

PROCEEDINGS
OF THE
Goba Scotian Institute of Science.

SESSION OF 1912-13.

ANNUAL BUSINESS MEETING.

*Civil Engineering Lecture Room, Technical College,
Halifax, 11th November, 1912.*

The President, Watson L. Bishop, in the chair.

Active members present: Dr. A. H. MacKay, Donald M. Fergusson, M. Bowman, Prof. E. Mackay, A. L. McCallum, Prof. C. L. Moore, D. S. McIntosh, Prof. A. S. MacKenzie, Prof. H. L. Bronson, Prof. D. Fraser Harris, C. B. Nickerson, R. H. Brown, W. McKerron, A. J. Barnes and H. Piers.

In the absence of a presidential address, the Corresponding Secretary (Prof. E. Mackay) presented a report on the work of the Institute during the past year, and suggesting lines of work that might be taken up in the future.

The Treasurer, M. BOWMAN, presented his annual report, showing that the receipts for the year ending 31st October, 1912, were \$809.91, the expenditures \$241.48, and the balance in current account was \$568.43; while the reserve fund was \$708.51, and the permanent endowment fund, \$912.13. The report, having been audited, was received and adopted.

The Librarian's report was presented by H. PIERS, showing that 1,688 books and pamphlets had been received by

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the Institute through its exchange list during the year 1911; and 1,298 have been received during the first ten months of the present year, 1912, viz. January to October inclusive. The total number of books and pamphlets received by the Provincial Science Library (with which those of the Institute are incorporated) during the year 1911, was 3,088. The total number in the Science Library on 31st December, 1911, was 45,497. Of these, 34,085 (about 75 per cent.) belong to the Institute, and 11,412 to the Science Library proper. Six hundred and forty-two books were borrowed, besides those consulted in the library. It was again reported that no binding or purchasing was done during the year, there being no grant for the library's support. The report was received and adopted.

DR. A. S. MACKENZIE and others spoke of the great need of having the volumes bound in the library, and it was agreed that some action should be taken in the matter.

The following question was then discussed: Whether the Institute shall offer money grants, when needed, to scientific research students, to assist in furnishing necessary apparatus, etc.; it having been suggested that two grants might be offered of \$50.00 each and four of \$25.00 each.

The subject was discussed by DR. FRASER HARRIS, DR. MACKENZIE, DR. A. H. MACKAY, DR. E. MACKAY, and MR. PIERS.

On motion of DR. E. MACKAY and PROF. BRONSON, it was resolved that the Council of the Institute be empowered to expend, at its discretion, a sum not to exceed fifty dollars to aid scientific research.

The consideration of the celebration of the Fiftieth Anniversary of the Foundation of the Institute, was referred back to the Council.

It was announced that ALBERT JOHNSTONE BARNES, service inspector, Maritime Telegraph and Telephone Co.,

Halifax, had been duly elected an ordinary member on 4th October last.

FRANK WILLIAM DODD, Assoc. Mem. I. C. E., of Brooklyn, N. Y., and Weymouth, England, gave an address on "Integral Atomic Weights," in which he advanced a new theory on the subject. (See Transactions, page 216.) The subject was discussed by PROF. E. MACKAY, PROF. BRONSON, DR. A. H. MACKAY, and PROF. A. S. MACKENZIE, and a vote of thanks was presented to the lecturer.

The following were elected officers for the ensuing year (1912-13):

President,—DONALD MACEachern FERGUSSON, F. C. S.,
ex officio F. R. M. S.

1st Vice President,—ALEXANDER HOWARD MACKAY,
LL. D., F. R. S. C.

2nd Vice President,—PROFESSOR HOWARD LOGAN BRONSON, PH. D.

Treasurer,—MAYNARD BOWMAN, B. A.

Corresponding Secretary,—PROFESSOR EBENEZER MACKAY,
PH. D.

Recording Secretary and Librarian,—HARRY PIERS.

Councillors without office,—PARKER R. COLPITT; PROFESSOR CLARENCE L. MOORE, M. A.; ALEXANDER MCKAY, M. A.; PROFESSOR DAVID FRASER HARRIS, M. D., C. M., D. Sc., B. Sc. (Lond.), F. R. S. E.; DONALD SUTHERLAND MCINTOSH, B. A., M. Sc.; CARLETON BELL NICKERSON, M. A.; and WATSON LENLEY BISHOP.

Auditors—GEORGE B. BANCROFT, B. A., and WILLIAM MCKERRON.

On motion of MR. PIERS and PROF. MACKAY a vote of thanks was presented to the retiring president, MR. BISHOP.

The Proceedings and Transactions, vol. xiii, part 2, were distributed.

FIRST ORDINARY MEETING.

*Civil Engineering Lecture Room, N. S. Technical College,
Halifax; 9th December, 1912.*

THE FIRST VICE PRESIDENT, DR. A. H. MACKAY, in the chair.

It was announced that J. H. L. JOHNSTONE, demonstrator of physics, Dalhousie University, Halifax, had been duly elected an ordinary member.

HARRY PIERS, curator of the Provincial Museum, Halifax, read a paper on "The Occurrence of European Birds in Nova Scotia," and exhibited a specimen of the European Widgeon recently taken here. (See Transactions, page 228.)

WATSON L. BISHOP read a paper entitled "A Curious Lightning Freak." (See page 240.) The subject was discussed by the CHAIRMAN, MR. PIERS, MR. COLPITT, PROF. BRONSON, MR. BARNES, and PROF. FRASER HARRIS, some of whom gave accounts of remarkable lightning effects as observed by themselves.

On motion of PROF. MACKAY and MR. NICKERSON it was resolved that the RECORDING SECRETARY be requested to prepare for the Transactions a sketch of the history of the Institute during the past fifty years, with biographical notes on those who had assisted materially in its work.

SECOND ORDINARY MEETING.

[COMMEMORATION MEETING, 1862-1912.]

*Civil Engineering Lecture Room, N. S. Technical College,
Halifax; Monday, 20th January, 1913.*

The Nova Scotian Institute of Science met at 8 p. m. to commemorate the completion of half a century's work of the society, which had been organized at Halifax on the 31st.

of December, 1862, as the successor of the Nova Scotian Literary and Scientific Society and the older Halifax Mechanics' Institute (1831).

The chair was occupied by the PRESIDENT, DONALD M. FERGUSSON, F. C. S., *ex officio* F. R. M. S. Other members present were: A. H. MACKAY, LL. D., F. R. S. C., first vice-president; PROF. EBENEZER MACKAY, PH. D., corresponding secretary; HARRY PIERS, recording secretary; and PROF. D. FRASER HARRIS, M. D., C. M., D. SC., F. R. S. E.; DONALD S. MCINTOSH, M. SC.; CARLETON B. NICKERSON, M. A.; and WATSON L. BISHOP, members of council; WILLIAM MCKERRON, auditor; and W. C. STAPLETON and J. H. L. JOHNSTONE, ordinary members.

The President announced the special purpose for which the meeting had been called.

There was read a paper by PROF. DAVID FRASER HARRIS, M. D., C. M., D. SC., F. R. S. E., of Dalhousie University, entitled "A Note on a Gastrolith found in a Moose." (See Transactions, page 242.) The subject was discussed by DR. A. H. MACKAY, H. PIERS, and others.

The RECORDING SECRETARY, HARRY PIERS, read a paper which he had prepared at the request of the society, entitled "A Brief Historical Account of the Nova Scotian Institute of Science, and the events leading up to its establishment; with Biographical Notes on some of those who have been prominent in its affairs." (See page liii.) Owing to lack of time, the presentation of the biographical section of the paper was deferred to the next meeting. Remarks on the subject of the paper were made by the PRESIDENT, DR. A. H. MACKAY, DR. E. MACKAY, and others; and on motion of DR. A. H. and E. MACKAY a vote of thanks was presented to MR. PIERS.

Attention was drawn to the fact that GENERAL CAMPBELL HARDY was the sole-surviving original member of the society,

and on motion of H. PIERS and DR. A. H. MACKAY, it was unanimously

“Resolved that the Nova Scotian Institute of Science, on the occasion of its meeting to commemorate the completion of half a century’s work in the field of science in Nova Scotia, extends its hearty congratulations to its sole-surviving original member and former vice-president, MAJOR-GENERAL CAMPBELL HARDY, R. A., of Dover, England, the talented author of ‘Forest Life in Acadie,’ and that it furthermore expresses its high appreciation of his work for it in the past, and of his continued interest in all of its affairs; and that a copy of this resolution be forwarded to General Hardy.”

THIRD ORDINARY MEETING.

*Civil Engineering Lecture Room, N. S. Technical College,
Halifax; 10th Febrdury, 1913.*

THE PRESIDENT, D. M. FERGUSSON, in the chair.

The following telegram from the HONORARY SECRETARY OF THE ROYAL SOCIETY OF CANADA, dated at Ottawa, 20th January, 1913, and received the day after the commemoration meeting, was read by the Recording Secretary:

“Harry Piers, Nova Scotian Institute of Science, Halifax. The Royal Society of Canada congratulates the Nova Scotian Institute of Science upon the completion of a half century of endeavour. Most hearty wishes for continued usefulness and success.—DUNCAN SCOTT.”

THE RECORDING SECRETARY stated that he had forwarded a due acknowledgment of the message to Mr. Scott.

An interesting letter from GENERAL CAMPBELL HARDY, our sole-surviving original member, dated at Dover, 20th January, was read, thanking the Institute for the cablegram sent to him on the occasion of the commemoration meeting, and giving reminiscences of the establishment of the society, etc.

The RECORDING SECRETARY, HARRY PIERS, presented a series of "Biographical Sketches of the Deceased Presidents and other Prominent Members of the N. S. Institute of Science since 1862," being the concluding section of an historical account of the society, the first portion of which had been read at the last meeting. (See page lxxxii.)

Discussion took place as to the ways in which more interest in natural history and science in general might be aroused among the people of the province.

FOURTH ORDINARY MEETING.

*Assembly Room, N. S. Technical College,
Halifax; 4th April, 1913.*

THE PRESIDENT, D. M. FERGUSSON, in the chair.

DAVID FRASER HARRIS, M. D., C. M., D. Sc., B. Sc. (Lond.), F. R. S. E., professor of physiology, Dalhousie University, Halifax, read a paper entitled, "Ventilation: its Discovery and Discoverer, and its bearing upon Tuberculosis," with lantern illustrations. The lecture dealt with the life and work of the Rev. Stephen Hales, D. D., F. R. S., 1677-1761, the inventor of ventilators (first described in 1743) which have had a most remarkable effect in lessening diseases. On motion of H. N. PAINT and M. THEAKSTON, a vote of thanks was presented to Dr. Harris for his lecture.

FIFTH ORDINARY MEETING.

*Civil Engineering Lecture Room, N. S. Technical College,
Halifax, 12th May, 1913.*

THE PRESIDENT, D. M. FERGUSSON, in the chair.

DR. A. H. MACKAY was appointed delegate to represent the Institute at the forthcoming meeting of the Royal Society of Canada.

The appointment of a representative to attend the fiftieth annual meeting of the Entomological Society of Ontario, to be held at Guelph, Ontario, on 27th to 29th August next, was left to the President and the Secretary.

DONALD SUTHERLAND MCINTOSH, M. Sc., instructor in geology and mineralogy, Dalhousie University, Halifax, read a paper entitled, "Notes on a Granite Contact Zone near Halifax, N. S." (See Transactions, page 244.) The subject was discussed by W. H. PREST, H. PIERS, and others.

A paper by FRANK HENRY REID, M. D., C. M., SS. "Crispin," China Mutual Navigation Co., Liverpool, England, entitled "The Irregularity in the Occurrence of Secondary Sexual Colours, and deductions therefrom," was read by title, owing to the lateness of the hour; as was also one by A. H. MACKAY, LL. D., F. R. S. C., on "Phenological Observations in Nova Scotia, 1912." (See Transactions, page 250.)

HARRY PIERS,

Recording Secretary.

A BRIEF HISTORICAL ACCOUNT OF THE NOVA SCOTIAN INSTITUTE OF SCIENCE, AND THE EVENTS LEADING UP TO ITS FORMATION; WITH BIOGRAPHICAL SKETCHES OF ITS DECEASED PRESIDENTS AND OTHER PROMINENT MEMBERS.—BY HARRY PIERS, Curator of the Provincial Museum, Halifax.

(Read at Commemoration Meeting, 20th January, 1913.)

PIONEER NATURALISTS.

No backward glance at the progress of scientific affairs in Nova Scotia would be at all complete without some reference to the pioneer workers in the field, the men who collected and observed, and thought and wrote, or otherwise laboured without the inspiring presence in their midst of institutions of learning and research, and companions of similar tastes.

The names we meet in this period are not many; but, *ipso facto*, something akin to a halo must surround them because these men were the Fathers of Science in this province.

Passing by the early voyagers and settlers, whose occasional hap-hazard observations on natural history are mostly of mere historic interest, we find that the close study of that subject seems to have begun about 1800 with Titus Smith, a man who was remarkable in many ways. He was followed by MacCulloch, Gesner, Webster, Brown and others, of whom I will give a few particulars.

TITUS SMITH, botanist, etc., was born at Granby, Mass., 4th September, 1768, and died at the Dutch Village, near Halifax, 4th January, 1850. He came to Nova Scotia with his father, a Yale graduate, in 1785, and settled at Preston, near Dartmouth, removing to the Dutch Village about 1800. He was remarkably well read and most accurate in his knowledge of many subjects, and became well known to all of his day as "The Dutch Village Philosopher." He was a most

enthusiastic student of botany, collected and observed all over the province, and conveyed the information he gained to the prominent botanists of the time in England, Scotland, France and elsewhere. He was also interested in geology, and in fact in natural history in general, as well as in the most improved methods of agriculture. As a general naturalist he was in advance of any others of his time in Nova Scotia, and his ability to read readily in various languages, placed scientific literature within his easy reach. In local history he was an acknowledged authority. About 1801-2 he was employed by the government to make a general tour or survey of the unsettled regions of the province, on which he left a voluminous manuscript report, including an account of our trees. Land surveying he took up as a profession. Unfortunately he published almost nothing over his own name, being of an exceedingly modest and retiring disposition; but he gave most liberally of his information to others and often wrote anonymously for the local press. The descriptive text of the first issues of Miss Maria Morris's superb "Wild Flowers of Nova Scotia" (about 1840) was written by him, and he collected the plants which that talented artist portrayed. His evidence before the Durham Commission of 1843 shows his extensive knowledge of the province. He contributed articles to the local press on the subjects of agriculture, rural economy, education, chemistry, geology and botany, and occasionally lectured before the Mechanics' Institute. For many years he was secretary of the Central Board of Agriculture and for a time conducted an agricultural periodical. Murdoch says of him that he was remarkable for the vast and varied information he acquired in botany, natural history, etc., and that with a knowledge of most that nature and books can teach, he united an unfeigned simplicity and kindness to the lowest as well as to the highest in the land, recognizing no distinction of rank whatever. On one occasion this Institute made a pilgrimage to his grave in the

woods near the Three-mile House, which will be found described in our Transactions. (See Lawson, M. J. K., History of Dartmouth, pp. 205-218; Trans. N. S. I. N. S., vol. i, pt. 4, pp. 149-152).

REV. THOMAS MACCULLOCH, D. D., ornithologist, was born at Neilston, Scotland, in 1776, and died at Halifax, N. S., 10th September, 1843. He was educated at the University of Glasgow and at Whiteburn, came to Nova Scotia in November, 1803, and was appointed first minister of Prince St. Church, Pictou, 6th June, 1804. From 1817 to 1824 he was the first principal of Pictou Academy, and in 1838 was appointed principal of Dalhousie College, Halifax. He made a study of our natural history, being particularly interested in birds, but also gave attention to mineralogy and left a manuscript list of Nova Scotian mineral localities which has since been published by this Institute. Audubon has left an account of meeting him in August, 1833 (See Audubon's Journal). MacCulloch's collection of birds is now the property of Dalhousie University, and, although badly mounted, contains some rare specimens, such as that of the Labrador Duck. Regarding the MacCulloch collection, it may be noted that Audubon says, "I am much surprised that his valuable collection had not been purchased by the governor of the province, to whom he offered it for five hundred pounds. I think it worth a thousand pounds." I can only add my own deep regret that the province did not obtain it for the price asked. About £500 has since been refused for one of its specimens alone!

ABRAHAM GESNER, M. D., F. G. S., mineralogist and geologist, was born at Cornwallis, N. S., of New York (loyalist) stock, on 2nd May, 1797, and died at Halifax, 29th April, 1864. He studied surgery and medicine in London under Sir Astley Cooper and Dr. Abernethy, and then returned to Nova Scotia, settling at Parrsborough. That district was rich in interesting minerals and he soon became

an industrious collector. In 1836 he published his well-known "Remarks on the Geology and Mineralogy of Nova Scotia" which immediately brought him into notice. It was particularly full in its observations on the trap district of the Bay of Fundy. From about 1838 till about 1843-4 he was provincial geologist of New Brunswick, and established at St. John the Gesner Museum, afterwards purchased by the Natural History Society of New Brunswick. Returning to Cornwallis, he wrote "New Brunswick, with notes for Emigrants" and "Industrial Resources of Nova Scotia". In 1850 he removed to Sackville, N. B., and in 1852 to Halifax. Two years later he patented a process for extracting an illuminating oil from coal and other bituminous substances, which he at first called 'keroselene,' a name subsequently shortened to kerosene. After 1855 he devoted much of his time to the production of kerosene oil, lived in the United States, and published in 1861 his 'Coal, Petroleum and other Distilled Oils'. He finally returned to Halifax in 1863. He was a fellow of the Geological Society of London (1840), corresponding member of the Royal Geographical Society of Cornwall and of the Academy of Natural Sciences of Philadelphia, and member of the Geographical Society of New York. He and Webster were the first students of science who had been born in the province. [See Gesner, A. T.: Gesner Family of New York and Nova Scotia, Middletown, Conn., 1912, pp. 11-13; Gesner, G. W.: Dr. Abraham Gesner, a biographical sketch: Bulletin of the Nat. Hist. Soc. of New Brunswick, vol. xiv, (1896), pp. 1-11, with portrait; Matthew, G. F.: Abraham Gesner, a review of his scientific work: Bull. Nat. Hist. Soc. New Brunswick, vol. xv (1897) pp. 3-48.]

WILLIAM BENNET WEBSTER, M. D., M. P. P., mineralogist, a man of lesser scientific note, was born at Kentville, N. S., 18th January, 1798, and died at Halifax, 4th April, 1861. Like Gesner he gave his spare moments to col-

lecting and studying our minerals, particularly those of the trap district, of which he formed a large collection of choice specimens which his widow presented to the Provincial Museum. He was the discoverer of the interesting fossil which Dawson named *Dictyonema websteri* in compliment to him. He was member of Assembly for Kings County, and is reported to have been a Fellow of the Geological Society, but this I doubt.*

RICHARD BROWN, geologist and mining engineer, was born at Lowther, Westmorland, England, on 2nd May, 1805, and died at London, 30th October, 1882. After experience in the coal-mines of his native country, he came to Nova Scotia in 1826 to report on and open up collieries in Cape Breton for Messrs. Rundell, Bridge and Co., and the newly organized General Mining Association, having been recommended for the work by the then Earl of Lonsdale. He began operating the Association's mines on 1st January, 1827. Subsequently he went to England, and then was stationed at Halifax till about 1839 when he returned to Cape Breton and was agent and general manager of this Association at Sydney Mines, with jurisdiction extending also to the Albion Mines in Pictou County, till his final departure for England on 1st July, 1864. He wrote much on the subject of the geology of the Cape Breton coal formations, and his elaborate work on the 'Coal Fields and Coal Trade of Cape Breton' (1871) is still a standard authority, has been reprinted, and the first edition sells for a large sum. In conjunction with Mr. Smith he contributed in 1829 a chapter on the geology of Nova Scotia (chiefly the eastern part) to Haliburton's 'Nova Scotia'. Many of his papers appeared in the earlier volumes of the Journal of the Geological Society

* Moses Henry Perley should be referred to here. He was a native of New Brunswick and was born in 1804, and died in 1862. His writings mostly refer to his own province, but in 1851 he published at Fredericton, N. B., a "Catalogue of the Fishes of New Brunswick and Nova Scotia," which more directly connects him with natural history work here. (See Dict. Nat. Biog., vol. 45, p. 9.)

of London. He also published at London in 1880, an interesting volume of 142 pages, entitled "Notes on the Northern Atlantic for the use of Travellers", which contains many natural history observations. He likewise is the author of a well-known 'History of Cape Breton' (1869). He was a fellow of the Geological Society of London, as well as of the Royal Geographical Society.

SIR JOHN WILLIAM DAWSON, geologist and palæontologist, born at Pictou, 1820, and died at Montreal, 1899, has become so famous in the world of science, that I will barely mention him here; and he furthermore belongs to a later period than would rightly place him among the pioneers. It will merely be noted that the visit of Sir Charles Lyall in 1842 filled him with enthusiasm and thereafter he began a long series of geological and palæontological works, chief of which, to us at least, was his 'Acadian Geology'. In 1848 he prepared a little 'Hand Book of the Geography and Natural History of Nova Scotia,' third edition in 1852, which is of interest as being one of the first works to give anything like a general scientific list of our fauna. It had been preceded in this respect, by the lists in the second volume of Haliburton's "Nova Scotia," 1829, which were supplied by various persons.

There are four others, who although but visitors to the province, gave a most marked impetus to the study of local geology and mineralogy. In May, 1826, FRANCIS ALGER of Boston visited Nova Scotia and in the next year published his "Notes on the Mineralogy of Nova Scotia" (Silliman's Journal of Science and Arts, vol. 12, June, 1827, p. 227); and in 1828 and 1829 appeared CHARLES T. JACKSON and Francis Alger's elaborate "Description of the Mineralogy and Geology of a part of Nova Scotia" (Silliman's Journal, vol. 14 [July, 1828], pp. 305-330, with geological map; vol. 15 [Jan. 1829], pp. 132-160, 201-217). This coloured geological map is the first we had. Their work profoundly affected the in-

vestigation of our formations and was undoubtedly the incentive which induced Gesner and Webster to devote their leisure to such studies.

In 1841, SIR WILLIAM E. LOGAN made a tour of Nova Scotia, which he described in a paper, and two years later he measured the fine South Joggins section. In 1842, SIR CHARLES LYALL came here, and one thing he did was to place our local observers in touch with other workers. He and Logan were the men who encouraged Dawson to take up his life's work..

THE HALIFAX MECHANICS' INSTITUTE.

In tracing what led up to the foundation of the Nova Scotian Institute of Natural Science, we must go back to the time when mechanics' institutes became popular and held their sway for a quarter of a century or more.

The first Mechanics' Institute, properly so called, was organized in Glasgow by George Birkbeck in 1823, being followed in 1824 by that at London. From them soon sprang many others, on a wider basis, the original idea having been merely to teach mechanics the principles of their trades. From these institutes have arisen various technical and other organizations.

The Halifax Mechanics' Institute was established on 27th December, 1831, at a meeting of the shareholders of the Halifax Mechanics' Library. It was affiliated with that organization, which had been established on 17th October of the same year, and all Institute members had to financially support the Library. The Institute's objects were the cultivation and diffusion of knowledge in the arts, sciences, and general literature, and the collection of models, drafts, specimens, books of reference and other materials tending to instruction and improvement*. The original officers were: Dr. William Grigor, president; John Leander Starr and

* The annual meeting for the election of officers, etc., was held on the last Wednesday of December, until February, 1838, when the date was changed to the first Wednesday in May.

Joseph Howe, vice-presidents; William M. DeBlois, treasurer; John Sparrow Thompson, secretary; and Robert Lawson, procuror of models, etc. (curator). Dr. Grigor held office till 23rd December, 1833. The subsequent presidents were, Joseph Howe (Dec. 1833 to Dec. 1834), John Leander Starr (Dec. 1834 to Dec. 1835), George Rennie Young (Dec. 1835 to Dec. 1837 or May 1838), Andrew McKinlay (from Dec. 1837 or May 1838 to May 1849), Dr. Daniel McNeil Parker (May 1849 to May 1852), Rev. Dr. Alexander Forrester (May 1852 to May 1855), Andrew McKinlay (May 1855 until his death, 29th Sept. 1867), after which the presidency was vacant, but James Thomson continued as vice-president until about the autumn of 1868.*

Meetings for lectures were held once a week during the session, and a museum was immediately established and gradually grew. The museum was at first in the same room as the library, namely the lower part of the premises occupied by Mrs. Grover as a boarding house, in Hollis Street. Subsequently gatherings were held, and the collections accommodated, in two rooms in the west end of Dalhousie College on the Parade.

The Institute became very popular and a most interesting series of lectures was given, by prominent local men, on scientific subjects, the fine arts, literature, etc., and art exhibitions were held, all of which were well attended.†

Gradually, however, doubtless in the '50s, the interest in it began to wane, and about 1860 it had become more or less dormant and finally became defunct as far as active work was concerned, leaving its museum, with old Errol Boyd, the curator since 1847, as the only tangible remains of its former glory. From that time the old officers appear to have just continued nominally in office, their places not being filled up as death took one after another, until in 1868 there

* The presidential dates I believe will be found accurate, but absolute verification has not been made in all cases by reference to newspaper files. The record books of the Mechanics' Institute are not known to be in existence.

† In 1845 a Mechanics' Institute building was erected in Dartmouth, N.S.

remained only a vice-president, a treasurer, a curator, and five committeemen. In that year the trustees handed over the collection to the Provincial Museum, which action finally closed the history of the society.

It may be mentioned that about 1839 a society known as the Halifax Literary and Scientific Association was in existence, with W. C. Silver as president, and it at least survived till the next year, but I know nothing further of its history. (See Belcher's Almanac for 1840).

THE NOVA SCOTIAN INSTITUTE OF NATURAL SCIENCE.

In 1859 the Nova Scotian Literary and Scientific Society was doing some active work, no doubt formed, about then, from the salvaged wreckage of the Mechanics' Institute, and with objects intended to save the new association from running on the rocks which had caused its predecessor to founder. It published its Transactions for the period from 4th January to 3rd December, 1859, (Halifax, 1859), probably not more. In the next year Dr. Charles Cogswell was its president, being followed by Robert Morrow; and in April 1862, I believe, J. R. Willis read before it a paper on our shells.

There seems to have been various interests working in this society, which possibly did not harmonize, and the scientific men proposed to form an organization that would be all their own.

In February, 1861, the second International Exhibition of London received its charter and was opened on 1st May of the following year. Nova Scotia had been rapidly coming into notice. Coal was being largely produced, iron was being mined, and gold had lately been discovered, and it was considered to be a favourable opportunity to bring our natural resources before the eyes of the world. Specimens for the purpose were collected with much enthusiasm and were forwarded to London. Those who had been engaged

in this work, felt the need of more scientific help and fuller information regarding our animal, vegetable and mineral resources. Thus was suggested the necessity of a permanent organization that might foster the scientific spirit among us. In other words, a few men of scientific tastes had individually devoted energy to studying our fauna, flora and geology, but it was felt that they should have a technical society of their own to publish the results of their observations. The Mechanics' Institute was dead in all but name, and had not been exactly on the lines now required. The recently formed Literary and Scientific Society formed a basis for a new structure. The scientific members were more energetic for the time being, and dropping the purely literary element, decided to form a society which would confine its activities to science alone.

General Hardy, the only survivor of those present at our inaugural meeting, writing on 20th January, 1913, says, "I remember well the friendliness and hearty co-operation of our efforts to set forward the development of local knowledge of the natural history and resources of the province. We were a band of enthusiastic lovers of nature: hunters and woodsmen, zoologists and geologists, botanists and fishermen, historians and antiquarians, each zealous of improvement in his own particular sphere of knowledge or science."*

Several preliminary meetings were held in the office of Robert G. Haliburton, Barrington Street, and a roster of prospective members was made out on 26th December, 1862, at one of these meetings held to talk over the matter. Finally on the 31st of that month (1862), at a general meeting held

* W. Gossip says "The Institute originated with a few gentlemen who believed, that in a province which contained vast mineral resources, and further was an untrodden field in other branches of natural science, there would be found men of culture and experience who would gladly lend their aid to develop them into successful activity." (Trans., vi, p. 157; see also Lawson, Trans., ix, p. viii).

in the hall of the Medical Society at Halifax,* there was organized the NOVA SCOTIAN INSTITUTE OF NATURAL SCIENCE,

At this meeting John Matthew Jones was in the chair, and there were also present Thomas Belt, Samuel Gray, Dr. John Bernard Gilpin, William Gossip, Robert Grant Haliburton, Captain Westcote Whitechurch Lyttleton, Henry Poole, Captain Campbell Hardy, R. A., John Robert Willis, and Philip Carteret Hill.

What took place is told in the manuscript minutes:

“The chairman read a draft of the bye-laws that had been prepared by the council, and intimated the desire of the council and officers that there should be a fresh election, and the resignation of the present office-holders and members of council should be accepted.**

“Capt. Lyttleton and Mr. Haliburton reported that they had waited on His Excellency, the Lieutenant Governor, who had consented to act as patron of the society.

“It was moved by Mr. J. M. Jones, seconded by Dr. Gilpin, that P. C. Hill, Esq., be president for the ensuing year; which passed unanimously.

“Moved by T. Belt, seconded by Capt. Lyttleton, that J. M. Jones and R. G. Haliburton be vice presidents for the ensuing year; which passed unanimously.

“Resolved on motion of Capt. Lyttleton, seconded by J. M. Jones, that the following gentlemen compose the council for the next ensuing year: Dr. Gilpin, Rev. J. Ambrose, Henry Poole, Captain Hardy, T. Belt.

“Also resolved on the motion of Dr. Gilpin, seconded by J. M. Jones, that J. R. Willis and J. B. Young be secretaries of the Institute.

“Resolved on motion of J. M. Jones, seconded by Dr. Gilpin, that Capt. Lyttleton be treasurer for the ensuing year.

*The Medical Society of Halifax originated in 1854.

**This doubtless refers to the officers and council of the N. S. Literary and Scientific Society.

“Resolved that the next monthly meeting be held on the 19th January and afterwards at the regular time on the first Monday of each month; also that the secretaries make enquiries as to procuring the Mechanics’ Institute room at Dalhousie College for monthly meetings, or some other suitable place.

“Resolved that at the next meeting each member be entitled to bring a friend.

“The bye-laws, with some slight modifications, were unanimously adopted.”

According to the bye-laws, monthly meetings were to be held for the reading and discussion of papers relating to natural science, and four field meetings were to take place annually. The Institute was to “undertake the publication of lists of the various natural productions of the province, with such observations as their respective authors may deem necessary. That, as far as the funds of the Institute will permit, the president’s address, the list of native productions, and a selection of the papers read at the meetings by members be published as the ‘Transactions of the Nova Scotian Institute of Natural Science’ and distributed gratuitously to the members.”

The admission fee was 20 shillings (afterwards \$4.00). and the annual subscription 10 shillings (afterwards \$2.00). The election of associate members was authorized in October, 1863, with an admission fee of 10 shillings and an annual subscription of 5 shillings.

Those whose names appear on the original roll as elected “26th December, 1862,” and who must be taken as the original members, with three exceptions afterwards referred to, are as follows:—Rev. John Ambrose, M. A. (St. Margaret’s Bay); J. Bernard Gilpin, M. D.; J. R. Willis, (name scratched out and marked “retired Dec. 1863”); Thomas Belt; Capt. C. Hardy, R. A.; Andw. Downs; R. G.

Haliburton; Capt. Westcote Lyttleton; J. Matthew Jones; Samuel Gray; Colonel [W. J.] Myers; Wm. Gossip; Lieut. [Francis] Duncan, R. A., (Canada); J. Young; Rev. Alex. Forrester, D. D., (Truro, marked "erased for non-payt. adm. fee"); H. G. Flint (Yarmouth); W. Lyttleton; P. C. Hill; Dr. Gesner (New York); Prof. How, D. C. L. (Kings College, Windsor); Rev. D. Honeyman (Antigonish, name erased); Henry Poole; J. Hunter Duvar; and Rev. Dr. Cramp (Wolfville). All were of Halifax or its vicinity, except those otherwise mentioned. There are columns for "date of election" and "date of admission" (the latter not being filled in). I think the "date of admission" was the time when a man qualified by the actual payment of the admission fee. The dates given in the earlier printed lists seem to have been the latter ones, and therefore do not indicate the date of election, which has produced some confusion in our ideas of when a man joined the Institute. If these dates were accepted, we would be in the peculiar position of believing that the society had no members when it was organized. As the first council minute-book is missing, we find it impossible after 1864 to say exactly when a member was elected and sometimes have to take the time when the fee was paid. There can be no doubt whatever that of those mentioned in the preceding list, the following did not pay admission fees, and cannot therefore be considered as original members: Lt. Duncan, Rev. Dr. Forrester, and Rev. D. Honeyman, the latter coming up again for election and being admitted on 3rd December, 1867. We also find that Dr. Gesner was re-proposed on 2nd November, 1863.

At the first ordinary meeting, held at Dalhousie College, on 19th January, 1863, Dr. J. B. Gilpin had the honour of reading the first paper, viz., on "The Common Herring of Nova Scotia," followed by one by Captain (now Major-General) Hardy, R. A., on the "Nocturnal Life of Animals

in the Forest". General Hardy, I am greatly pleased to say, is still living, at 3 Victoria Park, Dover, and has reached the age of eighty-one years. He takes a deep interest in all our affairs and is our sole surviving original member.*

At the February meeting, at which the patron, the Earl of Mulgrave, was present, and spoke at some length, the president, P. C. Hill, D. C. L., read an address. Hill, who was then mayor of Halifax and a prominent gentleman of the time, attended only this one meeting and was probably merely a figure-head, being succeeded in October, 1863, by J. Matthew Jones, since when the society has had, as its presiding officer, men who have been directly interested in scientific work.

In April, 1863, the place of meeting was changed to the "Institute Room" in the Province Building, the use of which was given by the government, where it assembled till May, 1871. From October 1871 till April 1887, it met in the Provincial Museum; then for a short while in the Provincial Engineer's office, Provincial Building; from December 1888 to April 1890 in the Art School; and thereafter mostly in the Legislative Council Chamber and Assembly Room, and

* Major General Campbell Hardy, late R.A., was born at Norwich, England, on 10th October, 1831, son of the Rev. Charles Hardy, M.A. He was educated at the Royal Military Academy, Woolwich. He entered the Royal Artillery as ensign on 19th December, 1849; became lieutenant on 11th August, 1851; and captain on 23rd February, 1856. He served in Nova Scotia from February, 1852, to August, 1867, five and a half years of which period he was Inspector of Warlike Stores and Firemaster. In 1866-7 he was also Inspecting Field Officer of the Nova Scotia Militia Artillery. While in Halifax he lived on Robie Street (Camp Hill). In 1869 he published in London his "Forest Life in Acadie", a work which is very highly valued for its accurate and delightfully written accounts of forest life and sporting adventures, he being a most ardent sportsman and lover of nature, as well as a skilful artist. He was commissioned major on 5th July, 1872; lieutenant-colonel, 16th Jan., 1875; colonel, 16th Jan., 1880; and was retired on full pay on 29th May, 1880, with the honorary rank of major-general, and now resides at Dover, England. Outside of his period of service in Nova Scotia, his life has been somewhat uneventful, but he has given much of his time to his favorite studies and sport. He looks back upon his Acadian forest experiences as the most delightful phase of his past. He published in our transactions six papers, viz., on Nocturnal Life of Animals in the Forest, The Capelin, Provincial Acclimatization, The Beaver in Nova Scotia, Nova Scotian Conifers, and a Nova Scotian Naturalist (Andrew Downs). To illustrate his paper on the beaver, he prepared a most carefully constructed model of a beaver house in 1866, which was shown at the Industrial Exhibition, Paris, 1867, and is now in the Provincial Museum.

finally on 13th December, 1909, it began to meet in the Technical College.

One of the pleasant features of the early years of the Institute were the field-days which were held in the summer. Although the bye-laws called for four annually, it was not found possible to have so many. The first was held on 11th June, 1864, at French Village, St. Margaret's Bay, to investigate some Indian shell-heaps, and on 21st of the following September one took place at Cole Harbour for the same purpose. In 1865 the members drove to the Waverley gold mines on 1st July; and on 26th June of the next year, a pilgrimage was made to the grave of Titus Smith in the woods near Dutch Village, where an interesting paper was read on that naturalist's life and work, and the president's museum at "Ashburn" was also inspected. From then till 1870 no excursions took place, although it was announced that one would be held on 28th June of the last-mentioned year in the vicinity of St. Margaret's Bay to explore shell-mounds there. On 21st June, 1871, a field-day took place at the Montagu gold mines, and another on 24th August, 1876, at Grand Lake. The last ones took place on 3rd and 24th August, 1878, at Point Pleasant and York Redoubt respectively. Since then they have been often proposed, but never carried out. They were enjoyed at the time, and gave members an opportunity of becoming acquainted with natural history in the field, under the guidance of competent leaders. They are now, at least, unpopular, perhaps because of the greater stress of present-day business life. Other societies are meeting with similar troubles in Nova Scotia; although in Ottawa and Montreal, field excursions are still kept up, as well as in England.

William Gossip, writing thirty-six years ago (October, 1876), says, "At the formation of the Institute it was supposed that these excursions would be generally taken advantage of, as pleasing and popular features of our proceedings.

In no one year, however, since that time, has there been found much enthusiasm in their behalf or willingness to engage in them. This may be attributed to the fact that each member of the Institute considers his public or private business of paramount interest, and the pursuit of science in this way quite a secondary object. I often think it a pity that it should be so at all times, and that we lose a large amount of knowledge and profitable recreation by not attending to these pleasant meetings."

The first part of the society's "Proceedings and Transactions", for the session of 1862-3, was published about November, 1863; and the first volume (for 4 years) was completed and its title-page issued in 1867. It contained articles on zoology by Gilpin, Jones, Ambrose, Willis, Belt, Downs, Duvar, and Sinclair; on anthropology by Haliburton and Gossip; on botany by Lawson and Hardy; on geology and mineralogy by Belt, How, Gossip, Honeyman, Jones, Hamilton, and Morton; on palæontology by Poole; on metallurgy by Gesner; and on meteorology, by Myers.

The earlier volumes were edited by its secretary and president, William Gossip, whose long experience in publishing assured good proof-reading and typographical style. In this work he was succeeded by Dr. Honeyman from about 1887 till 1889, whose eye for such work was not so well trained; then by Dr. MacGregor till 1901; by Piers till October 1908; and then by Dr. Creighton and Dr. MacKay.

In looking over the earlier lists of members, a noticeable feature is the number of army men who joined and often assisted in the active work of the society and by contributing papers. Pre-eminent among these was our vice-president, Captain (now Major-General) Hardy of the gunners, the author of that delightful work, "Forest Life in Acadie" (Lond., 1869), a book which now brings a large price. He was a charming writer, a keen sportsman, a good zoologist and woodsman, and a skilful artist.

Among other service-men were Capt. W. W. Lyttleton; Col. W. J. Myers; Lieut. F. Duncan, R. A.; Capt. C. L'Es-trange, R. A. (who served on the council); Lt. Col. M. Clifford, R. A.; Capt. J. R. King, R. A., (on council); Major D. L. Colthurst, 17th Regt., (on council); Capt. W. D. Thompson, 17th Regt., (on council); Lieuts. H. C. Deane, (member of council), and L. F. W. Dwyer, 17th Regt.; Lieut. H. H. Webber, R. A.; Lt. Archibald Anderson, R. A.; Capt. Tulloch; Lt. C. Morley, R. A.; Lt. H. J. Hope Edwards, 60th Regt.; Lieut. Hon. A. H. Fulke Greville, 60th Regt.; and others, most of whom belonged to the artillery and were probably brought in largely by Capt. Hardy. With the exception of Surgeon Capt. Barbour, we have lately had no recruits from this source, although invitation cards have been sent to the army departments for a number of years. As a matter of fact, the army man has changed in more senses than one since the first years of the society, and strange though it may seem, the abolition in 1871 of the old purchase system seems to have had something to do with it.

We have referred to the field-meetings of the Institute, but there was another style of entertainment that was indulged in on two occasions, and on each was successful and well attended. On 6th July, 1865, a *conversazione* was held in the hall of the Horticultural Gardens, at which about two hundred persons were present. Popular scientific addresses were given and refreshments served. Another of like character was held on 20th January, 1873, in the Provincial Museum and appartments of the Post Office, with His Excellency Sir Hastings Doyle in the chair, and about the same attendance. It was the last that took place.

The Provincial Museum had been established about October, 1868, through the strenuous exertions of some of the prominent members of the Institute, and it became the repository of all specimens that were donated to the society,

including many which illustrated papers read before it. Further reference will be made to this later on.

About 1867 a grant of \$200.00 was first received by the Institute from the Provincial legislature, and \$100.00 was granted in each of the two succeeding years at least. The Legislature for many years financially aided the, society, and in 1890 this grant was raised from \$400.00 to \$500.00 to meet the cost of printing a thousand copies of the Transactions.

It should be noted in passing, that in the winter of 1872-3 the sessions of a so-called School of Science were held in connection with the Provincial Museum, Dr. Honeyman lecturing on zoology; and that on 1st March, 1878, there was established at Halifax a Technological Institute, for instruction in technical subjects, of which Prof. Lawson was president, Dr. Somers, vice-president, and Dr. Honeyman, secretary and treasurer, with a competent corps of instructors, nearly all of whom were members of the Institute of Science. It had a class-room in the Stairs building, 74 Bedford Row, but some classes were held in the Museum and elsewhere. After three sessions, it passed out after May, 1880, for lack of funds. It was the unsuccessful forerunner of the present Technical College, and yet I never heard its name mentioned during all the agitation leading up to the foundation of the latter institution.

The visit to Halifax in May, 1873, of H. M. S. *Challenger* with Prof. Wyville Thomson on board, gave our members an opportunity of becoming acquainted with the most modern and improved methods of marine research, and stimulated such as were interested in that subject, as did also the sojourn here, from August to October, 1877, of the U. S. Fish Commission's ships with their corps of specialists.

The year 1874-5, unfortunately, is spoken of as our year of greatest intellectual dearth, judging by the small number of papers submitted, namely eight, (*vide* MacGregor's

address, 12th November, 1888). The average yearly number since 1862, has been between ten and eleven; and the average length of each paper, eleven pages. For the first twenty-five years, the average number of papers was about twelve, and the average length, nine pages.

On 2nd April, 1879, the Institute of Science was honoured by having its then and subsequent presidents made *ex-officio* Fellows of the Royal Microscopical Society, a distinction which our presiding officer still enjoys.

In the year just mentioned, the Institute deliberated on a collection of supposed rude, prehistoric pottery discovered in the water of Grand Lake. The few who had their doubts, were afterwards proved to be right when more careful investigation showed that they were merely disk-like concretions of iron and manganese oxides about a nucleus of quartzite! It is one of the very few little episodes of a semi-laughable kind we have to look back to.

On 5th and 15th October, 1884, a revised constitution and bye-laws were adopted. With the exception of the addition of a curator or librarian to the list of officers, the changes from the older bye-laws and unwritten laws were not material.

The session of 1888-9 was an epoch-making one in the annals of the society. Dr. James Gordon MacGregor was elected president on 10th October, 1888, and held office till November, 1891. It was a period of regeneration. A month after taking the chair, he gave a masterly address on the Institute's affairs—the first of the regular series of annual presidential addresses which we have since had, the older contributions of the kind having been at rare intervals. He carefully analysed the society's history, found that the period of greatest activity was the first few years of its existence, and that since 1867 it had kept oscillating with an average of about eleven papers a year. The lowest ebb, as has been remarked, was in 1875. About 304 papers had been pub-

lished down to 1888, a period of twenty-six years, mostly on the natural history and geology of Nova Scotia, and averaging about nine pages each.

It was felt that the society's activity had reached a critical point. Progress was not being made, activity was decreasing; some of the most energetic members had died and few young men were ready to take their places. He admitted that in the early history of a country it is comparatively easy to make additions to the knowledge of its natural history and geology. He thought, however, that scientific education in the province had not kept pace with scientific investigation.

He attacked the whole problem with all the energy and extreme keenness of intellect for which he was noted, and placed the Institute on a higher plane than it had been. Perhaps we may have to wait for another MacGregor to tackle the problems that now face us!

One result of MacGregor's exertions was the phenomenal growth of the library, which will soon receive notice. In 1890 he increased the edition of the Transactions to 1000 copies, which were sent in exchange to learned institutions and libraries over the whole world, thus making our volume a more acceptable means of gaining a hearing for our most-known workers who had begun to think that publication of their papers in more-widely circulated journals, which welcomed them, was an advantage. This enlarged edition was of great benefit to us in another way, as it was the means of rapidly building up our library by the much larger number of exchanges which were thereby received.

Another result of MacGregor's ideas of the needs of the case, was that on 24th March, 1890, at a general meeting, the name of the society was changed to the NOVA SCOTIAN INSTITUTE OF SCIENCE, an action which was opposed by ex-president Somers and a few of the old members*. The

*The Society was incorporated by act of the N. S. Legislature in the same year, 1890.

dropping of a single word is but a little matter in itself, but it widened the scope of the society to a large extent. It was felt that while "natural science" was retained in the name, others would consider it to be merely a natural history association, and it was found difficult to get general scientific organizations to exchange with it. It was also thought that no limitations should be placed on what the society should consider its field. As a result of this change, we have since had a number of papers on physical and chemical subjects, etc. I am aware that one of the most learned biologists of the United States regrets very much that we have departed from our old tradition of admitting only papers which have a manifest local bearing, leaving such purely technical papers as have been mentioned for the special journals which are devoted to such subjects.

Down to the time now under consideration, the Institute had had the field of science in Nova Scotia all to itself, for the Gold Miners' Association of about 1884 published little or nothing. On 30th March, 1892, however, the Mining Society of Nova Scotia was organized, absorbed the Gold Miners' Association, and began to publish its yearly "Journal." Although all of the papers which appear in the latter might not, possibly, be suitable for the Institute, yet there is no doubt it has deflected to itself a number of contributions which we would be glad to have had.

In December, 1906, the engineers formed an organization of their own, known as the Nova Scotia Society of Engineers; but publication so far does not seem to have been adequately taken up by them. It is to be hoped, perhaps, that some sort of affiliation may be possible among these various societies.

The foundation of the Royal Society of Canada in 1882 has also had a marked effect on the production of our Institute, as many papers on Nova Scotian subjects have appeared in the more notable society's publications, which otherwise would have been given to our own.

All of these influences have undoubtedly worked to the detriment of the Nova Scotian Institute.

A condition of affairs arose in 1901 which it was thought might bring good results. Members of the Institute in the university town of Wolfville, under the enthusiastic leadership of Prof. Haycock and other members of the college staff, expressed a desire to form a sub-organization. It was thought to be a good time to form affiliated branches throughout the province which would be of mutual benefit to all concerned.

Accordingly on 28th May, 1901, the KING'S COUNTY BRANCH OF THE INSTITUTE was organized at Wolfville, with Prof. Haycock as president. Associate members were permitted to join the branch for a nominal fee of twenty-five cents a year. It was very successful at first, held four annual sessions and read or discussed papers of interest, but ceased to exist after the session of 1903-4.

The summer of 1901 saw the departure of Dr. MacGregor for Edinburgh University to take the chair of natural philosophy there, and the Institute joined with others in a farewell dinner to the man who had done more than yeoman service for our society. While appreciating and delighting in the well-deserved honour that had thus come to one of the province's most talented sons and one of our fellow members, the whole society could not but deeply feel his loss. Possibly I may be pardoned for expressing my own humble opinion that his is the keenest intellect that Nova Scotia has produced.*

I shall not proceed further with a general narrative, as the past decade is clear in all of our minds, but will give a few particulars of the growth of the library and of the museum, and then concise sketches of the presidents and other men foremost in the society's affairs. In respect to the biographical notes, Sidney Lee, editor of the "Dictionary of National

*The sudden death of Prof. J. G. MacGregor. D. Sc. LL. D.; F. R. S.; F.R.S.E., F.R.S.C., at the age of sixty-one, took place at Edinburgh in May, 1913, a few months after the preparation of this paper.

Biography," says (and he should know) that no biography can or should be written until the culminating point, death, has closed the record. There are also other self-evident reasons why I will confine myself, in the biographical section, to merely remarks on those worthy labourers who have passed to rest.

THE LIBRARY OF THE INSTITUTE.

Although the acquisition of a library was no doubt in the minds of the original members in 1862, yet the earliest mention of a collection of books being formed is in March, 1864, when was announced the receipt of the first book donations to the institution, viz., the Second Report of the Scientific Survey of the State of Maine, and the Report of the Natural History Society of Newcastle-upon-Tyne. Such was the modest beginning of a library which now contains nearly 36,000 books and pamphlets. For some twenty-five years, society journals were very slowly added by exchange. It was not until the revision of the bye-laws in 1884, that a librarian was considered at all necessary, to which office A. J. Denton was elected on 21st October, 1885, which position he held for four years. When I first remember the library about 1887, it was contained in about three small book-cases in the hall outside the Provincial Museum, which was then situated on the top floor of the Post Office. I know, however, that even the few scientific journals it then had, gave me as a lad the keenest pleasure in perusing them. In 1888 the books were put in order and binding to a larger extent was begun.

Feeling that the possession of a good library of society periodicals was one of the principal requirements of a scientific institution for research, if its members hoped to keep abreast with progress elsewhere, Dr. MacGregor, during his energetic presidency, with the assistance of Mr. Bowman, the librarian, devoted much attention in 1889 and 1890 to

increasing the exchange-list, and with this end in view the edition of our "Transactions" was in 1890 increased to one thousand copies, and the question of dealing adequately with the binding of exchanges was actively taken up. (See MacGregor's Address, 8th October, 1890.). In November, 1889, the Institute exchanged with only about one hundred institutions, but steps were being taken to increase this number to three or four hundred, and this was ultimately brought up to seven or eight hundred.

The library then began to grow by leaps and bounds. Very soon it could not be accommodated in the Post Office hall, and in 1894 the foreign section of it was removed to Dalhousie College and eventually all of it, where MacGregor had it constantly under his eye, sharing with Mr. Bowman the great labour connected with its management, labour which was given willingly and gratuitously by these otherwise busy gentlemen.

Still it grew till it soon was beyond the capabilities of a small society with limited means, to look after it properly. Seeing that such publications, from every quarter of the world, and containing the very latest results in science, were of use to the whole province and not only to a limited few, the Institute by letter to the Provincial Secretary, dated 21st December, 1899, stated its willingness to intrust its library to the custody of the government (the right of property remaining with the society) on condition that it "should be made the nucleus of a public library to be maintained by the government in connection with the Provincial Museum, and to be open to all who may wish to use it, under such restrictions only as might be necessary for the safe-keeping of the books," and also on condition that the government appoint "a competent librarian to take the library in charge."

The government saw the wisdom of acquiring these books under the conditions laid down, and the result was the foundation of the PROVINCIAL SCIENCE LIBRARY OF NOVA

SCOTIA in the summer of 1900, under control of the Department of Public Works and Mines. The scientific works of the Legislative Library were passed to it in July and the transfer of the Institute's books from Dalhousie College was begun on 17th November, while manuals, textbooks, etc., were added by the government by purchase, and the whole was thrown open, free, to the public of the Province, soon after, thus becoming the first public library for the whole of Nova Scotia. The Mining Society also deposited its books there till February, 1907, when it fitted up a room of its own. A government grant of \$500 a year for the support of the Science Library was given up to 1904; but after that, was withdrawn, and I regret to say that it is now without direct financial support.

Having utterly outgrown its quarters in the so-called Burns and Murray building on Hollis Street, the library was removed in May-June, 1910, to a new and larger stack-room in the Technical College.

On 31st December, 1911, it contained 45,497 books and pamphlets, of which 34,085 (about 75 per cent.) belong to the Institute. The average yearly increase to the society's library is 1,841; and to the Science Library proper, 1,099; a total average yearly increase of 2,940.

THE PROVINCIAL MUSEUM.

Dr. A. H. MacKay has aptly spoken of the Provincial Museum as "the ward of the government, but the child of the Institute." The society has always taken a very vital interest in it, for it was formed at the solicitation of its members, and it has always deposited in it such specimens as were donated to it, so that in one way it is the Institute's museum in part, although under control of the government.

The origin of the collections it contains goes back to 1831 when the old Mechanics' Institute began to form a general

museum, which grew until 1860 when it came to a standstill owing to the dormant state into which that society had passed. Its curators were: (1) Robert Lawson, 1831; (2) John Fairbanks, about 1833; (3) John McDonald, 1835-46; (4) Andrew Downs, 1846-47; and its last and best remembered curator, Errol Boyd, (elected in May, 1847), a man, however, not well fitted for the position by education or native talent. The museum remained in Dalhousie College, but was going to pieces from lack of care.

The establishment of a provincial museum was first proposed in 1862, when collections were being made for the London International Exhibition. The Rev. J. Ambrose and J. M. Jones had (about 1861) suggested to J. R. Willis the propriety of taking some steps in the matter, and the first-named gentleman had written a communication upon the subject, to "tune" the newspapers, as he termed it. (Trans., vii, 409, foot-note). Nothing resulted immediately from this agitation. In 1865 Rev. D. Honeyman and J. R. Willis presented a memorial to the government strongly advocating the establishment of such an institution, and Willis appeared before a committee which was to report upon the matter. At the time of the preparation for an exhibit at the Paris International Exhibition which opened in April 1867, Honeyman being secretary of the Nova Scotia Commission, the project was vigorously pushed, with a successful issue. In the beginning of 1866 Dr. Honeyman had proposed to A. MacKinlay, trustee of the Mechanics' Institute, to take the museum of that defunct institution, whose collections were becoming ruinous, and to make it the beginning of a provincial museum. MacKinlay and the other trustee, James Forman, agreed to the proposal. Honeyman then applied to the Provincial Government for accommodation for a museum in the new building (now the post office) which was then in course of erection, and the government agreed to set aside a room there for the purpose. The foundation of

a museum being now assured, the Nova Scotia Commission purchased natural history collections with the understanding that they were to be brought back from Paris and deposited in the proposed museum. How, writing in January, 1867, says that a space, 70 by 30 feet, had been set apart for a provincial museum in the province building (post office) then being built.

The Provincial Museum was finally founded in October, 1868, when Honeyman was authorized by the government to take possession of the room, where the Halifax Mechanics' Institute museum (thirty-seven years after its formation) was formally transferred by its sole surviving trustee, James Forman, to the Nova Scotian government and placed in the large room prepared for it in the post-office building. These specimens were incorporated with those which had been at the Paris Exhibition and which had been returned after its close on 3rd November, 1867. The latter included How's minerals and herbarium, Downs's birds, and Barnes's carboniferous fossils. The late Dr. Honeyman was appointed curator and remained so until his death on 17th October, 1889, and the extent of the then collection was largely the result of his zeal. It should be mentioned that to the Hon. William Garvie was due much credit for lending his support to the institution on its formation.

For thirty-one years the museum was of a general character, and after Honeyman's death remained *in statu quo*, but in 1899 the government at the strong solicitation of the Institute of Science, decided to give it more attention and wisely determined to cut it down to a representation of Nova Scotian products only, placing the foreign specimens in storage. In October, 1899, arrangements were begun to remove the collections to the Burns and Murray building, where they soon outgrew their quarters, and in October, 1910, they were finally removed to the Technical College.

When the museum was revised in 1899 there were retained 10,099 of the old specimens. From then till December, 1911, there were added 14,814 specimens, making a total of 24,913, or about 25,000 at the present time. Since 1900 it has received an average of 1,235 specimens each year. Allowing for specimens that had been discarded in 1899 because of lack of data, there can be little doubt that for the twelve years since then, the number of accessions exceeds the total number obtained from 1831 to 1899, a period of sixty-eight years.

In closing these ragged and brief annals of our society, we find that, like those of Miss Mitford's Village, they are somewhat uneventful. I only regret that we have not had a Mitford to lend to our simple story the charm with which her genius invested the daily happenings of her little community.

BIOGRAPHICAL SKETCHES.

One of my chief aims in bringing together these notes, has been, not only to give a few particulars and dates, but especially to present a little about the men, now gone from among us, who laboured for the Institute, for science, and for the country generally, to the very best of their abilities, humble or otherwise, without pay and I fear with but scant recognition of the value of their work. I distinctly feel that at such a time as this, instead of singing too much the praises of the society itself, of which we are more or less a part, we should give a few retrospective glances at the men whose shares first cut the virgin sod, and through whose success we cannot selfishly add one cubit to our height.

With this end in view I have prepared short biographical notes on our deceased presidents and other prominent members which are appended hereto.

DECEASED PRESIDENTS.

HON. PHILIP CARTERET HILL, K. C., D. C. L.—Born at Halifax, 13th August, 1821, son of Capt. Nicholas Thomas Hill, late Royal Staff Corps; died at Tunbridge Wells, England, 14th September, 1894. He was educated at King's College, Windsor, entered the legal profession, and received the degree of D. C. L. from King's College in 1858. Was mayor of Halifax for three years, October 1861 to October 1864; became provincial secretary of Nova Scotia in 1867 and again in 1874; and was premier in 1875, retiring in 1878. He was one of the original members of the Nova Scotian Institute of Natural Science, and its first president, holding office from 31st December, 1862 to 26th October, 1863. He attended only one meeting, and his connection with the society was in all respects slight, his position as mayor at the time doubtless making him a desirable nominal head at the inception of the institute. He was a man of education and literary, but not scientific, tastes, and possessed cultivated manners and financial means.

JOHN MATTHEW JONES, F. L. S., F. R. S. C., zoologist.—Born at Frontfaith Hall, Montgomery, Wales, 7th October, 1828, son of Admiral Sir Charles T. Jones; died at Halifax, 7th October, 1888. He was educated at the Middle Temple, London, for a barrister, but being possessed of independent means, did not practice. About 1854 he went to New York and soon after came to Halifax, where he decided to reside, his relative, the Earl of Mulgrave, being then governor of the province. He spent sometime in Bermuda where his researches into natural history resulted in the publication, at London, 1859, of "The Naturalist in Bermuda".* At Halifax he resided from October, 1860, for a number of years, at "Ashbourne," Dutch Village, (which he purchased from his father-in-law, Col. W. J. Myers), and there he had a large

*Günter named *Sygnathus jonesi* and *Gerres jonesi* (= *Eucinostomus pseudogula*) in his honour; and Goode similarly named *Belone jonesi* (= *Tylosurus acus*). These are Bermudian fishes.

private museum which, in 1866, contained seven or eight thousand specimens. He was an enthusiastic collector and gave generously to various museums. The Nova Scotian fisheries exhibit of the International Exhibition at London, 1862, was brought together under his management. He was an original member of the Institute of Natural Science and one of those who took the most active part in its establishment in December, 1862; he presided at the inaugural meeting, and the society owes a vast debt of gratitude to him for his enthusiastic labours in its behalf. He was its first vice-president, and its second president, serving in the latter capacity for ten years, 26th October, 1863, to 8th October, 1873, the longest presidential term we have had. His studies related chiefly to zoology, more particularly fishes, reptiles, and mollusca, of all of which he left lists, as well as birds, lepidoptera, and marine invertebrates, and the name by which he was jocosely referred to, "Bug Jones," was well known to the last generation. A pretty conceit on his gravestone represents a butterfly above a caterpillar crawling on a twig. His publications number about twenty-three items, 15 of which appeared in our Transactions; and next to Dr. J. B. Gilpin (24 items) he was the most prolific writer the Institute has had on zoological subjects. He was a Fellow of the Linnean Society of London (1st December, 1859 till about 1878), and an original Fellow of the Royal Society of Canada, as well as a member of the Entomological Society of Canada, and corresponding-member of the Natural History Society of New Brunswick, of the New Orleans Academy of Science, and of the Frankfurt Senckenbergische Naturforschende Gesellschaft. (See sketch of life, by H. Piers, Trans., x, p. lxxx, with portrait; List of Fellows of Linnean Society.)

JOHN BERNARD GILPIN, M. A., M. D., M. R. S. C., F. R. S. C., zoologist and ethnologist.—Born at Newport, Rhode Island, 4th September, 1810, son of J. B. Gilpin,

formerly of Vicar's Hill, Hants, England, who afterwards retired to Annapolis, N. S.; died at Annapolis, 12th March, 1892. He graduated from Trinity College, Providence, R. I., and took a course of medicine in England, afterwards practising at Annapolis, and spending his leisure in the study of the animal life of the western part of the province. In 1846 he moved to Halifax where he resided for forty years, and then returned to Annapolis where after a period passed in retirement from all mental activities he passed away in 1892. He was an original member of the Institute of Natural Science, and with his friend Jones was one of those who took the most active part in its organization, and his paper on the herring was the first read before it and published in its Transactions. He served as vice-president, and succeeded as the third president on 8th October, 1873, holding office for five years, till 9th October, 1878. He was the society's most prolific writer of the period, his papers, which were long, numbering 24; but some of them being in several parts, 34 would convey a more correct idea of the number of his writings. Dr. Honeyman was the only one who surpassed him in the number of his contributions. Gilpin was a zoologist primarily,* and his papers deal with the mammals, food fishes, wild fowl, the eagles, and our Indians and their remains, and his article on Sable Island is still much referred to. His monographs on our mammals, with full descriptions of their habits, are still, although somewhat out of date, the chief source of information on the subject. Altogether he was probably the best student of the higher animals we have had. He possessed a racey, picturesque and attractive literary style, coupled with close accuracy in his statements and determinations. Furthermore he was a good draughtsman, wielding a ready pencil and brush, which assisted in illustrating his lectures. In

*William Gossip says he was well known in British America and the United States as the Nova Scotian Zoologist (Trans. vi., p. 158).

1882 he was nominated a foundation Fellow of the Royal Society of Canada. (See obituary notice, *Trans.*, viii, p. xlvii; portrait in x, pt. 2.)

WILLIAM GOSSIP.—Born at Plymouth, England, in 1809; died at Halifax, 5th April, 1889. He came to Halifax at the age of thirteen, and in 1831 went to Pictou where he published the "Pictou Observer" newspaper. He returned to Halifax in 1834, and established a bookselling and publishing business which was continued till his death. For some years he edited and published "The Times" newspaper of Halifax. He was one of the original members of the Institute and on 26th October, 1863, was elected secretary, holding office till 11th October, 1871, when he was succeeded by Honeyman. The minutes during his secretaryship are very full and interesting and contain items of scientific value which never went into the printed Transactions. From 1871 to 1874 he was a member of the council; from 1874 to 1878, vice-president; from 9th October, 1878 to 13th October, 1880, the fourth president; and from then till 1889 again a member of the council or vice-president. From the establishment of the society, therefore, he took a deep interest in its affairs, and his services were specially acceptable as editor of the Transactions, a duty which he assumed from the first, his knowledge of printing and publishing being valuable for this purpose. He contributed five papers to the Transactions (four anthropological and one geological), besides some addresses and miscellaneous notes. Not being a scientific man by profession, he felt a diffidence in writing on such subjects. The Institute, however, owes him much for long and faithful service. (See obituary by Prof. MacGregor, *Trans.*, vii, 319.)

JOHN SOMERS, M. D., botanist.—Born in St. John's, Nfld., in 1840; died at Halifax, 13 March, 1898. He came to Halifax in infancy and was educated at St. Mary's College. In 1866 he graduated from Bellevue Medical College, New

York, and spent a year in active service as an assistant army surgeon during the American Civil War, after which he returned to Halifax where he practised till his death. He took an active part in the establishment of the Halifax Medical College in which he was professor of physiology. On the organization of the Technological Institute, Halifax, on 1st March, 1878, he became its vice-president; and in 1883 he was president of the Medical Society of Nova Scotia; besides which he was chairman of the Commission of Public Charities, a school commissioner, and occupied some other positions during his very active life. In January, 1875, he became a member of this Institute, and served for two periods as president, 13th October, 1880, to 10th October, 1883, and 21st October 1885, to 10th October, 1888—the first non-foundation member to be elected to that office. He contributed many papers on his favourite study, botany, including articles on the mosses and fungi, in the latter of which, I think, he was our first investigator. Of his eighteen published papers, 14 relate to botany, 3 to zoology, and 1 to microscopy. His determinations were, perhaps, sometimes too hastily made. He formed a large herbarium, which was, unfortunately, destroyed after his death, which makes a revision of his identifications impossible. (See obituary by Prof. Lawson, *Trans.*, x, p. iii., with portrait; Dr. D. A. Campbell, *Mar. Med. News*, June, 1910, p. 186.)

ROBERT MORROW, comparative anatomist and zoologist.—Born at Halifax, 26th July, 1827, son of John and Mary Anne (Duffus) Morrow; died at Halifax, 5th August, 1885. His father came of mining stock from Co. Durham, England, and about 1835 was appointed United States Consul at Halifax, N. S., and later secretary of the N. S. railway. He was fond of studying, in an amateurish way, geology and conchology; and possessed collections of specimens relating thereto. In early life Robert entered the employ of the General Mining Association at the Albion coal mine,

Stellarton, where on the retirement of the manager he was offered that position, but declined it. He then came to Halifax and in 1853 entered the firm of Wm. Stairs, Son and Morrow, which connection he retained till his death, becoming a son-in-law of Wm. Stairs the founder of the firm. He became a man of considerable wealth, was philanthropic, built "Bircham," North West Arm, about 1869, and died there after an illness of several years. Much of his life was given to the study of natural history. He had been, about 1861, a president of the old Nova Scotian Literary and Scientific Society, but for some reason did not join the Institute of Natural Science until February, 1872, but then took an active part in all its affairs, was a member of its council from October 1873 to October 1880, and first vice-president from the latter date till 10th October, 1883, when he was elected president, which office he occupied up to his death. In the basement of his residence he had a small aquarium for studying the habits of fish, specimens of which he regularly received from fishermen. He also had a laboratory or work-room, and to the consternation of his household, he not infrequently kept fish until they were very unpleasant, in order to separate the skeleton, which he and J. M. Jones would study together. He received a prize for his carefully prepared skeleton of an Angler (*Lophius piscatorius*) and of a cod head, which with his collection of West Indian shells are now in the Provincial Museum. His papers on the osteology of *Salmo salar* and *Lophius piscatorius* were masterly productions. He published nine papers in our Transactions, all but one being on the anatomy of vertebrates; but also was interested in general zoology and Indians, and made a special study of Icelandic literature and Norse history.. He read two papers relating to Greenland and Vinland before the N. S. Literary and Scientific Society of Halifax in 1865, which secured his election as a member of the Royal Society of Northern Antiquaries (Copenhagen), and one, "Translation from the French relating to the Religious Beliefs of the Indians prior to the Discovery by Cabot," before the

service, the investment taking place on 23rd March, 1904. He was an extensive writer on his favorite subjects of economic geology and mineralogy; and besides his official reports, published a work on the "Mines and Mineral Lands of Nova Scotia" (1883), and various pamphlets on the minerals of the province, while the Transactions of the North of England Institute of Mining Engineers and of the Royal Society of Canada, and various other societies, contain articles from his pen, all of which did much to make known the mineral resources of his native land. (See bibliography to 1894, in *Trans Roy. Soc. Can.*, xii.). In April, 1873, he joined this Institute, having read before it in the previous month the first paper he ever prepared, and in 1881 became a member of its council and remained in it, either with or without office, till his death. He served as president for two years, 18th November, 1895, to 8th November, 1897. He published in our Transactions 30 papers and addresses, almost entirely on geology and mineralogy. He received the degree of D. Sc. from his Alma Mater, and LL. D. from Dalhousie (1892). He was a fellow of the Geological Society of London (1874), an original fellow of the Royal Society of Canada (1882), member of the American Institute of Mining Engineers and of the Canadian Society of Civil Engineers. (See obituary by Doane, *Trans.*, xii, pt. 2, p. xxxi.; also *Journal Mining Soc. of N. S.*, xiv., p. 103, with portrait.)

OTHER PROMINENT DECEASED MEMBERS.*

REV. JOHN AMBROSE, M. A., D. C. L., zoologist.—Born at St. John, N. B., 25th September 1823; son of Richard and Katherine (Phillips) Ambrose; died at Sackville, N. S., 12th September, 1898. He was born one month after the arrival of his parents from Cove of Cork (Queenstown), Ireland. Although originally from England, his ancestors had resided in Ireland for generations. Was educated at Truro and at

*These sketches are arranged chronologically according to the years in which their subjects became connected with the Institute.

King's College, Windsor, (B. A., 1852; M. A., 1856; D. C. L., 1888). For over forty-four years laboured successfully as a clergyman of the Church of England at St. Margaret's Bay, Digby, etc., and was editor of 'Church Work' and 'The Halifax Church Chronicle'; and also was a governor of King's College. Married, 30th June 1853, at Liverpool, N. S., Charlotte Ann Barss (U. E. Loyalist descent). During a busy life as a country parson, he found in natural history a recreation, although not claiming to be an authority on the subject. He was an original member of the Institute and was proposed as a member of the first council, but as he lived at a distance from Halifax he could take but little active part in its work; and in 1890 was elected a corresponding member. He published six papers in its Transactions, all relating to either the fishes or birds of St. Margaret's Bay, where he was stationed for thirteen years and so had ample opportunity of gathering from the fishermen much information regarding the inhabitants of the deep. (See obituary, Trans. N. S. I. S., x., p. iv.)

ROBERT GRANT HALIBURTON, M. A., D. C. L., Q. C., F. R. G. S., ethnologist.—Born at Windsor, N. S., 3 June, 1831, son of Judge T. C. Haliburton ('Sam Slick'); died at London (?), March, 1901. Was educated at King's College, Windsor (matriculated 1845; B. A., 1849; M. A., 1852; D. C. L., 1877), and then studied law, becoming a barrister in July 1853, and practised in Halifax. Was secretary of the N. S. Commission for the London exhibition of 1862. From 1871 to 1876 he was in England in connection with some Nova Scotian coal areas in which he was interested; and in 1877 moved to Ottawa. Ill health compelled him in 1881 to give up his practice in Canada, and to spend the winters in tropical or sub-tropical climates, his movements during these times being often not known to his friends for long periods. Since then he devoted his attention chiefly to ethnological investigations, the study of the pigmy races being particularly attractive to him. He

was an original member of the Institute and active in its organization, the preliminary meetings having been held in his office; served as its second vice-president (1862-3), but severed his connection with the society about 1880. He contributed to its early Transactions four papers on ethnological subjects and on the geology and economics of coal. His elaborate paper on 'The Festival of the Dead' attracted rather wide attention at the time of its publication. His writings elsewhere were extremely numerous, and a list of them will be found in Morgan's 'Canadian Men and Women of the Time,' 1898, p. 423. He was a fellow of the Royal Geographical Society and of the Royal Society of Northern Antiquaries (Copenhagen), a member of the American Association for the Advancement of Science, etc., and about 1875 was the first colonist by birth to be elected to the council of the Royal Colonial Institute.

COLONEL WILLIAM JAMES MYERS, F. R. Met. Soc., meteorologist.—Born, doubtless in Scotland, about 1807; died at Halifax, 15 April, 1867. Myers had been major of the 71st Regiment of Highland Light Infantry which had served in Canada, Bermuda and the West Indies from 1824 to 1846. He received his captaincy on 29th December, 1835; his majority on 22nd November, 1842; and on 19th March, 1847, retired on the half-pay of the Royal Staff Corps, being subsequently commissioned lieut.-colonel on 20th June, 1854, and colonel on 26th October, 1858, (vide Army Lists). He came to Nova Scotia from Quebec and settled in Windsor, where he lived for a while, marrying Jean Gordon, daughter of Rev. Archibald Gray of St. Matthew's Church, Halifax. Their daughter became the wife of our late president, J. Matthew Jones. Col. Myers left Windsor and came to Halifax about 1856, living at 'Ashbourne,' Dutch Village, afterwards well-known as the residence of his son-in-law, Mr. Jones. The past generation had pleasant recollections of him as a fine gentleman. He died suddenly while preparing to leave his house to attend

church, and is buried at St. John's cemetery. The very sad death of his son in January, 1870, will be recalled by many. Col. Myers was one of the original members of the Institute, and afterwards served on its council. He was a most enthusiastic student of meteorology, kept a very careful record of the weather at Halifax, as Henry Poole was doing elsewhere in the province, and I think his papers in our Transactions are the earliest full and systematic ones published here, although Poole, and possibly Hensley of Windsor, were in the field before him. This led to his election as a fellow of the Royal Meteorological Society. He published in our journal, notes on the weather at Halifax for four years, from 1863 to 1866. His work was then taken up by Frederick Allison in 1867, and the Dominion meteorological service was ultimately established in 1871.

THOMAS BELT, geologist and naturalist.—Born in England. 1832; died at Denver, Colorado, 1878. Made geological investigations in the Australian gold-diggings from 1852 to 1862; came to Nova Scotia as superintendent of the N. S. Gold Company's mines in 1862, and returned to England (Newcastle-on-Tyne) in 1863 or 1864; conducted the gold-mining operations of the Chontales company, Nicaragua, from 1868 to 1872. Elected a fellow of the Geological Society in 1866. He published works which chiefly relate to the glacial period (for which some of his observations were made in this province), and also his popular classic, 'The Naturalist in Nicaragua' (1874), a work which contains much information on protective mimicry, plant fertilization, sexual selection, etc., and written in a fine style. He was one of the original members of the Institute, was elected to the first and second council, and was a member until his death. He contributed four papers to the Transactions, his list of butterflies observed about Halifax, being the first such catalogue to be published. (See Dict. of Nat. Biog., iv., p. 204; also Trans N. S. I. N. S., v., p. 4.)

JOHN ROBERT WILLIS, conchologist.—Born at Philadelphia, U. S. A., 14th February, 1825, son of John and Elizabeth Willis, of Irish extraction; died at Halifax, 31st March, 1876. He came to Halifax when a child and was educated there at the National School of which in 1846 he became a teacher. In 1863 was appointed superintendent of an industrial school on its establishment at Halifax, and resigned from the National School. In 1865 he took an active part in the efforts to establish a Provincial Museum at Halifax and was a candidate for the position of curator, but in the same year became secretary of the Board of School Commissioners, Halifax, and in 1875 retired, being thereafter in poor circumstances. About 1850 he began to study our mollusca, thus becoming the first Nova Scotian conchologist, and in 1857 his first known list of our shells appeared in an obscure publication, supposed to have been 'The Church Record', followed by two other lists, all of which are very rare. He made a large and very fine collection of shells, both native and foreign, said to have consisted of over 8000 specimens, but the location of the local part is unknown, and the foreign portion is in ruins. Corresponded largely with noted conchologists of the time, and large numbers of his Nova Scotian specimens are in the great museums of the United States and elsewhere, and a small collection is in the museum of King's College, Windsor, but in a dilapidated state. In 1862 he was elected a corresponding member of the Liverpool (Eng.) Natural History and Microscopical Society, and in the next year a corresponding member of the Boston Society of Natural History. Though he possessed his weaknesses, yet he was a man who was much liked for his good qualities. He had been connected with the old N. S. Literary and Scientific Society of Halifax; and was one of the original members of the Institute of Natural Science, and was elected one of its first joint-secretaries, but seems not to have acted, and must have resigned the position before 4th May,

1863, as he then signed the only minutes he wrote, as secretary *pro tempore*, and was succeeded by W. Gossip. He finally withdrew from the society about 1869. The Transactions contain but one paper by him, on the occurrence of *Littorina littorea* on the coast of Nova Scotia (1863), and I fear that for some reason entire harmony could not have existed between him and the society. Vol. VII however contains a full account of his life, his writings, and a reprint of his rare list of Nova Scotian shells, a memorial to which I think he was justly entitled. (See Trans, vii., pp. 404-428.)

HENRY HOW, D. C. L., chemist, mineralogist and botanist. —Born at London, Eng., 11th July 1828, (son of Thomas How, whose wife was a Molyneux, whose ancestors had served in the old fort at Annapolis, N. S.); died at Windsor, N. S., Sunday, 28th September, 1879. He attended a private school in Beaconsfield and then studied chemistry at the Royal College of Chemistry, obtaining therefrom a certificate of proficiency. Prof. Hoffman, of that college, recommended him as assistant to the late Rt. Hon. Lord Playfair, F. R. S., then professor of chemistry at the College for Civil Engineers at Putney. His first paper, an analytical one, was read before the Chemical Society of London, and published in its Journal in 1846. He held his assistant professorship at Putney until he was appointed analytical chemist to the British Admiralty Steam Coal Enquiry, and in 1848-49 were published, as a British blue-book, his 'Analyses of Coals of Great Britain' with reports by Sir H. De la Beche and Dr. Lyon Playfair. Then he became assistant to Prof. Thomas Anderson of Edinburgh University, whom he accompanied in 1852 to Glasgow on the latter's appointment as Regius Professor of Chemistry in the University there, and was there for two years.

He came to Nova Scotia in 1854, being appointed fellow and professor of chemistry and natural history at King's College, Windsor, and about 1876, also vice-president of the

University and librarian. He filled the chair with untiring zeal and the most distinguished ability until his death, a period of some twenty-four years. His first paper on a Nova Scotian subject (natro-boro-calcite in gypsum) appeared in 1857 and was rapidly followed by very many others. In 1861 he was employed by the Provincial Commissioners of the Industrial Exhibition to make a collection of the minerals of the province for the Nova Scotian court at the London exhibition of the next year. This collection was awarded two medals, one in the class of mining and one in that of educational works and appliances. He prepared a report on the minerals, which however was not then published, but it subsequently appeared as a series of articles, entitled 'Notes on the Economic Geology of Nova Scotia,' in our Transactions (1864-69), and with a similar title in the 'London, Edinburgh and Dublin Philosophical Magazine' (1866-76). He also prepared for the Provincial Commissioners a second collection of our minerals for the Dublin Exhibition of 1865, which was awarded a medal; and another (of 240 specimens to which were added 84 specimens from the late Dr. Webster's collection), for the Paris International Exhibition of 1867, for which honorable mention was awarded. The latter fine collection was purchased by our government and incorporated in the Provincial Museum in 1868. To accompany and illustrate this set, he prepared a 'Sketch of the Mineralogy of Nova Scotia as illustrated by the Specimens sent to the Paris Exhibition,' for the official catalogue (1867). This was so much appreciated that it was decided to have him prepare a further report on the subject. Thereupon he published, by authority of the government, his chief work, 'The Mineralogy of Nova Scotia' (Halifax, 1869), a book which is still much used and relied upon for its fullness and accuracy. He discovered and named several new minerals found in this province, for example, mordenite, cryptomorphite, silicoborocalcite (which was superseded by Dana's name Howlite, in honor of him), and

winkworthite. The total number of new minerals found by him was said to have been fourteen. He was also a good botanist and prepared an herbarium of Nova Scotian plants for the Paris exhibition of 1867, which is now in the Provincial Museum. 'Every one who had come in contact with Dr. How,' says the King's College Record (Oct. 1879), had been struck with his honesty of purpose, his great love of science, his varied literary taste. From the moment he landed in this country, fresh from the wonderful laboratories of Europe and glowing with enthusiasm for the prosecution of his favorite studies, he had lived a life of obscurity, almost of seclusion. A few there were, and only a few, who had come to appreciate his talent as an analyst, his great learning as a chemist, his industry in fields of original research.' I may add that the last sentence is true as regards this province alone, for abroad his great ability was recognized fully. I think I am right in saying that he was the first notable chemist we had; he was most likely the best analytical chemist we have had. He was a successful experimenter and his researches, I understand, resulted in the discovery of certain acids, etc. Billings named in his honor, *Phillipsia howi*, one of the last representatives of the trilobites, discovered by How at Kennetcook, N. S., (Can. Naturalist, viii., 209); and Dawson in the preface to his Acadian Geology, and Dana in that to his Mineralogy, acknowledge indebtedness to him for valuable contributions. Furthermore he was a fine German, French and Latin scholar.

He was an original member of our Institute and contributed to its Transactions 10 papers (14 if we count the separate parts of one of them), almost entirely on mineralogy and botany. Had he lived in Halifax, he would certainly have become a president of the society which he assisted so much by his labours otherwise. He was an honorary D. C. L. of King's College (1861), corresponding member of the New York Lyceum of Natural History and of the Natural History

Society of Montreal, etc. He possessed testimonials from some of the most distinguished chemists of England and France, and he had been heard to say, and no doubt rightly, that he could have become a fellow of the Royal Society because of his original research work, if he had had the money to waste on such an honour. How's principal papers and books, in general chemistry, analytical chemistry, mineralogy and botany, number over 44 items, and appeared in the Journal of the Chemical Society (London), Transactions of the Royal Society of Edinburgh, the Edinburgh New Philosophical Journal, Silliman's Journal, the London, Edinburgh and Dublin Philosophical Magazine, the Canadian Naturalist, Chemical News, our own Transactions, and elsewhere. (See King's College Record, Windsor, October, 1879, with list of 44 of his writings; introduction to his mineralogy of N. S.; also private sources.)

ANDREW DOWNS, C. M. Z. S., ornithologist.—Born in New Brunswick, New Jersey, 27th September, 1811, son of Robert and Elizabeth Downs, of Scotch parentage; died at Halifax, 26th August, 1892. Settled at Halifax in 1825 and engaged in the plumbing business, but became deeply interested in birds and other animals, and their preservation and propagation, to which he finally devoted all his attention. He remembered seeing Audubon at Halifax on 27th August, 1833, and afterwards corresponded with him and other notable naturalists. From about May 1844 to May 1846, he was assistant curator of the Halifax Mechanics' Institute; and from then till about May 1847, was its curator. In 1847 he established at Dutch Village, near Halifax, the first zoological garden in America, sixteen years before the Central Park collection at New York was opened. This soon became very popular and was visited by persons of note who came to Halifax. In 1864 he visited Europe with specimens, alive and mounted, which he presented to the Zoological Gardens at London. In 1867 he was proposed as superintendent of the

Central Park menagerie, New York, under a recommendation from Prof. S. F. Baird, and the next year went there to assume the position, but displeased by what he considered to be an over-abrupt reception, declined the appointment and returned to Halifax. He then started a new zoological garden near his earlier one, which he maintained for about three years. A couple of years before his death, although of venerable age, he built a museum annex to his house in Halifax where he was surrounded by a large collection of native birds. Ornithology was his chief study, and his knowledge of our local birds was extensive, and would have been much greater had he made a practice of keeping notes. He gave freely of his information to others, and delighted in encouraging in young people the outdoor study of nature. As an taxidermist he possessed rare skill, being the best workman of this kind we have ever had in Nova Scotia, and receiving bronze medals at the London exhibitions of 1851 and 1862 and the Dublin exhibition of 1865, and a silver one at Paris in 1867. His Paris exhibit was praised by Sir Wyville Thomson in the *Illustrated London News*. He mounted some 800 moose-heads, and specimens of his work were supplied to various European sovereigns, and large quantities went to various museums. He was an original member of this Institute, although not taking up his membership till a year later, and served on the council. In 1862 he was elected a corresponding member of the Zoological Society of London. Owing to his great lack of literary training, he wrote very little, but his store of self-acquired knowledge was disseminated verbally or by letters, and others profited by it. Had he possessed more education and scientific training, I have no doubt the native genius of the man would have caused him to make a more notable record among our naturalists. Three papers by him appeared in our *Transactions*—his only published work. His 'Land Birds of Nova Scotia' (*Trans.*, I, 1865-66), was the first full list of the kind we have, with the exception of Lt. Blakis-

ton and Lt. Bland's shorter 'List of Birds of N. S.' (compiled by J. R. Willis) which appeared in the Smithsonian Report for 1858 (Wash., 1859, pp. 280-286), and which I suspect contained many of Downs's observations. (See sketch of his life by H. Piers, *Trans.* x., p. xii., with portrait; Chas. Hallock, 'First American Zoo', *Nature*, N. Y., vol. 1(1891?), pp. 130-131; Chas. Hallock, 'Andrew Downs, naturalist,' *Forest and Stream*, N. Y., vol. 53(1899), p. 184, with portrait, p. 182; Gen. Campbell Hardy, 'Reminiscences of a Nova Scotian Naturalist, Andrew Downs,' *Trans.* xii. p. xi.)

JOHN HUNTER DUVAR.—Born 29th August, 1830, of Scottish-English parentage; died in Prince Edward Island, (?) January, 1899. Educated in Scotland. It is as a litterateur and poet that Duvar has left a name in Canada. He contributed many papers on history, literature and art to various periodicals. As a poet he displayed good song quality in his briefer lyrics, and in 1879 published 'The Enamoranda' and 'De Roberval,' a Canadian drama, in 1888. In the latter years of his life he resided in Prince Edward Island, and was connected with the Dominion Department of Fisheries. He was one of the original members of the Institute and was for a time a member of its council until he left Halifax for Prince Edward Island about 1868, and published a couple of papers in the first volume of *Transactions*, but had no standing as a scientist. (Biographical notes, 'Songs of the Great Dominion').

JOHN BROOKIN YOUNG.—Born at Halifax, about 1835, eldest son of George Rennie Young and grandson of John Young ('Agricola'); lost in the 'City of Boston' which left Halifax on 25 Jan. 1870. Was a civil engineer and practised in Halifax where he lived all his life. He was an original member of the Institute and was its assistant, or joint secretary, from December, 1862 to October, 1864, but contributed nothing to its *Transactions*, and withdrew from the society sometime before 1865.

REV. JOHN MOCKET CRAMP, D. D.—Born at St. Peter's, England, 25th, July, 1796, son of Rev. Thomas Cramp, pastor of St. Peter's Baptist Church; died at Wolfville, N. S., 6th December, 1881. Was ordained in 1818, and from that year to 1825 was pastor of Dean St. Baptist Church, Southward; from 1827 to 1842 co-pastor with his father at St. Peter's; and from 1842 to 1844 was pastor at Hastings. In 1844 he came to Canada as principal of the Montreal Baptist College, Montreal, holding that position until 1851 when he was appointed president of Acadia College, Wolfville, N. S. From 1853 to 1855 he was principal of the Theological Institute, Acadia College, and from the latter year until 1869 was again president of Acadia. He was one of our original members, but contributed nothing to its Transactions although retaining his interest in its welfare.

COLONEL FRANCIS DUNCAN, R. A., C. B., M. P., LL. D., D. C. L.—Born 4th April, 1836; died, 1888. Graduated M. A. from Marischal College, Aberdeen and commissioned lieutenant in Royal Artillery, 24th September, 1855; served at Halifax and in Canada, 1857 to 1862; commissioned captain in 1864 and major in 1874. Was instructor in gunnery, School of Gunnery, Shoeburyness, 1877 to 1882. Became lieutenant-colonel in 1881, and was employed with the Egyptian Army from January, 1883, to November, 1885, taking an active part in the Soudan Expedition of 1884-5, commanded the artillery of the Egyptian army and employed on lines of communication and as commandant of Wady Halfa. Was mentioned in despatches, became a colonel in June 1885, received the Egyptian medal with clasp and made C. B. (1885). Was conservative member of parliament for Holborn division of Finsbury, 1885-6. Received the degree of LL.D from Aberdeen, and D. C. L. from Durham. Duncan, who was stationed at Halifax from 1857 to 1862 with Hardy, was among the names of the original members of the Institute of Natural Science, and deserves mention here only

on that account, as he seems to have then gone to Canada and could not take an active part in its proceedings, and most likely never took up his membership. (See. Dict. of Nat. Biog., Suppl. vol. ii., p. 166).

PIERCE STEVENS HAMILTON.—Born at Truro, N. S., 1826; died at Halifax, 22nd February, 1893. He matriculated at Acadia College, but did not graduate. Admitted an attorney in 1851 and a barrister in 1852, and practised at first at Truro, and afterwards at Halifax. Abandoned his profession to take up journalism, and edited the *Acadian Recorder* from 1853 to 1861. In 1863 was appointed the first God Commissioner of Nova Scotia and the next year his duties were extended and he became Chief Commissioner of Mines, holding office till about 1867. About 1871 he went to western Canada and re-entered journalism, but finally returned to Halifax where he died under somewhat distressing circumstances. He was elected a member of the Institute on 2nd March, 1863, served for a time in its council, and contributed three papers to its Transactions on geology and physical geography. He also published several pamphlets on other subjects. (See Morgan's *Bibliotheca Canadensis*; also *Acadian Recorder*, 22 Feb., 1893.)

WILLIAM CHAMBERLAIN SILVER.—Born at Preston, Halifax Co., Dec., 1814, son of William Nyan Silver, of Kentish extraction, who came to Nova Scotia in 1804; died at Halifax, 23rd February, 1903. Mr. Silver was a well known and philanthropic merchant of Halifax, the memory of whom is still fresh in our minds. While not at all an active worker in the field of science, he took an interest in it, and joined the Institute on 7th May, 1864. It is as a faithful officer of the society for the very long period of over thirty-five years, that he deserves notice here. He was elected its second treasurer, succeeding Capt. W. Lyttleton, on 9th October, 1867, and nominally retained the office (although in latter years deputing the work) till his death—the longest office term we

have had in the society. (See *Acadian Recorder*, Hfx., 24th February, 1903).

REV. DAVID HONEYMAN, D. C. L., F. G. S., F. R. S. C., geologist.—Born at Corbie Hill, Fifeshire, Scotland, in 1817; died at Halifax, 17th October, 1889. Educated at Dundee High School and the University of St. Andrews, where he devoted himself to the study of oriental languages and natural science. In 1836 he entered the United Secession Theological Hall, was licensed in 1841, and about 1846 came to Nova Scotia where he became professor of Hebrew in the Free Church College, Halifax, but resigned not long after. He subsequently took charge of the Presbyterian church at Antigonish, but as a preacher was not successful. All his spare time was given to the study of the geology of that district, the complicated formations of Arisaig having his special attention. After being a few years pastor at Antigonish, he resigned, although continuing to reside there until about 1868, and thereafter devoted himself to scientific work. He published his first paper, on the fossiliferous rocks of Arisaig, in the *Transactions of the N. S. Literary and Scientific Society* for 1859. He had charge of the Nova Scotian exhibits at the London International Exhibition of 1862, at the Dublin Exhibition of 1865, the Paris Exhibition of 1867, the Philadelphia Exhibition of 1876, and the London Fisheries Exhibition of 1883. For a short while in 1869 he was employed in Nova Scotia by the Geological Survey of Canada, for which he was fitted as a geologist, but had had no training as a topographer and draughtsman. J. R. Willis and he had, in 1865, presented a memorial to the government strongly advocating the establishment of a provincial museum, a matter which had come up four years previously, and the two memorialists became candidates for the position of curator. As a result of the agitation in various quarters, the Provincial Museum of Nova Scotia was founded about October, 1868, and Honeyman was placed in charge (at first, I believe, with-

out a salary), and he laboured at building up that institution until his sudden death in 1889. Honeyman joined the Institute of Natural Science on 3rd December, 1866, and in 1870 became a member of its council, and on 11th October, 1871, was elected honorary secretary (afterwards known as corresponding secretary), which position he held till his death, a period of eighteen years. He gave very much time and energy to the affairs of the society, which for a long period met in the museum, and succeeded Gossip as editor of the Transactions. His chief service to us, however, was the contribution to the Transactions of a very long series of papers, mostly on geological subjects, but latterly interspersed with some on marine zoology. Their number, no less than fifty-eight, makes him the most voluminous writer we have had. He also published a few papers elsewhere, and a small geological work called "Giants and Pigmies" (Halifax, 1887). He was a good geologist, probably the best the society has had among its ordinary members, although some of his conclusions came in for considerable criticism from certain quarters. His little tilts with Sir William Dawson will be recalled by our older members. It must be admitted, however, that his literary style lacked perspicuity and scientific precision and orderliness, which unfortunately has caused his reputation to suffer somewhat with those who only know him and his work by his writings. I have always felt that his writings do not do him the justice he deserves. His genial character we all remember well. He was a D. C. L. of King's College, Windsor, (1864), a fellow of the Geological Society of London (1862), an original fellow of the Royal Society of Canada (1882), a member of the Geological Society of France, honorary member of the Geologists' Association of London and of the Society of Science, Letters and Art (London), a corresponding member of the Society of Arts (London) and of the Horticultural Society (London), as well as an original member of the Geological Society of America, etc. He received the

Mantuan medal for scientific eminence, and various medals from the great exhibitions. (See Trans., vii., p. 313; obituary by MacGregor, Trans., vii., p. 320, with portrait.)

FREDERICK ALLISON, meteorologist.—Born at Halifax, 1835, son of Hon. Joseph Allison, (of north of Ireland descent); died at Halifax, 29th April, 1879. His family having moved to Windsor about 1845 or 1846, he entered King's College, in 1848, and received the degree of B. A. in 1851, and M. A. in 1865, later in life becoming one of the board of governors. He spent some years in the West Indies in a mercantile capacity, but afterwards returned to Halifax and later entered into the life insurance business and also became agent for the Collins estate. He married a daughter of Harry King of Windsor. In 1848 he began making observations on temperature at Windsor and on the death of Col. W. J. Myers, a private observor, in 1867, Allison took up the recording and publishing in the Institute's Transactions of careful meteorological observations made at his residence, South Park Street, Halifax, work which had previously been done by Myers. Later he joined with G. T. Kingston of the Toronto observatory, in urging upon the people and the government the need of a general meteorological service for the Dominion. This led to the establishment of such a department in 1871, and he was then appointed the first chief-meteorological agent for Nova Scotia, a position which he filled with ability and enthusiasm until his death, taking an interest in the progress of the service as he had in its inception. He was succeeded by his cousin and assistant, Augustus Allison. F. Allison joined the Institute in Feb., 1869, was Second Vice-President from October, 1874, to October 1878, and First Vice-President from then till his death. He was the chief contributor of meteorological papers to our Transactions (11 articles), and his carefully prepared annual summaries of our weather were looked forward to with interest. It is much to be regretted that these papers were not continued in our publications by

his successors. (See *Trans.*, v., p. 5; *Ann. Report. Meteor. Service of Canada*, for 1879, p. v.)

AUGUSTUS ALLISON, meteorologist.—Born at Halifax, 19 April, 1837, son of Jonathan Crane Allison of the firm of Fairbanks and Allison; died at Halifax, 11th January, 1904. He had been assistant to his second cousin, Frederick Allison, and on the latter's death in April, 1879, continued the meteorological observations until he was regularly appointed chief meteorological agent for Nova Scotia in August following, retaining that position till his death when he was succeeded by F. P. Ronnan. In business Mr. Allison was connected with the Confederation Life Association. He married Miss Cevilla Hill. He joined the Institute on the same date as his cousin, 15th February, 1869, but contributed but one paper to its *Transactions* (*Meteorological Register* for 1880), and lacked the enthusiasm in the work which characterized his relative.

HENRY YOULE HIND, M. A., D. C. L., F. R. G. S., geologist and explorer.—Born at Nottingham, England, 1st June, 1823; died at Windsor, N. S., 9th August, 1908. Dr. Hind was a geologist with a large and well-deserved reputation, but as his connection with this Institute was but very slight, the present notice will be brief. He was educated at Leipsic and Cambridge, came to Canada in 1846, and two years later became a master in the Provincial Normal School, Toronto, and subsequently professor of chemistry and geology in Trinity College in the same place until 1864. In 1857 he became geologist to the first Red River expedition, and next year director of the Assiniboine and Saskatchewan exploring expedition, and in 1861 made explorations in the regions about Labrador, while in 1864 he made a preliminary geological survey of New Brunswick. In 1866 he took up his residence in Windsor, where he died. His reports on the gold districts of Nova Scotia are well-known and valuable, and he contributed to the publications of the Royal Geographical Society, the Geological Society, Society of Arts, and many

other scientific journals; his writings altogether being most voluminous.* He was also a keen student of history, and in other respects a remarkable man. He joined the Institute in February, 1869, and read three geological papers before it, only one of which was published. The non-publication of his paper of January 1870, 'On the Laurentian Rocks', seems to have been about contemporary with his early withdrawal from the society, and may have had something to do with it. His third paper, presented in March, 1904, was withdrawn. (See Morgan's *Canadian Men and Women of the Time*, 1898).

REV. GEORGE PATTERSON, D. D., LL. D., F. R. S. C., archæologist.—Born at Pictou, N. S., 30th April, 1824, son of Abram Patterson; died at New Glasgow, 26th October, 1897. Was educated at Pictou Academy, Dalhousie College, and the United Presbyterian Theological Hall, Edinburgh, being ordained in 1849. Labored for twenty-seven years as a minister at Greenhill, Pictou Co., till 1879, when he went to New Glasgow. In 1843, at age of nineteen, he is said to have established and edited the 'Eastern Chronicle' newspaper, and in 1850 he began to publish and edit the 'Missionary Register of the Presbyterian Church of N. S.,' afterwards superseded by the 'Missionary Record'. Was chiefly notable as a historian and theological biographer, being an industrious and painstaking compiler of facts, and wrote a well-known 'History of Pictou County' (1877), 'Memoir of Rev. Dr. MacGregor' (1859), 'Life of Dr. Keir' (—), 'Memorials of Johnston and Mattheson' (1864), and 'Life of Rev. John Geddie' (1882). His scientific work was subsidiary to that relating to history. A full list of his papers down to 1894, will be found in the Transactions of the Royal Society of Canada for that year. He was not elected a member of this Institute until 12th March, 1878, and published in its Transactions three papers, one describing the collection of Indian stone implements which he presented to Dalhousie College, one of a geological character, and the last descriptive of the

*Hind's "Effect of Fishery Clauses of Treaty of Washington on Fisheries and Fishermen of B. N. A.," prepared for the Fishery Commission, Halifax, 1877, contains much compiled information regarding our fisheries.

Newfoundland dialect. Princeton conferred on him the degree of D. D. (about 1870), and Dalhousie that of L. L. D. (1896). In 1889 he was elected a fellow of the Royal Society of Canada. (See obituary by E. Gilpin, *Trans.* ix., p. xcv., with portrait; *Morgan's Canadian Men and Women of the Time*, 1898).

JOHN JAMES FOX.—Born at Salisbury, England, 1818; died at Montreal, September, 1899. He studied medicine, but preferring a sea-faring life, spent many adventurous years in Egypt, Greece, the West Indies and South America. In 1852 he was appointed by the British Government comptroller of customs and navigation laws at the Magdalen Islands, a position which he held for thirty years, and became familiarly known as the 'governor' of those islands. For services to ship-wrecked mariners, the United States President presented to him a watch valued at \$1,000. His great knowledge of the fisheries made him a valuable witness before the Halifax fisheries commission of 1877. After retiring about 1882 he moved to Halifax, where he resided for some years, and finally went to Montreal in about 1890. He was characterized by modesty, bravery and humanity. An anecdote is told of how he amputated a man's leg, when proper surgical aid was absent. He joined the Institute in May, 1882, was for six years a member of its council (October, 1884 to October 1890), seldom missed a meeting, and continued his membership till his death. One paper from his pen appeared in the *Transactions*, dealing with the currents of the Gulf of St. Lawrence and their danger to navigation (vol. vi., p. 302.) (See obituaries, *Trans.*, x., p. xxxvi., [A. McKay], and in *Halifax Herald*, 15th September, 1899).

ARTHUR PETERS SILVER, sportsman-naturalist.—Born at Halifax, 9th January, 1851, son of Wm. C. Silver (q. v.); died at same place, 14th February, 1908. Was educated at the Halifax Grammar School, Dalhousie College, and King's

College, Windsor, but did not, I believe, proceed to a degree. Became a partner in his father's dry-goods business in 1872, but retired in 1898, since when he devoted himself to farming at 'Riverbank', Preston, near Dartmouth, to sports, and literary pursuits. Was a keen lover of the rod and gun and became vice-president of the Game and Inland Fisheries Protection Society of N. S. Contributed many sporting sketches to 'The Badmington', 'Country Life', 'The Empire Review', 'World Wide', 'Chambers's Journal', etc. Also author of an interesting work entitled 'Farm, Cottage, Camp and Canoe in Maritime Canada' (1908) which appeared about the time of his death, and which should be read along with Hardy's 'Forest Life in Acadie'. He took a great interest in all that related to wild animal life, and was elected a member of the Institute in December, 1887, but retired about 1902. He published but one paper in our Transactions, a list of Nova Scotian Butterflies, a subject to which he had given considerable attention. (See Morgan's 'Canadian Men and Women of the Time,' 1912).

HUGH FLETCHER, B. A., geologist,—Born at London, England, 9th December, 1848, son of Hugh Rose Fletcher, a mining engineer of Scotch birth; died at Lower Cove, N. S., 23rd September, 1909. About 1858 he came to Montreal, a year after his father. In 1860 the family moved to the Bruce Mines in Lake Huron, and the fall of 1862, to Toronto. Educated at Toronto University, where he was a silver medallist in natural science, and otherwise distinguished himself. Became connected with the gold mines at Tangier, where his father was in charge. Joined the Geological Survey of Canada on 1st September, 1872, and took up work in the Sydney coal-field, and up to the time of his death, was employed in mapping and writing reports on the geology of Nova Scotia, having worked out in detail the structure of the Island of Cape Breton, and the counties of Guysborough, Antigonish, Pictou, Cumberland, Colchester, Hants, Kings and Annapolis.

He was the leading authority on our coal and iron deposits, and in fact knew more about our geology and mineral resource (excepting probably gold) than possibly any other man. His genial, kindly and extremely modest character was marked by every one who came in contact with him. His many maps and reports as well as other papers are a monument to his energy and display his great knowledge of a subject of which he had made a life-long study. He passed away in the midst of active work. He was elected a corresponding member of this Institute on 3rd March, 1891, and published three valuable papers in its later Transactions. (See The Nova Scotian, Mining Number, October, 1903, p. 59, with portrait; Journal of Mining Soc. of N. S. vol. xv., 1910, p. 131, with excellent portrait.)

The curious may be interested in considering the foregoing list in the light of origin, as indicated by birth-place:

	Presidents.	Other Members.	Total.
Nova Scotian.....	3	8	11
English.....	1	5	6
Scotch.....	1	2	3
Canadian and Newfoundland..	1	2	3
United States of America.....	1*	2†	3‡
Welsh.....	1	0	1
Irish.....	0	0	0
Total.....	8	19	27

* English parentage. † 1 Irish parentage. ‡ 1 Scotch parentage.

LIST OF OFFICERS, 1862 TO 1912.

<i>Presidents.</i>			
<i>Names.</i>	<i>Term of Office.</i>		<i>No. of years</i>
	<i>From</i>	<i>To</i>	
1. Hon. Philip Carteret Hill, D. C. L., Q. C.	31 Dec. 1862	26 Oct. 1863	1
2. John Matthew Jones, F. L. S., F. R. S. C.	26 Oct. 1863	8 Oct. 1873	10
3. John Bernard Gilpin, M. A., M. D., M. R. C. S.	8 Oct. 1873	9 Oct. 1878	5
4. William Gossip.	9 Oct. 1878	13 Oct. 1880	2
5. John Somers, M. D.	13 Oct. 1880	10 Oct. 1883	3
6. Robert Morrow.	10 Oct. 1883	5 Aug. 1885	2
7. John Somers, M. D.	21 Oct. 1885	10 Oct. 1888	3
8. Prof. James Gordon MacGregor, D. Sc., F. R. S., F. R. S. C.	10 Oct. 1888	9 Nov. 1891	3
9. Martin Murphy, C. E., D. Sc., I. S. O.	9 Nov. 1891	8 Nov. 1893	2
10. Prof. George Lawson, Ph. D., F. I. C., F. R. S. C.	8 Nov. 1893	10 Nov. 1895	2
11. Edwin Gilpin, Jr., LL. D., D. Sc., F. G. S., F. R. S. C., I. S. O.	18 Nov. 1895	8 Nov. 1897	2
12. Alexander McKay, M. A.	8 Nov. 1897	20 Nov. 1899	2
13. Alexander Howard MacKay, B. Sc., LL. D., F. R. S. C.	20 Nov. 1899	24 Nov. 1902	3
14. Henry Skeffington Poole, D. Sc., A. R. S. M., F. G. S., F. R. S. C.	24 Nov. 1902	18 Oct. 1905	3
15. Francis William Whitney Doane, C. E.	18 Oct. 1905	11 Nov. 1907	2
16. Prof. Ebenezer MacKay, Ph. D.	11 Nov. 1907	14 Nov. 1910	3
17. Watson Lenley Bishop.	14 Nov. 1910	11 Nov. 1912	2
18. Donald MacEachern Fergusson, F. C. S.	11 Nov. 1912		

NOTE—Since 1879 the presidents of the Institute have been *ex-officio* Fellows of the Royal Microscopical Society.

<i>First Vice-Presidents.</i>			
<i>Names.</i>	<i>Term of Office.</i>		<i>No. of Years.</i>
	<i>From</i>	<i>To</i>	
1. John Matthew Jones, F. L. S., F. R. S. C.	31 Dec. 1862	26 Oct. 1863	1
2. John Bernard Gilpin, M. D.	26 Oct. 1863	12 Oct. 1864	1
3. Capt. (now Maj. Gen.) Campbell Hardy, R. A.	12 Oct. 1864	9 Oct. 1867	3
4. John Bernard Gilpin, M. D.	9 Oct. 1867	12 Oct. 1870	3
5. George Lawson, Ph. D., LL. D.	12 Oct. 1870	9 Oct. 1872	2
6. John Bernard Gilpin, M. D.	9 Oct. 1872	8 Oct. 1873	1
7. John Matthew Jones, F. L. S., F. R. S. C.	8 Oct. 1873	14 Oct. 1874	1
8. William Gossip.	14 Oct. 1874	9 Oct. 1878	4
9. Frederick Allison.	9 Oct. 1878	29 April. 1879	½
10. John Somers, M. D.	11 Oct. 1879	13 Oct. 1880	1
11. Robert Morrow.	13 Oct. 1880	10 Oct. 1883	3
12. John Somers, M. D.	10 Oct. 1883	21 Oct. 1885	2
13. William Gossip.	21 Oct. 1885	12 Oct. 1887	2
14. Prof. James Gordon MacGregor, D. Sc., F. R. S.	12 Oct. 1887	10 Oct. 1888	1
15. Martin Murphy, C. E., D. Sc., I. S. O.	10 Oct. 1888	9 Nov. 1891	3
16. Henry Skeffington Poole, D. Sc., F. G. S.	9 Nov. 1891	21 Nov. 1892	1
17. Prof. George Lawson, Ph. D., LL. D.	21 Nov. 1892	8 Nov. 1893	1
18. Alexander Howard MacKay, LL. D., F. R. S. C.	8 Nov. 1893	12 Nov. 1894	1
19. Alexander McKay, M. A.	12 Nov. 1894	8 Nov. 1897	3
20. Alexander Howard MacKay, LL. D., F. R. S. C.	8 Nov. 1897	20 Nov. 1899	2
21. Francis William Whitney Doane, C. E.	20 Nov. 1899	18 Oct. 1905	6
22. Prof. Ebenezer MacKay, Ph. D.	18 Oct. 1905	11 Nov. 1907	2
23. Prof. Joseph Edmond Woodman, D. Sc.	11 Nov. 1907	8 Nov. 1909	2
24. Watson Lenley Bishop.	8 Nov. 1909	12 Dec. 1910	1
25. Donald MacEachern Fergusson, F. C. S.	12 Dec. 1910	13 Nov. 1911	1
26. Alexander Howard MacKay, LL. D., F. R. S. C.	13 Nov. 1911	8 Oct. 1913	2
27. Arthur Stanley MacKenzie, Ph. D., F. R. S. C.	8 Oct. 1913	21 Oct. 1914	1

LIST OF OFFICERS, 1862 TO 1912.

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	Name	Second Vice-Presidents.		Term of Office.		No. of Years.
				From	To	
1.	Robert Grant Haliburton, F. S. A.	31 Dec.	1862	26 Oct.	1863	1
2.	Capt. Campbell Hardy, R. A.	26 Oct.	1863	12 Oct.	1864	1
3.	John Bernard Gilpin, M. D.	12 Oct.	1864	9 Oct.	1867	3
4.	James Ratchford DeWolf	9 Oct.	1867	8 Nov.	1869	2
5.	Prof. George Lawson, PH. D., LL. D.	8 Nov.	1869	12 Oct.	1870	1
6.	John Bernard Gilpin, M. D.	12 Oct.	1870	9 Oct.	1872	2
7.	Prof. George Lawson, PH. D., LL. D.	9 Oct.	1872	8 Oct.	1873	1
8.	James Ratchford DeWolf, M. D.	8 Oct.	1873	14 Oct.	1874	1
9.	Frederick Allison	14 Oct.	1874	9 Oct.	1878	4
10.	Prof. George Lawson, PH. D., LL. D.	9 Oct.	1878	12 Oct.	1881	3
11.	Augustus Allison	12 Oct.	1881	11 Oct.	1882	1
12.	Martin Murphy	11 Oct.	1882	10 Oct.	1883	1
13.	William Gossip	10 Oct.	1883	8 Oct.	1884	1
14.	Prof. James Gordon MacGregor, D. SC.	8 Oct.	1884	12 Oct.	1887	3
15.	Alexander Howard MacKay, B. A.	12 Oct.	1887	8 Oct.	1890	3
16.	John Somers, M. D.	8 Oct.	1890	9 Nov.	1891	1
17.	Prof. George Lawson	9 Nov.	1891	21 Nov.	1892	1
18.	Henry Skeffington Poole, F. G. S.	21 Nov.	1892	8 Nov.	1893	1
19.	John Somers, M. D.	8 Nov.	1893	12 Nov.	1894	1
20.	Edwin Gilpin, Jr. LL. D.	12 Nov.	1894	18 Nov.	1895	1
21.	Alexander Howard MacKay, LL. D.	18 Nov.	1895	8 Nov.	1897	2
22.	Francis William Whitney Doane	8 Nov.	1897	20 Nov.	1899	2
23.	Henry Skeffington Poole, A. B. S. M., F. G. S.	20 Nov.	1899	24 Nov.	1902	3
24.	Prof. Ebenezer MacKay, PH. D.	24 Nov.	1902	18 Oct.	1905	3
25.	Prof. Joseph Edmond Woodman, D. SC.	18 Oct.	1905	11 Nov.	1907	2
26.	Watson Lenley Bishop	11 Nov.	1907	8 Nov.	1909	2
27.	Prof. Arthur Stanley MacKenzie, PH. D.	8 Nov.	1909	12 Dec.	1910	1
28.	Philip Albert Freeman	12 Dec.	1910	13 Nov.	1911	1
29.	Donald MacEachern Fergusson	13 Nov.	1911	11 Nov.	1912	1
30.	Prof. Howard Logan Bronson, PH. D.	11 Nov.	1912	8 Oct.	1913	1

Note—First and Second Vice-Presidents first so called in Oct., 1881.

	Name	Treasurers.		Term of Office		No. of Years.
				From	To	
1.	Captain Westcote Whitechurch Lyttleton	31 Dec.	1862	9 Oct.	1867	5
	John Matthew Jones, acting Treasurer	Sum.	1866	9 Oct.	1867	
2.	William Chamberlain Silver	9 Oct.	1867	23 Feb.	1903	35 ⁴ / ₁₂
3.	William McKerron (Appointed by Council)	9 Mar	1903	12 Nov.	1906	3 ⁹ / ₁₂
4.	Joseph Baker McCarthy, B. A., M. SC.	12 Nov.	1906	11 Nov.	1907	1
5.	Maynard Bowman, B. A.	11 Nov.	1907			

	Name	Corresponding Secretaries.		Term of Office		No. of Years.
				From	To	
1.	John Robert Willis	31 Dec.	1862	26 Oct.	1863	1
2.	William Gossip	26 Oct.	1863	11 Oct.	1871	8
3.	Rev. David Honeyman, D. C. L., F. G. S., F. R. S. C.	11 Oct.	1871	17 Oct.	1889	18
4.	Alexander Howard MacKay, LL. D., F. R. S. C.	8 Oct.	1890	8 Nov.	1892	2
5.	Prof. James Gordon MacGregor, D. SC., F. R. S.	8 Nov.	1892	9 Dec.	1901	9
6.	Prof. Ebenezer MacKay, PH. D.	9 Dec.	1901	24 Nov.	1902	1
7.	Alexander Howard MacKay, LL. D., F. R. S. C.	24 Nov.	1902	13 Nov.	1911	9
8.	Prof. Ebenezer MacKay, PH. D.	13 Nov.	1911			

Note—The official terms, Corresponding and Recording Secretaries, were first used in the By-Laws passed in Oct. 1884. Prior to that, these officers were called the First and Second Secretaries. Willis seems not to have acted, for the only minutes that are found of his, are those of 4 May, 1863, which are signed as "secretary *pro tem*".

PROCEEDINGS.

Recording Secretaries.

<i>Names</i>	<i>Term of Office</i>		<i>No. of Years.</i>
	<i>From</i>	<i>To</i>	
1. John Brookin Young.....	31 Dec. 1862	12 Oct. 1864	2
2. Alexander S. Finnie.....	12 Oct. 1864	9 Oct. 1865	1
(No Second Secretary).....	9 Oct. 1865	9 Oct. 1872	8
3. Angus Ross.....	9 Oct. 1872	13 Oct. 1875	3
4. John Thomas Mellish, M. A., D. C. L.....	13 Oct. 1875	12 Oct. 1881	6
5. Alexander MacKay, M. A.....	12 Oct. 1881	21 Oct. 1885	4
6. Simon Donald Macdonald, D. D. S.....	21 Oct. 1885	13 Oct. 1886	1
7. Alexander McKay, M. A.....	13 Oct. 1886	12 Nov. 1894	8
8. Harry Piers.....	12 Nov. 1894		

Note—The term Recording Secretary was first used in the By-Laws passed in Oct. 1834. Prior to that, this officer was called the Second Secretary. From Oct. 1865 to Oct. 1872, the duties of the Second Secretary were performed evidently by the First Secretary.

Librarians.

<i>Name</i>	<i>Term of Office.</i>		<i>No. of Years.</i>
	<i>From</i>	<i>To</i>	
1. Adoniram Judson Denton.....	21 Oct. 1885	9 Oct. 1889	4
Harry Piers, Asst. Librarian.....	2 Nov. 1888	Jan. 1890	
2. Maynard Bowman, B. A.....	9 Oct. 1889	24 Nov. 1902	13
3. Harry Piers.....	24 Nov. 1902		

Note—A "Curator of the Museum and Library" was first constituted by the By-Law adopted in Oct. 1885.