consists chiefly of coarse sand, clay, Niagara limestones (similar to the ones at Lime Ridge), fragments of chert and occasionally rounded weathered boulders (of rather small dimensions), of Gneiss, greenstone, etc.

The different theories regarding the phenomena presented by the great ice age are known to all the older members of the Geological Section. The astronomical theory regarding the cause which led to appearances in post-tertiary days has even now defenders in Europe, while it certainly appears to be discredited generally on this continent by leading geologists. If "an ice age" was developed at the termination of every ten or twelve thousand years, they ask, surely we must see sufficient proof in the older rocks, from "the Cambrians" upward. Why not produce any evidence that may show such was obtainable? We might point to "the Millstone Grit," "the Devonian Conglomerate," (capping Slieve Na Mon in Ireland), or the older loose, uncemented conglomerate, which forms the foundation of our Quebec Citadel. A granite boulder discovered in the English chalk some years ago was pointed out as positive proof of "a glacial age" during the time of the cretaceous formation, because,

as alleged, it was found in undisturbed layers or beds, and most probably was conveyed by an iceberg. A tree undermined on the bank of a flooded river frequently has a mass of rock entangled in the roots. I saw, when a boy, one carried a considerable distance in an almost upright position on the Munster Blackwater. Such, perhaps, was the means of conveyance in this case, and not ice. When we reflect at the time the chalk was deposited palms, myrtles, magnolias, sequiras flourished, that corals and tropical or sub-tropical shells abounded in the English seas, it is difficult to imagine the existence of floating ice. We have undoubted evidence that a real tropical climate prevailed a little later in "Eocene time." Unless we recognize the importance of a paper (to which I have already referred), by Prof. Matthews, New Brunswick, it appears impossible to account for well-developed Cones, Nautidi, Volutes, Olives, Mitras —habitants of warm seas—occurring in Tertiary beds containing an undoubted Fauna, now characteristic of a colder climate. I considered formerly that the minute cowrie of Ireland was merely a degenerated descendant, dwarfed by a change in climate, but I subsequently noticed a member in the tropics, which, corresponding in size and general appearance, I looked upon as a mere variety of the living Irish shell. I have seen fossilized Moluscs which were obtained from London clay, England's Eocene. They presented a blanched appearance, not unlike what we call dead shells, but yet retaining a considerable portion of the original color. If we examine the Flora of the Eocene rocks, and the Strata, estimated at not less than 12,000 feet, we find plants (remarks Geekie) having living representatives in the hotter part of India, Africa, Australia and America. Now, although we may find mingled with the above the Chestnuts, Willows, Elms and Laurels, characteristic of more temperate climates, yet it does not follow that they flourished precisely at a similar level above the sea. Many of the remains possibly were conveyed from high hills to the plains below by streams or river floods. Near Newcastle, Jamaica (up in the Blue Mountains), I have often seen, after heavy tropical rains, the swollen brooks carrying down to the lowlands trees, ferns, etc., torn from the banks. These vegetable remains would undoubtedly be mixed with a Flora below, foreign to the hills. May not this have occurred also in ormer times? It seems reasonable to think so, and would it not

sufficiently explain why we now find tropical plants embedded with ones which flourish in more temperate climates?

I believe ice to have been the sole agent capable of transporting some of the large rocks noticeable in the Conglomerate at the base of the Citadel, Quebec, and icebergs were probably the means of transport at a later period than a Silurian or Cambro-Sil. age. The Devonian Conglomerate of this Continent, Jamaica, and Ireland, is composed of pebbles, varying from 1 to 4 inches in diameter, of Trap, Quartz, Greenstone, Porphyry, all rounded or waterworn, cemented by Silex. The description will do for all, and each appeared to me to represent portions of older sea beaches.

One thing I remarked at "The Devil's Bit," in the south of Ireland. Although limestone pebbles in the Devonian Conglomerate which caps the Silurian hill there were not altogether absent, I never succeeded in obtaining a complete fossil, or even a fragment of one, which could be recognized. Their hardness was very great, and the cementing material of these rounded pebbles resisted fracture even better than *Igneous Porphyries*. The Bit looks as if a big wedge had been cut out and removed altogether bodily. The story is that the old gentleman was in such a rage with a Cowherd there who deceived him, and slipped through his claws, that he took a bite out of the mountain, flew off with it and dropped it on the spot now called "The Rock of Cashel." We may hear many remarkable stories of what are called Metamorphic rocks. I think we may reasonably claim this gentleman in black as one of our oldest field geologists. Wonderful to relate, during his flight he converted that mass of Devonian conglomerate into fossiliferous mountain limestone. I know this, and can vouch for the fact, for I passed some days in its examination. Surely this circumstance ought to convince the most sceptical individual.

NOTES.

Carbonized wood has been found, it is said, on this continent in the early tertiaries. It has been remarked half a century ago also in Europe in the same beds. What folly to adduce this as a proof of man's existence at such a period! Would not lightening fire the forests then as in our own days, leaving the charcoal in evidence, which is almost indestructable, like baked clay?

The following extract, recently received from the States, is of

some interest to conchologists. The writer, Chas. T. Simpson, claims that even in land shells of the same species the color is not always persistent. It may be remembered that in a paper published some years ago in the Proceedings of the Association the claim that the color of sea shells was owing solely to light was disputed at a time when the statement was generally accepted. "While living at Braidentown, Florida, I found *Bulimulus Dormani* quite abundant, living and dead, in heavy lands north of Manatee River, and with the typical form on the very same trees I found quite a number of specimens without a vestige of color. The ground of most of these shells was a lovely pale porcelain, the spots were reddish brown, sometimes forming uninterrupted bands, clouded, and more or less distant."

Detached remarks like the above are rarely published in our proceedings. They may be, perhaps, incorporated as Notes. The foregoing is of considerable interest to concologists, more especially collectors of land and fresh water shells.

NOTES ON GEOLOGICAL MATTERS IN CONTINUATION.

Read before the Geological Section, February 22nd, 1895.

The Council of the Association were kind enough to publish, perhaps, more papers on Geological matters than we could have reasonably expected. Still many written or verbal remarks in explanation are necessarily omitted, and could not well be incorporated in the proceedings. I am not surprised to learn that a doubt I expressed relative to the age of a portion of the rocks on the north shore of Anticosti requires a little additional light, more especially since the views expressed appear to be opposed to the opinions of Sir W. Logan and Professor E. Billings. My remarks, I believe, to this effect, were as follows, in reference to the Silurians of the North shore: "While these rocks undoubtedly hold many organic remains, found below the Hudson River series, I doubt whether any of these beds themselves occur there." The conclusion arrived at by Sir W. Logan and Prof. Billings rested solely on organic remains obtained by Richardson, an officer of the Canadian survey. Evidence of this sort may not prove altogether reliable. For instance, between the West Point Light-house and Ellis or Gamache Bay there are a good many well-preserved fossils in shale at the foot of a small cliff. They represent a curious mixture of Upper Hudson River (Bala) and Niagara (Wenlock) specimens. The majority obtained by Richardson there belonged to the latter series, whereas the ones I extracted belonged to the former, and I looked upon these shales as true passage-beds, connecting the Cambro-Sils. and the Silurians.

I wish to call particular attention to the following paragraph, taken from page 221, "Geology of Canada, 1863:" "Loose fragments of black, strongly bituminous shales (Graptolitic) in every way resembling those of the Utica formation and of some of the interstratified beds of the Hudson River, are met with on the beach on the North side of Anticosti. These are probably washed up in storms or pushed up by the ice from the intermediate chan-

"nel (viz., between the Mingan Islands and Anticosti)." Now, is it not natural to suppose we must have had indications of these shales in the cliffs of the island also, if the Bird's Eye, Black River, etc., actually existed there? The Utica shale occurring at Collingwood, etc., if you examine some of the specimens in the Museum cases, will be found to contain large numbers of Trilobite fragments *(Asaphus Canadensis)* (Chapman), and occasionally a few Brachipods, but the former are altogether absent from the shales you find among the shingles on the Anticosti shore. It certainly closely resembles the Utica rock, but one may well hesitate to confidently recognize it as such.

The Hudson River, or "Bala beds," are said to be some twelve feet in thickness in the Quebec Province. That Anticosti was once joined to the main land can scarcely be doubted. The Flora and Fauna, with a few exceptions, are similar. No snakes have ever been seen there, however, and, stranger still, notwithstanding the many wrecks along the coast, rats are never seen there alive. The French fishermen believe the climate proves fatal to them. Hawks, eagles, foxes and martins may, perhaps, have more to do with it. It can scarcely be imagined that the air of one of the healthiest islands on the globe, where sickness is almost unknown, is responsible for their absence.

Lever in "Con Cregan" lands the hero of the work on the island, and gives an amusing account of the means taken to rid himself of his unwelcome predecessors, the rodents, which shared with him the shelter afforded by his cheerless domicile. Putting aside this circumstance as an exaggeration, merely intended to heighten the effect for his readers, the novelist's description of the surroundings, both in Anticosti and Quebec, bear the impress of personal observation, and could scarcely have been otherwise acquired.

NOTES ON THE GLACIAL MAN CONTROVERSY (AS REGARDS ONTARIO).

BY COL. C. C. GRANT.

Read before the Geological Section, March 22nd, 1895.

Since the discoveries of human implements in Trenton drift gravel beds by Dr. Abbott, the late Miss Babbitt, and others, an unnecessarily angry discussion has been going on for years in the States respecting Glacial Man on this continent. Personally the locality is unknown to me, so I prefer to abstain from any remarks on this particular find. If man existed here in the ice age (viz., in North America), as a hunter he would naturally follow the different animals driven Southward by the great ice sheet as it approached. Now, where should we look for evidence of man's existence then? Where but in places which contain terminal Moraines, derived from the continental glacier? We can hardly expect to find it elsewhere, since all human records would probably be obliterated wherever the moving mass passed over.

Even admitting that Dr. Abbott may be mistaken (a circumstance many eminent men deny), some of us may feel we are indebted to the scientific pioneers who first called attention to a very important and highly interesting subject, which some carping critics themselves neglected.

The writings of another glacial geologist (Professor Wright) we cannot afford to lose sight of, whose views coincide with Abbott's. The most formidable opponent these are likely to encounter is the archæologic geologist, W. H. Holmes. He describes how he went systematically to work in opening up trenches in the undisturbed portion of the gravel beds in question without obtaining a trace of an "art relic." "Relics of art," he states, "were found upon the surface and in such portions of the talus as happened to be exposed. Nothing in the gravels in place, and we closed the trench with the firm conviction that it was absolutely barren of art." After all, the

above evidence is merely negative, and there is just a possibility that accidental absence from a particular portion of the gravels has not been taken sufficiently into account.

I have been collecting Indian relics in the Province of Ontario for upwards of a quarter of a century, and previously in Quebec, yet I never found anything which led me to believe that the red men had been here for any considerable time. I have ascertained from old residents that the gravel ridge which runs through Hamilton from the Church of Ascension, by Central School to Burlington Heights, was formerly an Indian trail. It represents the old lake beach, when the waters of Ontario were about 130 feet higher than at present (the Lake Iroquois of Dr. Spencer). Many thousand years must have elapsed since these water-worn shingles, pebbles and sands were first deposited on the glacial till underlying.

When the cutting was made at the Desjardins Canal, the remains of a deer, a beaver, and portions of the jaws and teeth of two elephants, were discovered there. Accompanied by Mrs. Holden, a lady who takes great interest in local history, Indian antiquities, etc., I paid a visit last summer to the gentleman who had the contract for the excavation. He informed me that the bones were lying in the consolidated gravel several yards from the surface (they did not appear to have been rolled up by the waves on the beach). Horns of the buffalo or bison were also discovered there, but these were taken away by a bystander, who kept them. The circumstance was probably unknown to Sir W. Logan, the then director of the Canadian Geological Survey, who fortunately succeeded in securing the other organic remains. As I am unable to find it recorded in the Proceedings published in 1863, I may be permitted to refer to this omission. I must admit I have been greatly disappointed in obtaining no proof as yet of the existence of man in the consolidated gravels of this ancient beach. A few Indian relics were found on the surface soil, but little importance can be attached to that. I was likewise mistaken in supposing I might probably find other portions of the two extinct elephants there. Large masses topple down every year west of the canal, and although carefully examined I can find no indications of bones or flint implements. We know from experience in the Old Country that tusks frequently break into small fragments when you attempt to remove them from loose gravel. The

carbonate of lime which binds the pebbles and sand together would likely act as a preservative at the Iroquois beach.

Although unsuccessful in this instance, personally I do not doubt for a moment that the red men lived in North America before the Mammoth became extinct. The proof seems too strong to be affected by carping denial or charges of fraudulent manufacture in recent times by white men. "Doctors, parsons" (and geologists are not included), remarks the late Judge Haliburton (Sam Slick), "do not meet face to face like these gentry (J. E. Sawyers), and then shake hands like good fellows, after a fair, stand-up fight. They fire long shots at their opponents when their backs are turned, and insert scalping, cutting and venemous articles in works devoted to science *and defamation.* Your parson sends to religious newspapers, in a truly charitable spirit, anonymous communications displaying scanty sympathies with sinners, which they believe all to be who differ from them."

Many centuries probably have passed since the primitive forest first appeared on the brow of the escarpment south of the city. The glacial till rests on the polished and striated beds of the Niagara chert. The surface soil above that again is so exceedingly thin that one is surprised that so little decayed vegetation is shown there. Did the local glaciers linger longer here than we suppose? or was the re-foresting, after the great ice sheet retreated, slowly progressive? How long since they disappeared we cannot tell. "In a certain sense it may be said," remarks Sir A. Geikie, "the ice age still exists among the snow fields and glaciers of Europe."

In an apparently undisturbed portion of the till at the city quarry I extracted a few years ago an irregular-shaped piece of polished chert with a deep-cut groove (V) in the centre (there is one also on the opposite side not so well marked). While it presents the appearance of human workmanship, this may be deceptive. The grooving and polishing may be owing to ice passing over and attaching it to its base. There are no indications that roots of trees penetrated the subsoil there; the blue clay (weathered) was quite hard about it. I recently learned that a flint arrow-point was discovered by some workmen employed by Mr. C. Myles in sinking the foundation of a row of houses at the foot of his property on Hannah street, in the red Medina clay. The land in rear is very steep, and

a land slip would have buried a surface implement probably lower than six or seven feet, or it may have fallen into the hollow left by an uprooted forest tree.

We have no right to assume that mound-builders (Indians) were the Aborigines of America. Indeed, it seems more likely they were recent immigrants from Asia by way of Behring Straits. Look to the burial mounds recently opened in the Canadian North-West. The bark in which the crumbling bones were enveloped was so completely preserved as to be easily recognized. What we want to know is something regarding the real Aborigines—some one who can throw light on the ancient inhabitants of Yucatan, the Pigmies (smaller than the race of dwarfs in Central Africa), whose diminutive arches, temples, houses and tombs are still existing. In a paper on "Man and the Glacial Period," by Professor Warren Upham, the following invitation occurs: "Every worker who comes into this field and devotes his spare time to glacial explorations and studies as Prof. Wright, deserves the hearty welcome of all fellow-glacialists." This is the only excuse I can offer for inflicting this paper on the Section, which possesses, in the present state of things, this only merit, viz., it is *non-committal*. But, respecting the "Paleoliths" of America and Europe, probably ninety-nine per cent. of those I have seen were merely rejected coras or damaged implements, such as one can obtain in the vicinity of any modern Indian camping-ground of less than a century ago.

I recently received from Arizona a few small "bird arrow-points," so called, made from onyx, agates, etc. I cannot believe these exquisite little implements were formed by Turanian red men. I would be more inclined to attribute their manufacture to a people more advanced in civilization—the Mayas, for instance. I have not heard they were ever discovered in northern burial mounds, and I do not recollect that they are recorded as found in southern ones, but, if so, it would, probably, not be of much importance.

SHORT NOTES ON RECENT DISCOVERIES.

Read before the Geological Section, April 22nd, 1895.

BY COL. C. C. GRANT.

The beautiful collection of Algæ (sea) and land plants presented to the Hamilton Association by our late lamented friend, Professor Wright, finds a fitting and honored place in the Botanical Case. Such specimens, however, as come under the head "Sertularia" *(Halcyonoid Polyps)* are of animal, not vegetable, nature, and are undoubtedly out of place there. Admitting that we cannot recognize them as fossils, yet they are considered by many Palæontologists here and in Europe to be so nearly allied to the extinct Graptolites of former ages that doubts have been expressed whether these modern forms may not actually prove to be merely modified by surrounding circumstances, at least in some instances. To restrict this section merely to fossilized organic remains would place it at a great disadvantage, since we are compelled to investigate the past life from the still existing. If the Council were in a position to provide a case open to public examination, it would prove an additional attraction to the visitors.

AN ANCIENT FOSSIL CORAL FROM THE CLINTON ROCKS, HAMILTON.

In a collection of fossils brought from the Arctic regions some years ago, the late Dr. Salter recognized a coral (Syringopora) supposed to be characteristic of the Devonian formation. As it was associated, however, with other fossils of undoubted Upper Silurian (lower Helderberg type), he claimed it as the oldest discovered. The specimen submitted for the inspection of the Geological Section takes it back to another stage, viz., to the time when the Clinton beds were deposited. It occurs a little above the Medina grey-band in the lower shales. As far as I can learn no Syringopora

as old as this has hitherto been discovered. For a reef-building coral it seems singular to find it in muddy sediment.

Since the foregoing was written Mr. A. Walker placed in one of the cases a Syringopora he discovered in the Niagara limestones at Thorold, Ont., some years ago.

PALÆOZOIC SPONGES.

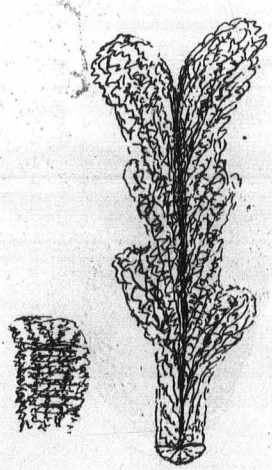
I have just received from Dr. Head, Chicago, the author's catalogue, "Palæozoic Sponges." Hamilton is credited in it with three new Genera and seven new species of Upper Silurian sponges; so we cannot complain that the Niagara ones have been neglected. The majority of the Tennessee sponges were, I believe, from the Doctor's personal collection, which was so greatly admired at the World's Fair, Chicago. Unaided by the States or its universities my old friend, at a very considerable expense, prepared for microscopical examination a great number of our Hamilton specimens, independent of others he discovered in Tennessee. Strictly he may be right in rejecting detached Spicules; but if Salter had not figured and described the Cambrian sponge from these fragments *(Protospongia Fenestrata)*, which he erroneously ascribes to Walcott, we may never have carried the Hexactineloid sponges back to the Cambrian age.

In a paper read before the Geological Section, published in No. 10 of the Proceedings of the Hamilton Association, you may remark your chairman expressed his belief that *Phyllograptus Dubius* (Spencer) belonged to new distinct genera. From Dr. Gurley's letter, he evidently arrives, independently, at this conclusion also. Your chairman was unacquainted with the European Graptolite it resembles, not having seen it figured or described. The Retiolites of the Clintons is Hall's Graptolite, but is figured so imperfectly that I am not at all surprised at the Doctor failing to recognize it. The ranching cellules are too far apart or separated.

HAMILTON SPONGES.

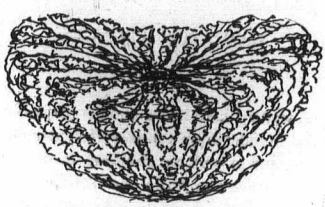
BY A. E. WALKER.

During the winter I have had a number of our Silicious sponges cut and polished in order to get a more perfect understanding of their skeletal structure, and to work out the form of the spicules. They have been sent to Professors Zittle and Rauff, of Bonn, Germany, who are writing a special work on these forms, which will be beautifully illustrated. All the Niagara sponges will be classified, and those not named will be described and named. The plates following illustrate a few of the pronounced forms.



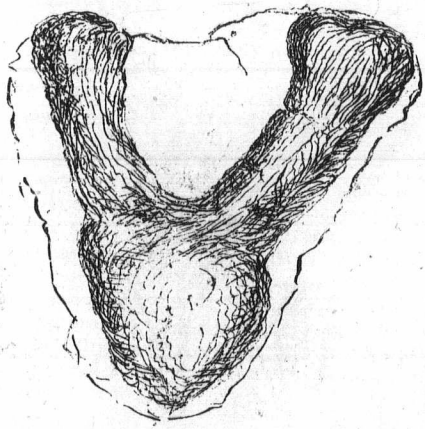
NO. 1.

No. 1.—This plate gives a vertical section of one of the *Aulocopina*, showing the osculum from the upper opening to where it is broken at the base.



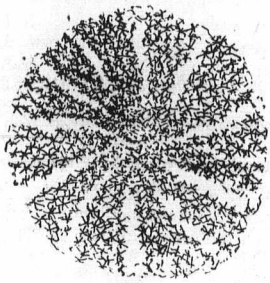
NO. 2.

No. 2.—This plate gives a general idea of the *Aulocopina Granti* (discovered by Col. Grant and named by Dr. Billings) as it would appear divested of its flinty filling.



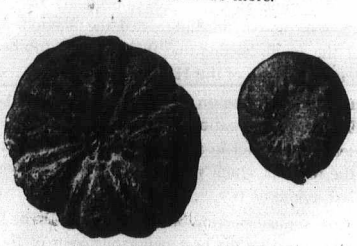
NO. 3.

No. 3.—Some time ago I drew attention towards a branching form of the *Aulocopina* that I had discovered. The cut gives you an illustration of a specimen found by Col. Grant. My specimens have been sent to Germany.



NO. 4.

No. 4.—This plate gives a good idea of the spicular structure of the *Astylo Spongia*. The varied forms have all the same spicular arrangement. As these forms are in the hands of Dr. Herman Rauff, of Bonn, I will not presume to do more.



NO. 5.

No. 5.—This plate shows two forms of *Astylo Spongia Piaemassa*, both of which I found at Hamilton.

REPORT OF THE PHOTOGRAPHIC SECTION.

Read at the Annual Meeting, May 9th, 1895.

Your Photographic Section beg leave to present the following Report for the year ending 9th May, 1895.

During the summer months not much was done in the way of business, although the Section still held their meetings—one per month.

A number of outings were held by the Section. A joint outing of the Toronto Camera Club and our own Section was held on the 24th May to Fisher's Glen and Webster's Falls. The day was pleasantly spent, some good views were obtained, and all went home tired but delighted with the scenery.

On Tuesday, June 26th, Mr. Lake, Secretary of the Toronto Camera Club, was present and addressed the Section. He spoke especially of the kindly feeling that the Toronto Club held towards the Photographic Section of the Hamilton Association.

A discussion took place on the advisability of joining the Lantern Slide Exchange (International). After some discussion it was decided to leave the matter in abeyance, and form a Canadian Slide Exchange, the result of which you have had the pleasure of seeing during the last month or two.

At the last annual meeting of the Section, Mr. B. E. Charlton donated a gold medal for the best panoramic view of the city from the mountain top. He also added a silver medal at a later meeting. The first prize was won by Mr. A. H. Baker, and the second by J. R. Moodie. A great deal of interest was taken in the contest. Mr. Hugh C. Baker and A. M. Cunningham acted as judges. The medals were presented by Mr. Charlton at the opening meeting of the Association, when the Section made a large display of work and also exhibited the contesting pictures.

In January the collection of prints and slides of the Canadian Photographic Journal were on view and created a favorable

impression, as they were a decided improvement on the set of the previous year.

During the month of April a very interesting exhibition of work by members of the Section was made, and a great deal of interest was taken in the exhibit by the Association and friends.

During the past season a question box was placed on the table and proved a step in the right direction, as it was the means of making known points that otherwise would not have been brought out.

During the year several improvements have been made in the dark room and apparatus added. Gas has been introduced into the lamp and an Alladin lamp and a table purchased, which are found very convenient. The Section had an enlarging apparatus placed, and members can now do their own enlarging.

An Anthony Portrait Lens has also been introduced by the Section for use in enlarging.

All of which is respectfully submitted.

J. R. MOODIE,
Chairman.

WILLIAM WHITE,
Sec.-Treas.

REPORT OF THE BIOLOGICAL SECTION.

Read at the Annual Meeting, May 9th, 1895.

Six regular monthly meetings have been held during the year, and although no original papers have been read at our meetings, we have always found enough to make them interesting and instructive.

During the session large and valuable additions have been made to the Herbarium.

Of Canadian wild flowers found within the twelve-mile limit, 37 species, representing 16 Genera, have been added.

The collection of Jamaica ferns, donated by Mr. Adam Brown, together with a catalogue of the same, has been placed in the Herbarium. These have been mounted and labelled in regulation style, for which work we can thank Mr. Alexander. There are 102 species, representing 22 Genera.

The Herbarium now also contains Prof. Wright's beautiful and unique collection of California, Arizona and Mexican ferns.

By the opening up of the Hamilton, Grimsby & Beamsville Electric Railway, new botanizing grounds have been made more accessible, and we hope to avail ourselves of the opportunity to work along the mountain eastward.

We have greatly missed contributions from Mr. Yates, of Hatchley, during the session.

We have enjoyed the use of microscopes belonging to the members of the Section at some of our meetings.

We are pleased to see the interest awakened in our flora through the publication by the Montreal *Star* of the WILD FLOWERS OF CANADA, although some of the cuts will not stand much criticism, and we do not quite agree with the order of arrangement.

We hope during the coming summer season to do considerable work in the interests of Botany, which seems to be our only live point at present.

All of which is respectfully submitted,

J. M. DICKSON, *Chairman.*

H. S. MOORE, *Secretary.*

REPORT OF THE CURATOR.

Donations to the Hamilton Association during the year 1894-5.

Indian Relics—Stone arrow points and bone implements, found and presented by R. Batlers, of Tecumseh, Co. Simcoe.

A number of fine shells—By Mrs. Beasley.

Two Indian Arrows from Arizona, one with very small obsidian stone point fastened by its original texture; the other has its points made apparently from a piece of iron hooping, but fastened after the Indian fashion; also a fine obsidian stone arrow point—By Dr. E. A. Gaviller.

A fine specimen of Horned Lizards from Mexico, also a specimen of Asbestos—By Mrs. Carry.

A collection of Indian flint flakes—By Col. Grant.

A Japanese Lady's Pipe—By A. Gaviller.

Some Japanese money, viz.: 1 Rinpiece, 2 Rinpiece and 1 Tempo—By George Duff, of Hamilton.

A Soldier's Badge, belonging to one of the Royal Scot Regiments. This was found in the entrenchments occupied by the troops during the war of 1812, when the battle of Stony Creek was fought on the 6th June of that year. The relic was found by Mr. D. Blachford, of Hamilton. The entrenchments now form a part of the Hamilton cemetery—By Mr. D. Blachford.

Indian Stone Chisel—By Mr. Blachford.

Model of the Hull of an English Frigate, made of bone, by one of the French prisoners in England of the war of 1812—By Alex. Gaviller.

The Cap, Belts, Badges, Cartouche Box, etc., of a private soldier of the —— Regiment, from the battlefield of Chrysler's Farm—By Mr. Somerville.

Specimen of a Spotted Salamander Lizard, found near the City of Hamilton, 1895—By Mr. C. Gardner, Hamilton.

A large valuable collection of Fossils of thirty years' gathering—By Mr. A. E. Walker, Hamilton.

A singular stone found with an engraved figure on it of a man. Two Assegais from the battlefield of Ibeka, in the Gaika Galeaka War, in the Transkei, South Africa, during the years 1877-8-9—By Mr. Geo. W. Richards.

ALEX. GAVILLER, *Curator.*

HAMILTON ASSOCIATION.

Statement of Receipts and Disbursements for the Year ending May 9th, 1895.

RECEIPTS.

Cash Balance from 1894	$132 43
Government Grant	400 00
Prof. Garner's Lecture	5 57
Interest on Deposit	11 85
Members' Subscriptions	146 00
	$695 85

DISBURSEMENTS.

Rent, Museum and Dark Room	$174 00
Caretaker's Salary	42 65
Expenses Lectures, Gas Account, Repairs, etc	45 53
Spectator Printing Co., Annual Report	135 05
Printing Notices, Stationery, Postage, etc	70 27
Camera Section, Expenses	22 25
Balance on Hand	206 10
	$695 85

THOMAS MORRIS, JR.,
Treasurer.

We have examined the vouchers and found them correct.

H. P. BONNEY,
J. M. BURNS, } *Auditors.*

July 5th, 1895.

THE JOURNAL AND PROCEEDINGS OF THE HAMILTON ASSOCIATION

IS SENT TO THE FOLLOWING:

I.—AMERICA.

(1) CANADA.

Astronomical and Physical Society	Toronto.
Canadian Institute	"
Natural History Society of Toronto	"
Department of Agriculture	"
Library of the University	"
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.

(2) UNITED STATES.

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.
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	" "
Torrey 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, Art and Letters	Madison, Wis.
Society of Alaskan Natural History and Ethnology	Sitka, Alaska.

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.

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 ..... "

(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 Nationale des Sciences, Arts et Belles-Lettres.....Dijon.
Société Géologique du Nord.....Lille.
Société Géologique de France.....Paris.

(6) GERMANY.

Naturwissenschaftlicher Verein.....Bremen.
Naturwissenschaftlicher Verein.....Carlsruhe.

(7) RUSSIA.

Comité Géologique.....St. Petersburg.

III.—ASIA.

(1) INDIA.

Asiatic Societies of Bombay and Ceylon.
Asiatic Society of Bengal.....Calcutta.
Geological Survey of India..... "

(2) STRAITS SETTLEMENT.

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.—AUSTRALASIA.

(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.

New Zealand Institute ..... Wellington.

(3) TASMANIA.

Royal Society of Tasmania ..... Hobartown.

Obituary.

WALTER S. CHAPMAN.

In the last Journal of Proceedings it was our sad duty to record the loss of two active and well-known members of the Association.

But a more painful duty now awaits us. Even death, when it comes at the sunset of a long and useful life, may justify its approach. To-day we chronicle the loss of one whose life had yet scarce shed the freshness of youth. Mr. Chapman was born at Hamilton on the 16th day of September, 1871, and was thus but 24 years of age at the time of his death, which occurred on the 3rd day of September of the present year.

Early in life Mr. Chapman chose the medical profession as his intended vocation, and applied himself diligently to his preparatory school course. But a higher fate ruled otherwise. When but eleven years of age failing health and a severe affection of the eyes compelled him to abandon all study for a time. A trip to Europe for change and medical treatment so far restored his health as to enable him to complete his public school course and spend two years in collegiate work, when a second loss of strength forced him to relinquish all thought of undergoing the severe strain of university work.

Though compelled to forego the pleasure of school life, Mr. Chapman did not in the least lose his thirst for knowledge. The study of nature, to which he had been early drawn, now became his ruling passion, microscopy and botany being his favorite departments. In the last of these he has left as a memorial of his zeal a collection of Canadian and foreign plants which would do credit to a scientist of far older years. It was at this time that Mr. Chapman became interested in the work of the Association, among whose members he found companions congenial to his quiet and studious disposition. Being of a retired nature he always avoided the very appearance of notoriety. The Association, however, were not slow in discovering his real merit, and soon appointed him to one of its offices, a position which he held at the time of his death.

It was not to the work of the general association alone, however, that the deceased confined his attention. He was a most faithful attendant at the meetings of the Biological Section, and on the formation of the Photographic Section became one of its most active members, devoting much attention to landscape scenery, of which he leaves behind a most excellent collection.

Mr. Chapman was a most painstaking officer, never being absent from his post, with the exception of a few months in the spring of 1894, when failing health compelled him to take a trip South; yet even at this time he was so governed by his love of scientific pursuit as to seek health where nature might best be studied.

Ever a companion of nature, Death overtook him in the midst of his devotions at her sacred shrine, and the moaning of her quiet waters chanted their sad requiem over the corse of her spotless child. As we lament to-day over his open grave, let us ask ourselves whether death can come untimely to that man who, even in youth, hath learned to live in peace with all, and who leaves behind him a memory as pure as those flowers he had learned so much to love.

LIST OF MEMBERS

- OF THE -

HAMILTON ASSOCIATION.

HONORARY.

1881 Grant, Lt.-Col. C. C., Hamilton.
1882 Macoun, John, M. 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., Stony 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, Texas.
1891 Hanham, A. W., Quebec
1892 Wolverton, L., M. A., Grimsby.
1895 Jones, P. E., M. D., Hagersville.

LIFE.

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

ORDINARY.

1892 Adam, Alex. E.
1882 Adam, Jas. R.
1881 Aldous, J. E. P., B. A.
1872 Alexander, A., F. S. Sc.
1892 Alexander, Ernest
1891 Arthur, C. C., M. A.
1892 Baker, C. O.
1892 Baker, Alfred H.
1885 Baker, Hugh C.
1880 Ballard, W. H., M. A.
1895 Beasley, Mrs. Thos.
1880 Black, Geo.
1890 Bonney, H. P.
1881 Boustead, Wm.
1892 Bowman, J. W.
1881 Bowman, Wm.
1880 Briggs, Samuel
1857 Brown, Adam
1891 Brown, O. J., M. A.
1885 Buchanan, W. W.
1892 Buckley, Miss M. A.
1892 Burkholder, J. G. Y.
1880 Burns, Rev. A., D. D., LL. D.
1894 Burns, Miss B.
1891 Burns, J. M.
1889 Campbell, D. J.
1894 Campbell, Robt.
1892 Cameron, Chas. E.
1890 Cape, John.
1891 Carpenter, H., B. A.
1895 Carry, Mrs.
1891 Chapman, J. R.
1891 Chapman, W.
1880 Charlton, B. E.
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1887 Colquhoun, E. A.
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1880 Foster, W. C.
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1882 Gaviller, E. A., M. D.
1883 Gibson, Hon. J. M., M.A., LL. B.
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1892 Grant, W. J.
1887 Greene, Joseph
1883 Grossman, Julius

1888 Galbraith, W. S.
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1890 Lees, Thomas
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1880 Leslie, James, M. D.
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1890 McLaughlin, J. F., B. A.
1895 McLagan, Alex.
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1890 Moore, Henry E.
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1891 Morgan, S. A., B. A.
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1890 Staunton, George Lynch-
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1892 Sweet, David
1892 Sweet, Harry
1892 Smith, J. H.
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1892 Turnbull, J. D.
1892 Turnbull, W. R.
1880 Turnbull, William
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1881 Williams, J. M.
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