PROCEEDINGS

OF THE

Nova Scotian Institute of Science.

SESSION OF 1897-98.

Annual Business Meeting.

Legislative Council Chamber, Halifax, 8th November, 1897.

The President, Dr. Gilpin, in the chair:—

The President addressed the Institute, as follows:—

"Gentlemen,—I have much pleasure in opening another session of the Institute, and trust that our meetings will be successful and our papers more numerous. We have held our own in numbers, and have maintained our position among our sister societies.

The Institute had recently to mourn the removal, by death, of our friend and President, Dr. Lawson, and we have now to deplore the loss from our ranks of Rev. Dr. Patterson. It is true that he was not as intimately and directly connected with our work as Dr. Lawson. This, however, was our loss, for he had eminently the Academician mind, and, had his other pursuits permitted, his services to the Institute would have been both great and distinguished. His thirst after knowledge, his assiduity in collecting facts, his faculty of assimilation, would, if directed specially to any of the objects of the Institute, have given him a most cherished position among us.

George Patterson was born in Pictou, April 30th, 1824, and, on his mother's side, was a grandson of the Reverend Doctor McGregor, a name famous in the annals of Presbyterianism in Pictou County. What Pictou County in particular, and generally the Province, owe him has

been well told by his grandson, the subject of these remarks. His boyish education was received at Pictou in a school noted for inculcating thoroughness and perseverance as the foundation stones of scholarship. He completed his academic studies at Dalhousie College, and removing to Edinburgh, studied theology at the United Presbyterian Theological Hall.

Returning to his native land, he entered upon his clerical duties at Greenhill, in the County of Pictou, and ministered to his congregation until 1879, when he resigned his charge and removed to New Glasgow. Assiduous and gentle, while upholding firmly the doctrines of his Church, his consistent discharge of his parochial duties endeared him to all who looked up to him as a spiritual guide.

To the general public, however, he was best known as a biographer and historian. At the age of nineteen, in the year 1843, he established and edited the *Eastern Chronicle*. This paper is still published, and is one of the most influential of our Provincial weeklies.

In 1850, he became editor of the *Missionary Record* of the Presbyterian Church in Nova Scotia, a periodical which, after passing through several changes, is now known to us as the *Presbyterian Record*. During his association with the organ of his church, he was outspoken in support of the better moral life of the people, and especially urged the duty of missionary work.

It is impossible for me to give here details of his writings. I may mention the "Life and Labors of Dr. Keir," "Memoir of Rev. Dr. McGregor," two histories of Pictou County. Princeton University conferred on him the degree of Doctor of Divinity, in recognition of the ability he displayed in his only theological work on the "Doctrine of the Trinity underlying the Revelation of Redemption," published in 1870.

As a contributor to the literature of missions, in addition to numerous newspaper and magazine articles, he published, in 1864, the "Memoirs of Johnstone and Matheson;" in 1882, the "Life of the Reverend John Geddie," and in 1884, an essay on missions called "The Heathen World."

In 1889 Dr. Patterson was elected a fellow of the Royal Society of Canada, and in 1896 Dalhousie University conferred on him the degree of Doctor of Laws. This degree was fittingly conferred on one of her oldest students who gave the good fruit of a mind which retained and adorned the education of its Alma Mater.

I am informed that ever active and industrious, he had recently completed a History of the Fathers of the Presbyterian Church in Nova Scotia.

Dr. Patterson's work in science was subsidiary to his historical labors, and necessarily lessened in amount. He was naturally interested in Archæology, and in this respect conferred a favor on the Province by making a large collection of articles illustrating the life of our Indians in pre-historic days. He presented this valuable collection to Dalhousie College, where it is available to all students of the subject, and described it in a paper read before the Institute.

As a historian his attention was naturally drawn to the alterations which languages have undergone in consequence of changes of environment. On this subject he published papers in the Transactions of the American Folk Lore Society, of the Royal Society of Canada, and in our Proceedings. We owe to his historical interest not only the valuable historical papers published in the Transactions of the Royal Society of Canada, and the Nova Scotia Historical Society, but also such ethnological papers as "The Beothiks," published by the Royal Society, and geographical papers such as "The Magdalen Islands," in our Transactions, and "Sable Island," in those of the Royal Society.

A full list of his publications down to 1894 may be found in the Transactions of the Royal Society for that year, and a list of his subsequent papers will probably be published by the same Society.

Dr. Patterson was noted for his diligence in collecting facts, and for the amount of research he expended on every subject he took up.

Few for instance, who read a history of one of our counties, realize that these annals of recent times require an enormous amount of work in collection of data, and nearly as much more in the separation and accretion of the essential. Similarly his Folk Lore papers gave evidence of most minute and painstaking enquiry.

Scholarly in his sermons, keen and tenacious in his editorial work, painstaking in his researches and polished in his writings, he has shown what can be done by the student, even when confined by fate to an outlying district of the literary and scholastic world. His example is a good one for all to follow, if not to surpass; and his work in its way was performed precisely as our work as members of the Institute of Science should be performed, that is by patient enquiry and research, followed

by prompt publication, for facts known to the individual are buried unless made public.

As Dr. Patterson died during the recess of the Institute, I took upon myself as expressing the feelings of the members to request the Corresponding Secretary to convey to the family of the deceased our sympathy with them in their loss, and asked him to represent the Institute at the funeral.

Among the events of interest to the Institute last year may be mentioned the visit of the Royal Society. They left, as a memento, the handsome tablet on the walls of this Chamber, commemorating the landfall of Cabot. The result of impartial investigations leads to an apparently well founded belief that the history of English domain on this continent had its opening page on the romantic shores of Cape Breton.

The Provincial Exhibition, from the standpoint of this Institute, was remarkable for what it did not exhibit. Advantage should be taken of such occasions by the Provincial Government to teach people something new and practically valuable. Each year some subject should be taken up and illustrated. A display of insects injurious to the farmer or fruit-grower, giving their life history, changes, food, etc., and the remedies would serve for a number of teaching exhibits. In a similar manner the subject of soils, fertilizers, etc. The more advanced systems of fishing, curing fish, etc., in other countries. Every one can add to this list. I believe that the Provincial Government would find their efforts in these directions well appreciated, and the material in many instances would be permanently available for their agricultural schools and for museums. This matter may be worth your consideration, and you may see an opportunity to offer assistance to the Government in preparing and advancing such exhibits.

These remarks on the Provincial Exhibition of a few days lead our thoughts to our permanent Provincial Exhibition, the Museum. It may be the case that Nova Scotians as a body retain the old fashioned idea that a museum should be a collection of curiosities. If so, it is the duty of the Institute to educate them to a better understanding. As you are aware, several representations have been made to the Government as to the importance of a modern museum, and its value from an educational as well as an economic standpoint. I think that the necessity of action has been conceded by the Government, but the provision from a fixed revenue for ever increasing public wants renders it difficult to provide funds for a new building.

As a preparation for the new state of affairs, which must come, and as a means of partly meeting the present want, it has been suggested that the collections should be reorganised.

The establishment of a museum, taking the word in its wide and proper sense, is an expensive undertaking beyond the means of a Provincial Government. In our position a much more limited definition of the word would be most useful and cost but little. If the Museum were restricted to the collection and exhibition of material purely Provincial, it would be valuable and practically without cost. A museum, illustrating the natural resources of the Province, of the ocean, the woods, the soil, the minerals, and the manufactures depending on them, would be a credit to the country and city, and of untold interest and value to visitors and capitalists who could see at a glance what we had to offer. A scheme such as this should meet general approval, and still better could be made at a very small cost.

There is in the Museum much material which, interesting in itself, is of little scientific or teaching value, as it is incomplete This could be given or traded with other institutions for material needed for completing or supplementing local collections. I know, as a matter of fact, that there are numbers of people in the Province who would be ready to contribute to a practical exposition of our resources as outlined above.

Some slight work has been done in the way of re-arranging and labeling the more important collections, but they have been seriously drawn upon for various foreign exhibitions, and require renewal. The Mining Society of Nova Scotia has already taken an interest in this matter conjointly with the Institute, and these two bodies may see their way to effect improvements in addition to those already made.

The following papers have been communicated to the Institute during the past year :—

Two papers by Professor McGregor on the Relation of the Physical Properties of Solutions to their State of Ionization.

Recent discoveries regarding the young and eggs of fishes, by Dominion Fishery Commissioner Prince.

The botany of the vicinity of Halifax, by Rev. Brother Peter.

Measurements of two Beothuk skulls by Mr. W. H. Prest.

New arrangements in sailing gear, by Charles Twining.

Some analyses of Nova Scotia coals and minerals, by the President.

Notes on Calcareous Algæ, by Dr. MacKay, and by Mr. Harry Piers on Nova Scotia Zoology.

Supplementary note on Venus, by Principal Cameron.

Phenological observations by Dr. MacKay, and Rainfall of 1896 by City Engineer Doane.

At the last meeting two papers were read by title, one by Dr. Murphy on the tides of the Bay of Fundy, and one by Professor Butler on the water supply of Nova Scotia towns. Dr. Murphy has promised to complete his paper during the present session, and, no doubt, Professor Butler will have his paper completed shortly. I may remark that he has left King's College, Windsor, to fill the chair of mathematics at the Military College, Kingston.

During the past year we have continued to add to our valuable library, fuller details of which can be given by the Librarian. A large number of the exchanges have been arranged and placed in bindings, plain, but strong and serviceable. Through the kindness of the authorities of Dalhousie College we have been allowed the use of a room fitted with shelving, etc., so that the more important of our exchanges are readily accessible for reference and study."

The Treasurer's report was presented, together with his accounts for the year, which had been audited and certified as correct, and an abstract of the accounts shewing the amounts expended on Library, publication of Transactions, distribution of Transactions, etc. The report was adopted and the thanks of the Institute tended to Mr. Silver for his services as Treasurer.

The report on the Library was presented by Dr. McGregor. It showed that exchanges had been received for the first time during the past year from the following :—

The Museum, Albion, N. Y.

N. E. Coast Institution of Engineers and Shipbuilders, Newcastle-upon-Tyne.

Royal Geographical Society of Australasia, Sydney, N. S. W.

Academia Mexicana de Ciencias exactas Fisicas y Naturales, Mexico.

Appalachian Mountain Club, Boston.

Die Niederrheinische Gesellschaft fiir Natur-u. Heil-kunde, Bonn.

Nuttall Ornithological Club, Cambridge, Mass.

Société Hongroise de Geographie, Buda-Pest.

Accademia di Scienze Lettere e Arti, Acireale, Italy.

Direccion General de Correos y Telegrafos, Buenos Aires.
Premiere Exposicion Centro-americana de Guatemala, San Josè.
Société Neuchateloise de Geographie, Neuchatel.
Faculté des Sciences de Marseille.
Physikalische Gesellschaft, Berlin.
Geological Society of Washington.
Kansas University, Lawrence, Kan.
Australasian Anthropological Society, Sydney, N. S. W.
Pennsylvania State College (Agricultural Experiment Station).
Geological Survey of Java and Madoura.
Sydney Observatory, Sydney, N. S. W.
Société Entomologique, Bruxelles.
R. Orto Botanico di Palermo.
Bureau General de Statistique, La Plata.
Instituto Geologico de Mexico, Mexico.
Historischer Verein für Oberpfalz und Regensburg, Regensburg.

Copies of the Transactions had been sent for the first time to the following :—

Nuttall Ornithological Club, Cambridge, Mass.
Faculté des Sciences, Marseille.
New York Electrical Society, New York.
New York Public Library.
Physikalisches Central Observatorium, St. Petersburg.

Exchange relations which had been previously established with other Socicties had, in no case, been terminated, and in consequence, the Library was growing rapidly.

Partly through lack of time on the part of the Library Committee, and partly through the difficulty of getting at the books owing to the crowded state of the cases, no books had been bound during the year. The money which was available for that purpose had therefore been carried forward to next year's account, and would be expended as soon as possible.

The English, Scottish, Irish and American publications were in the Institute's cases on the third floor of the Post Office building ; all other publications at Dalhousie College. The cases at the Post Office were excessively crowded, insomuch that it was practically impossible to obtain access to books that were wanted. In these circumstances the

council had gladly availed themselves of an offer courteously made by the Governors of Dalhousie College to provide temporary accommodation for the whole Library at the College in a room already fitted with shelving. At the present rate of growth of the Library, the accommodation thus offered would probably be sufficient for the needs of the Institute for from eight to ten years, and the necessity of acquiring rooms of our own would thus be postponed for that period of time. The work of removing and re-arranging the books would be proceeded with as soon as possible. When completed, the Library would be much more readily accessible to members than it had ever been in the past.

The report was adopted, and the thanks of the Institute tendered to Mr. Bowman and Prof. MacGregor for their work in connection with the Library.

It was resolved that the council be instructed to a make minute of the loss sustained by the Society in the death of REV. DR. PATTERSON. Also resolved, that a portrait of the deceased be published in the Proceedings and Transactions.

The thanks of the Institute were presented to the retiring PRESIDENT, DR. GILPIN ; to the GOVERNORS OF DALHOUSIE COLLEGE for their courtesy in providing accommodation for the Institute's Library ; to the HON. ROBERT BOAK, President of the Legislative Council, for granting the use of the Council Chamber ; and to the Secretary of the SMITHSONIAN INSTITUTION, Washington, for continuing to extend to the Institute the privileges of the Bureau of International Exchanges.

The following officers were elected for the ensuing year (1897-98) :—

President—ALEXANDER MCKAY, ESQ.

Vice-Presidents –A. H. MACKAY, ESQ., LL.D., F.R.S.C., and F. W. W. DOANE, ESQ., C. E.

Treasurer—W. C. SILVER, ESQ.

Corresponding Secretary—PROF. J. G. MACGREGOR, D. SC.

Recording Secretary—HARRY PIERS, ESQ.

Librarian—MAYNARD BOWMAN, ESQ.

Councillors without office—E. GILPIN, ESQ., LL.D., F.R.S.C. ; MARTIN MURPHY, ESQ., D. SC. ; WILLIAM MCKERRON, ESQ. ; RODERICK MCCOLL, ESQ., C. E. ; REV. BROTHER PETER ; S. A. MORTON, ESQ., M. A. ; WATSON L. BISHOP, ESQ.

Auditors—P. O'HEARN, ESQ. ; G. W. T. IRVING, ESQ.

First Ordinary Meeting.

Legislative Council Chamber, Halifax, 8th November, 1897.

The President, Mr. McKay, in the chair.

The Secretary announced that Dr. W. Henry Dobie, of Chester, England, had been elected a Corresponding Member of the Institute.

A paper "On the Calculation of the Conductivity of Aqueous Solutions containing Potassium and Sodium Sulphates," by E. H Archibald, Esq., Physical Laboratory, Dalhousie College, was read by Dr. MacGregor. (See Transactions, p. 291).

Second Ordinary Meeting.

Legislative Council Chamber, 13th December, 1897.

The President in the chair.

It was announced that R. R. McLeod, Esq., of Brookfield, N. S., had been elected an Associate Member.

Dr. MacGregor, Corresponding Secretary, laid before the Institute an invitation to attend the Centenary of the Hanover Geological Society.

Dr. MacGregor also reported progress in removing the Library to Dalhousie College.

E. H. Archibald, Esq., Physical Laboratory, Dalhousie College, read a paper "On the Relation of the Physical Properties of Certain Complex Solutions to their state of Ionization." (See Transactions, p. 335).

The paper was discussed by Dr. MacGregor and Prof. E. MacKay.

The thanks of the meeting were conveyed to Mr. Archibald.

A paper on "Glacial Clays in New Jersey, with correlation of them elsewhere," by Arthur M. Edwards, Esq., M. D., of Newark, N. J., was read by Dr. Gilpin.

Third Ordinary Meeting.

Council Chamber, City Hall, Halifax, 21st February, 1898.

The President in the chair.

E. H. Archibald, Esq., B. Sc., read a paper "On the Calculation of the Conductivity of Solutions containing Potassium-Copper Sulphate." (See Transactiont, p. 307).

The paper was discussed by Drs. MacGregor and MacKay.

Dr. MacGregor then delivered an address on "Physical Laboratory Work of an Elementary Grade."

The address was discussed by Prof. E. MacKay, Dr. A. H. MacKay, and Messrs. Morton, O'Hearn, Trefry and Marshall.

Fourth Ordinary Meeting.

Legislative Council Chamber, Halifax, 14th March, 1898.

The President in the chair.

The President referred to the loss the Society had sustained in the death of Dr. Somers, who had for several years been President of the Institute, and who had contributed a number of papers to its Transactions.

On motion, the President, the Recording Secretary, and Dr. MacKay, were appointed a committee to draw up a resolution of condolence and to forward the same to Mrs. Somers.

Charles Twining, Esq., exhibited a working model of a "Pivot-Boat," and explained the principles upon which it was constructed.

The subject was discussed by Drs. MacKay, Murphy and MacGregor, and Mr. Stayner.

T. C. McKay, Esq., B. A., of Dalhousie College, read a paper "On the Electrical Conductivity and other Properties of Solutions containing Barium and Sodium Chlorides." (See Transactions, p. 321.)

The paper was discussed by DR. MACGREGOR; and the thanks of the Society were presented to the author.

The following paper was read by title :—"On the Calculation of the Conductivity of Solutions containing Potassium-Magnesium Sulphate." By T. C. MCKAY, ESQ., B. A., Dalhousie College. (See Transactions, p. 348).

FIFTH ORDINARY MEETING.

Legislative Council Chamber, Halifax, 9th May, 1898.

The PRESIDENT in the chair.

A paper on "The Triassic (?) Rocks of Digby Basin," by PROFESSOR L. W. BAILEY, LL. D., Ph. D., F.R.C.S., of the University of New Brunswick, was read. (See Transactions, p. 356).

A. H. MACKAY, ESQ., LL. D., F.R.S.C., presented a "Plan of a Proposed Ethnological Survey of Canada."

DR. MACKAY also read a paper entitled : "Phenological Observations for 1897." (See Transactions, p. 402).

The following papers were read by title :—

Flora of Newfoundland, Labrador, St. Pierre et Miquelon : Part III.—By REV. ARTHUR C. WAGHORNE, Newfoundland. (See Transactions, p. 361).

On the State of Ionization of Simple and Complex Solutions, at 0°C., as determined by Freezing-point and Conductivity Methods.—By E. H. ARCHIBALD, ESQ., M. Sc.

The PRESIDENT, and MESSRS. SILVER and PIERS, were appointed a committee to wait upon the Government of Nova Scotia for the purpose of recommending the purchase, for the Provincial Museum, of the Indian stone implements in the collection of JUDGE DESBRISAY.

On motion, the council was authorized to receive as read by title, any papers that may be presented too late for this meeting.

HARRY PIERS,
Recording Secretary.