

PROCEEDINGS  
OF THE  
**Nova Scotian Institute of Science.**

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SESSION OF 1892-3.

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ANNUAL BUSINESS MEETING.

*Halifax, 21st November, 1892.*

DR. M. MURPHY, *President, in the chair.*

The minutes of the last annual meeting were read and approved.

The PRESIDENT addressed the Institute as follows :—

*Gentlemen,*—Twenty-two years of association with the Nova Scotian Institute of Natural Science, or with the Nova Scotian Institute of Science, its new name, as a member, and for the greater portion of that time as a member of Council, have not lessened the sense of appreciation I have from the first entertained, of the honor that you have conferred by my appointment as President. On the contrary, this long connection has served to intensify my present feeling of obligation to the Council and the members for having elected me to that office.

Many of the active members of that date (1870) have since passed away, leaving handsome records of scientific thought and research on the pages of the Proceedings and Transactions of the Institute ; and whilst we have had from time to time to mourn their loss, it is gratifying to be able to remark that others still remain with us, and are no less active in contributing to the progressive knowledge that time and experience are daily revealing. Moreover, new life and vigor is being imparted, for at no time in its past history was our Institute of Science more assiduously cultivated than during the term of office of the late President ; nor does his zeal end here : he is ever active for the promotion of its interests.

During the past year we have lost two of our oldest and best members, Dr. J. B. Gilpin and Mr. A. Downs.

JOHN BERNARD GILPIN, A. M., M. D., M. R. C. S., who died on the 12th March, 1892, was born in Newport, Rhode Island, on September 4th, 1810. He was a son of J. Bernard Gilpin, of Vicar's Hill, Hants, England, who was for many

years British Consul at Newport, and finally retired on his pension to Annapolis Royal.

Doctor Gilpin graduated at Trinity College, Providence, Rhode Island, and turning his attention to the practice of medicine completed his education in England. He practised his profession for some time at Annapolis, and was in the habit of spending his leisure time in the study of the wild animals of the western part of the Province. His frequent excursions carried him into all parts of the central district at the head of the Atlantic coast waters, ground at that time almost untrodden, and a safe harbor for the moose, beaver, etc.

He removed to Halifax about the year 1846, and practised his profession during forty years. He then removed to Annapolis, died there Mar. 12, 1892, and lies buried with many of his family in the shadow of the old fort, and at the end of the trench marking the advanced line of the siege which finally vested the town in the English.

He was one of the original founders of the Nova Scotian Institute of Natural Science, and his date of election, January 5th, 1863, marks the inauguration of the Institute. His paper, the first read before the Institute, on the Common Herring, was the opening paper of the long series of Transactions that now number seven volumes, and the first of an interesting series of thirty-four contributions from him to our Proceedings. At the anniversary meeting October 12th, 1864, he was elected Vice-President; in 1873, he was made President; and he retired from that office in 1878. He however continued to serve on the Council and in every way to promote the interests of the Institute he had been so instrumental in founding. His longer and more elaborated papers read before this Institute are about thirty in number, and would, if collected, form a very interesting and valuable work on the Natural History of the Province. Certainly, the naturalist of the younger generation who essays the task will find prepared for him many faithful and exact facts.

Among the more noteworthy of his papers may be mentioned those on the food fishes of Nova Scotia, the Indians, eagles, wild fowl, the mammals of the Province, Sable Island, etc.

His services were always at the disposal of those seeking information in the paths he had devoted himself to. Doctor Baird of the Smithsonian Institute, who may be called the father of the great business of replanting the fisheries of the North Atlantic, frequently called on his services to assist him in the determination of new or doubtful species of fish, their migrations in the involved ocean rivers of the Northern fisheries, etc. The museum has been served by his brush as well as by his pen, for he possessed the unusual accomplishment of an accurate and artistic reproduction in colors of any subject being treated of in his papers.

ANDREW DOWNS, who died on the 26th April, 1892, was born in New Jersey, on the 27th September, 1811. He acquired very early in life a love of animals and a delight in studying their habits, and having taken up his residence in this city, he started a zoological garden here in 1847, at the head of the North-west Arm. It was the first zoological garden on the continent of America; for the collection of the Central Park, New York, was not opened till 1863, and the Philadelphia garden not until 1874. His garden at first covered five acres, but it was

gradually extended until in 1863 it had become an estate of one hundred acres ; and including in its bounds hills, lakes, brooks, ravines and wooded land, it provided the variety of surroundings necessary to make his collection of animals of all kinds feel thoroughly at home. Mr. C. Hallock gives in the *New York Nature*, Vol. I, p. 150, an interesting description of the garden as it was at this date, and many of us will doubtless remember the very large collection of animals which it contained, and the careful provisions made by their loving guardian for their comfort. In 1867 he disposed of his estate at Halifax and went to New York, having been assured of his appointment as Superintendent of the Central Park Menagerie. For some reason or other, however, the appointment was not confirmed, and he returned to Halifax, where a few years later he purchased a new property at the North-west Arm and started a new zoological garden, which he continued to develop for about six years.

During his active life he did an immense amount of work in acquiring knowledge of the American fauna, and in disseminating that knowledge not through the publication of scientific papers so much as by individual correspondence with other naturalists and by sending abroad stuffed and living specimens of our animals. There is probably hardly an important museum anywhere which does not contain specimens obtained from him.

Mr. Downs joined this Institute during its first session, on the 5th February, 1863, and was for many years a regular attender at its meetings. He contributed four papers to our Transactions,—all on the subject of Ornithology, the subject in which he was most interested. He was a man of a quiet and retiring disposition, and his work was probably better known abroad than at home, his correspondents having secured his election as fellow or corresponding member of many Natural History Societies in America and Europe.

This is the thirtieth year of the existence of our Institute, and we have no reason to complain of its record, of its financial position, or of its general progress.

Many papers possessing considerable interest have been read during our last year's meetings, and as they will appear in the Transactions it is only necessary to allude to them briefly here.

On November 9th, 1891, Mr. T. C. Weston, of the Geological Survey of Canada, communicated, by permission of the Director of the Survey, a paper on concretionary structure in various rock formations in Canada. The paper referred to certain concretionary forms found in the gold-bearing rocks of Nova Scotia, supposed to be fossils, and assigned to the Lower Silurian age ; but under microscopic examination, the result proved to be precisely the same as for those examined thirty years ago, 1860-1870, by Dr. Selwyn. Dolomitic concretions in gold-bearing rocks of Nova Scotia, concretions found in the Huronian rocks of Newfoundland, and tree-like concretions found at Kingston, Ontario, in the Cambrian sandstone (Potsdam) were treated of and illustrated. The notes will be interesting to mining engineers as it has been a vexed question whether these forms are concretionary or organic.

The next paper by W. H. Prest on the evidence of the post-glacial extension of the southern coast of Nova Scotia quotes evidences of the subsidence of the land along our shores at Cumberland County, at Black Point, Liverpool River, at Black Rock south of Lunenburg, at Broad River, at Catherine River, east of Port Joli

in Queens County, and at Port Mouton. Similar phenomena are also referred to relating to evidences of subsidence along the sea coast of Prince Edward Island, where peat bogs and forests are being slowly engulfed by the ever-advancing sea.

The visibility of Venus to the naked eye is the subject of a paper contributed by Principal A. Cameron, of Yarmouth. If one has no telescope nor any other optical instrument, except the naked eye, on how many days of the year can he see Venus? is the question which forms the subject of the paper. The author points out that while her elongation is changing, her brilliancy is changing also, and that at her greatest elongation she is three times as bright as at superior conjunction; but this does not mean that it is only three times as easy to see her in the former position as in the latter, as it is much more easy to do so. No eye can see her in one case, and no eye can fail to see her in the other. A standard is selected for convenience in terms of which to express her different brilliancies. He takes for this her greatest brilliancy, as it always would be if both she and the earth were always at their mean distance, and if the reflective powers of all parts of the surface of Venus were equal and constant, and he uses the number 100 as the value of this greatest brilliancy. The actual brilliancy at any moment depends on several conditions, some physical and others geometrical. Of the physical conditions, too little is known to be able to make them the subjects of calculation, but from the geometrical conditions, can be calculated the relative theoretical brilliancy for any position in her orbit. These geometrical conditions are three in number,—the distance of the planet from the earth and the phase of the planet; that is, the illuminated part of its disc. To get a general idea of the changes in Venus's brilliancy he supposed her to be always at her mean distance from the sun, and then the changes will depend only on her distance from the earth and her phase. The paper will be found interesting to others as well as the star gazers throughout, and is given in a pleasant readable manner. It is to be hoped that Principal Cameron will give us the second part of his paper which he speaks of in his closing remarks, viz. :—The visibility of Venus to the naked eye in daylight.

The fourth paper, read at the December meeting, gives a list of localities for trap minerals in Nova Scotia by the late Revd. Thomas McCulloch, D. D., President and Professor of Moral Philosophy and Rhetoric in Dalhousie University. A note attached by Professor George Lawson, Ph. D., L.L. D., will explain its history. It is as follows :—“This is a very old list, and was found recently among the Museum specimens of the McCulloch collection, presented to Dalhousie College by the Revd. William McCulloch, D. D., of Truro. The original manuscript bears neither date nor author's name, but, on its being forwarded to Revd. Dr. W. McCulloch to ascertain if it was in his father's handwriting, he replied: ‘You are right about the document enclosed. I had given it up as lost. It is in my father's hand though the work was the joint labour of my father and brother, Thomas, running over years.’” Although this paper is from an old manuscript it is no less interesting. It embraces lists of the principal trap minerals which may be collected along the North Mountain from Little River, St. Mary's Bay, to Five Islands, and must have been the result of much labor and diligent research.

The next contribution is by the President on the destruction of piles at the

Narrows, head of Halifax Harbor, by the *Limnoria*, read at the March meeting. It is given as supplementary to a paper read in 1882 on the ravages of the *Teredo Navalis* and *Limnoria Lignorum* in Nova Scotia. Mr. Hugh McKenzie, Civil Engineer, Moncton, has contributed a photograph of the piles removed from the Narrows Railway Bridge, shewing the extent of their workings. This photograph is reproduced to illustrate the paper.

Notes on Nova Scotian Zoology by Mr. Harry Piers is the second contribution from this gentleman on such new and rare interesting occurrences as came within his observation. It treats of birds, reptiles, and fishes captured or found in Nova Scotia. It will be read with much interest.

We are indebted to Mr. Henry M. Ami, M. A., F. G. S., for a catalogue of Silurian fossils from Arisaig, Nova Scotia. During the season of 1886, Mr. T. C. Weston, accompanied by Mr. J. A. Robert, made important collections of fossils in the rocks constituting the stratigraphical series at Arisaig along the coast in connection with the geological work entrusted to Mr. Hugh Fletcher, B. A., of the Geological Survey of Canada, and amongst them were several new and hitherto unrecorded forms.

“On the graphical treatment of the inertia of the connecting rod,” is the title of a paper read by Professor J. G. MacGregor, at the June meeting of the Institute, in which the author points out that in slow-speed steam engines no great error is introduced in calculating the effort of the connecting rod on the crank-pin, on the assumption that the connecting rod is without mass. In high-speed engines, however, a considerable error is thus introduced; and it is therefore desirable to have a method of determining the actual effort. The demonstrations are based on certain technical principles that are concise and practical, of geometrical application, and will be found useful to every student studying practical mechanics.

“The Geology of Nova Scotia—the Lower Silurian”—is the title of a paper read at the May meeting of this Institute by Edwin Gilpin, Jr., LL. D., Inspector of Mines. In the continuance of Dr. Gilpin’s work of previous years he follows up his contribution on the Devonian Measures of Cape Breton, with his paper on the Lower Silurian Rocks. He says that between the basal conglomerates of the Carboniferous and the Pre-Cambrian there intervene but a few limited areas referred to the Devonian and Lower Silurian. The extent of these Silurian strata is obscured at many points by the overlying Carboniferous conglomerates, and they rest frequently on the Laurentian. They are not found in the counties of Richmond or Inverness.

“The Geology of Nova Scotia,” by Sir William Dawson, can be largely supplemented from the Proceedings of this Institute. The contributions from the late Dr. Honeyman and from Dr. Gilpin cover a large field, and until we have a complete geological survey of Nova Scotia they will be found to embody the best and most reliable information regarding the mineral resources of the Province.

In making these observations this evening I have endeavored to point out some of the work that is being done by the Nova Scotian Institute of Science. It would not be difficult to mention other papers, but doubtless they are familiar to all present, and I am afraid I have only been going over old ground, which has already been more ably trodden by others. I will not, therefore, detain you

longer, but will conclude by asking you all to assist the Institute and its President by introducing new members, by contributing papers and by your presence at the meetings; and hoping the future of the Institute will be as beneficial to science and as prosperous as has been the past, I will conclude my remarks.

The TREASURER presented his annual report, showing the Institute to be in a satisfactory financial condition.

The CURATOR of the Library presented his annual report shewing the rapid growth of the Library, and the great necessity for making better provision for its accommodation.

The following were elected office-bearers for the ensuing year :—

*President*—M. MURPHY, D. SC., C. E.

*Vice-Presidents*—H. S. POOLE, F. G. S., and PROFESSOR LAWSON, LL. D.

*Treasurer*—WM. C. SILVER.

*Corresponding Secretary*—A. H. MACKAY, LL. D.

*Recording Secretary*—ALEXANDER MCKAY.

*Curator of the Library*—MAYNARD BOWMAN.

*Councillors without office* :—Professor J. G. MacGregor, E. Gilpin, Jr., A. M., F. G. S., LL. D., F. W. W. Doane, C. E., Harry Piers, John Forbes, Roderick McColl, Revd. John Ambrose, D. D.

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ORDINARY MEETING, Province Building, 21st Nov., 1892.

The PRESIDENT *in the Chair*.

*Inter alia,*

Dr. MacKay, Superintendent of Education, read and illustrated by experiments a paper entitled : “Explosive gas generated within the Hot Water Pipes of house heating Apparatus.” (See Transactions, p. 374.)

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ORDINARY MEETING, Province Building, 12th Dec., 1892.

The PRESIDENT *in the Chair*.

*Inter alia,*

A paper by T. C. Weston of the Geological Survey of Canada, entitled : “Notes on the Miocene Tertiary Rocks of the Cypress Hills, North West Territory of Canada,” was read by Dr. A. H. MacKay, Superintendent of Education, who, as an introduction to the paper, gave an outline of historical geology. (See Transactions, p. 223.)

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ORDINARY MEETING, Province Building, 9th Jan., 1893.

The PRESIDENT *in the Chair*.

*Inter alia,*

Dr. MacKay, Superintendent of Education, read a paper entitled : “Natural History Observations made at several Stations in Nova Scotia during the year 1892.” (See Transactions, p. 378.)

ORDINARY MEETING, Church of England Institute, Halifax, 13th Feb., 1893.

The PRESIDENT *in the Chair*.

*Inter alia,*

H. S. Poole, F. G. S., read a paper entitled: "The Pictou Coal Field—A Geological Revision." (See Transactions, p. 228.)

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ORDINARY MEETING, Provincial Museum, Halifax, 10th April, 1893.

The PRESIDENT *in the Chair*.

*Inter alia,*

Professor J. G. MacGregor read a paper entitled: "On the Definition of Energy."

Dr. MacKay, Superintendent of Education, read a paper prepared by the Rev. A. C. Waghorne of Newfoundland and entitled: "The Flora of Newfoundland, Labrador, and St. Pierre et Miquelon." (See Transactions, p. 359.)

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ORDINARY MEETING, Province Building, Halifax, 8th May, 1893.

DR. MACKAY, *in the Chair*.

*Inter alia,*

The President, Dr. M. Murphy, read a paper entitled:—"Crossing the Strait of Canso by a Submarine Tube."

Dr. Murphy read also a paper entitled:—"Bridge Sub-structures and Foundations in Nova Scotia." (At the request of the American Society of Civil Engineers, New York, this paper was subsequently read, by permission of the Council, before the Civil Engineering Division of the International Congress of Engineers held at Chicago in connection with the World's Columbian Exposition; and it has been published in the Transactions of the above Society, Vol. XXIX (1893), page 620.)

Professor G. Lawson read papers entitled:—"A Shower of Cotton-like Substance in Florida"; "On a recent Whaling Expedition from Dundee"; and "On Hybrid Grafts."

The following papers were read by title:—

"Parasitic Fungi affecting the Apple and other Pomeæ, with Suggestions as to their Destruction," by Dr. J. Somers.

"Notes on Nova Scotian Zoology," by Harry Piers.

"Venus by Daylight to Eye and to Opera-glass," by Aeneas Cameron, Principal of Yarmouth Academy. (See Transactions, p. 345.)

Dr. A. H. MacKay was appointed a Delegate to the Royal Society of Canada.