

Technical and Bibliographic Notes / Notes techniques et bibliographiques

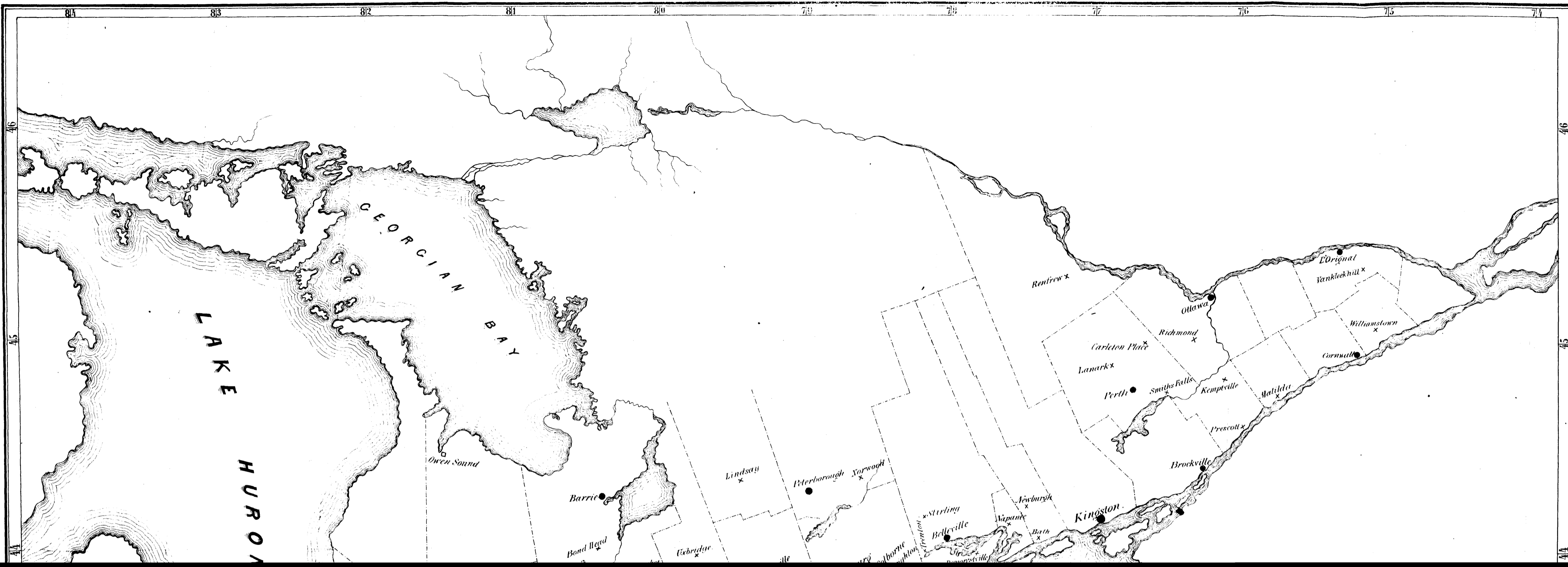
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The Canadian Journal.

TORONTO, DECEMBER, 1855.



CANADIAN INSTITUTE.

SESSION 1855-56.

First Ordinary Meeting—Saturday, December 1st, 1855.

The minutes of the previous meeting (Saturday, 7th July, 1855), having been read and confirmed, the following gentlemen, who had been provisionally elected members of the Institute by the Council during the recess, were duly elected:—

George Morphy	Toronto.
T. G. Ridout	"
W. C. Evans	Montreal.
Rev. J. G. Geddes	Hamilton.
Sir George Simpson	Lachine.
James Webster	Guelph.
W. M. Wilson	Simcoe.
James Crawford	Brockville.
William Kingsford	Toronto.
William Hodgins	Hamilton.
Colonel Baron de Rottenburg	Toronto.
Dr. F. Russell	"
Dr. A. Jukes	St. Catherines.
Charles Jones	Toronto.
Alexander Murray	Woodstock.
Captain Beecher, R.N.	London, England.
Hon. Robert Spence	Toronto.
Archibald Carlyle	Orillia.
John Wilson, M.P.P.	London, C.W.
S. F. Holcomb	Hamilton.
Romeo H. Stephens	Montreal.
Dr. Thomas Cowdry	Cobourg.
Rev. A. C. Geikie	Toronto.
William Hind	"
Geoffry B. Hall	Nanticoke.
William Mercer	Simcoe.
L. A. H. Latour	Montreal.
W. Coverton	Simcoe.
Professor Young	Toronto.
W. M. Matheson	"
Larratt W. Smith, D.C.L.	"
A. Sullivan	"
Thomas W. Lawford	London, C.W.
John McKinon	Ottawa.
John Patton	Toronto.
Professor Kingston	"
Moses H. Perley	St. John's, N.B.

VOL. III., No. 17, December, 1855

W. McMaster	Toronto.
Amos Hostwick	"
George Beatty	"
Andrew Russell	"
John Gibbs Ridout (jun. mem.)	"
Rev. W. McMurray, D.D.	Dundas.

Professor Croft read a Paper "On the Hydrate of Hydro-Sulphuric Acid."

Professor Wilson read a Paper "On Displacement and Extinction among the Primæval Races of Man."

Second Ordinary Meeting—Saturday, December 8th, 1855.

The names of the following candidates for membership were read:—

John W. Dawson, F.G.S.	Montreal.
Rev. W. A. Johnson	Toronto.
Rev. John Taylor	"
Arthur Carter (jun. mem.)	"
Donough O'Brien, do.	"

The nominations for the Office-bearers of the ensuing year were then made:—

	No of Nominations.		
President	One		
First Vice President	Five.	Corresponding Secretary. Two.	
Second Vice President	Five.	Librarian	Three.
Treasurer	Three.	Curator	Three.
Recording Secretary	Two.	Council	Thirty-eight.

The Indenture relating to the union of the Toronto Athenæum with the Canadian Institute, was read, submitted to the meeting, and approved of.

The following Donations were announced:—

From the Honourable P. B. de BLAQUIÈRE:

Journal of the Legislative Council, 1848.
Do. do. Vol. VIII., 2nd Session of Third Parliament, 1849, Part I.
Do. do. Vol. IX., Third Session of Third Parliament, 1850.
Do. French.
Appendices, No. I. & No. II., Vol. IX., do.
Journal of the Legislative Council, 1851.
Do. do. Vol. XI.
Legislative Council Sessional Papers, No. I., Vol. VIII., 2nd Session 3rd Parliament, 1849.
Do. French.
Do. No. II., French.
Do. No. III.
Canada Legislative Council Sessional Papers:—
No. 4, Vol. XI., 1st Sess. 4th Parl., 1852-3.
5, do. do.
6, do. do.
7, do. do.
8, do. do.
9, do. do.
Statutes of Canada, Vol. III., 1851.
Do. 1852-3, Part I.,
Do. 1852-3, 4th Parliament, 16th Victoria.
Do. 1854-5, Part I.
Do. do. " II.
Census of the Canadas, 1851-2, Vol. I.
Trade and Navigation, 1850.
Edicts et Ordonnances, Vol. II.
Total (half-bound Books.)
*Return Plank or Macadamized Roads, &c. 1851.
*Annual Report of Inspectors of Provincial Penitentiary.
*Reports of Commissioners on Discipline and Management of the Provincial Penitentiary.
*Reports of Commissioners on Public Works, 1850.
*Do. 1851.
*Summary of Proceedings of the Legislative Assembly, 1st Session, 5th Parliament, 1854.

Those marked thus (*) are Pamphlets.

- *Prize Essay, Alex. Morris.
- *Canada, by Hon. F. Hincks.
- *Reports 1st and 2nd, Inquiry into Public Income and Expenditure.
- *Report of Inquiry into Public Departments.
- *Political Catechism, in French.
- *Public Accounts for the year 1852.
- *Annual Report of the Post Master General, for the Year ending 5th of April, 1852.
- *Report of Commissioners of Public Works, 1851.
- *Report of Select Committee on Charges against the late Ministry, 1851.
- *Seigniorial Tenure, J. C. Tache.
- *Public Accounts, 1853.
- *Report on the Riot at Chalmers' Church.
- *Report on Accidents on Great Western Railway.
- *Second Report on Public Accounts, 1853.
- *Report on the Management of Public Lands.
- *Report on Agricultural Societies in Lower Canada.
- *Documents—Bureau of Agriculture.
- *Journal of the Transactions of the Board of Agriculture of Upper Canada, No. II., Vol. I.
- *Do., No. III., Vol. I.
- *Roman Catholic Bishop of Toronto, &c., on Separate Common Schools.
- *Seven Letters on the Common School System.
- *Correspondence on Separate Schools.
- *Annual Report of the Normal, Model, and Common Schools, Upper Canada, 1851.
- *Do., 1853.
- *Report on Ice-Bridge at Quebec.
- *Heat and Ventilation, &c.
- *Philosophie des Chemins de Fer.
- *Report on the St. Lawrence and Ottawa Junction Railway.
- *Report on Organizing the Militia.
- *The Upper Canada Journal.
- *Report on Cause of Fire in Parliament Buildings, 1854.
- *Report on North Shore Railway.
- *Report on Admiralty Tariff of Fees.
- *Return—Contracts to the Junction Canal.
 - “ Schools in the Ottawa District.
 - “ connected with the Grand Trunk Railroad.
 - “ Montreal Harbour.
- *Papers—Late Welland Canal Company.
- *Statement of Expenditure of £30,000 in aid of Settling Vacant Lands in Lower Canada.
- *County Lotbinero Election Committee.
- *Report—Catalogue of Books in Library of Legislative Assembly.
- *Orders of the Court of Chancery.
- *Despatches—referring to Seigniorial Tenure in Lower Canada.
- *Estimate of Expenses of Civil Government, 1853.
- *Loose Sheets—The Statutes of Canada.
- *Logan's Geological Survey—Report of Progress, 1848-49.
- *Do. 1850-51.
- *Do. 1851-52.

From the Rev. W. AGAR ADAMSON, D.C.L.:—

- Minutes of the Committee of Council on Education, with Appendices and Plans of School Houses, 1845. Vol. II.
- Do. do. do. England and Wales,
- Schools of Parochial Unions, 1847-8-9
- Do. do. 1848-9, Correspondence, &c.
- Do. do. Correspondence, Tabulated Statements of Grants &c., 1848-49-50, Vol. I.
- Do. do. Vol. II.
- Do. do. Financial Statements, &c., and Reports by Her Majesty's Inspectors of Schools, 1850-51.
- Do. do. Schools of Parochial Unions in England and Wales, &c., 1850-51-52.
- Do. do. Correspondence, &c., 1851-2.
- Do. do. do. 1852-3.

From Lieut.-Col. J. H. LEFROY, R.A.:—

- Italian Irrigation, by Capt. R. Baird Smith, F.R.S., Vols. I. & II.
- Magnetical and Meteorological Observations made at Lake Athabasca, &c., by Capt. J. H. Lefroy, R.A.

From the Hon. J. M. BRODHEAD, of Washington, through A. H. Armour, Toronto:—
 Patent Office Reports, 1854, Agriculture.

United States Coast Survey, 1854. Report of the Superintendent. Explorations and Surveys for a Railroad from the Mississippi River to the Pacific Ocean.

The thanks of the Institute were ordered to be transmitted to the donors for their valuable donations.

A Paper was read by Professor Chapman, “On a Convenient Method of Indicating in Crystal Combinations the Relative Positions and Degrees of Development of the Included Forms.”

Annual General Meeting, Saturday, December 15th, 1855.

The Annual Report was read and adopted.

ANNUAL REPORT OF THE COUNCIL, 1855.

The Council of the Canadian Institute have the honour to submit to the Members, the following Report of the operations of the past Session, and of the proceedings adopted by the Council with a view to the still more effective furtherance of the objects for which the Institute has been founded.

The Council have much satisfaction in reporting, that the progress of the Institute, as indicated by the number of its members, continues to furnish gratifying evidence of the increasing hold it is acquiring on the Province. Last year the Council drew attention to the fact that the members—who numbered only 112 at the close of 1851, the first year of incorporation—had increased, in all, to 333, and since then we have to report a further addition of 104 members, which, after deducting eighteen, resigned or deceased, make the present number of members constituting the Canadian Institute, 419, exclusive of those of the Athenæum.

In the last Annual Report, the Council referred to the anticipated amalgamation of the Athenæum with the Canadian Institute. This highly desirable union has since been happily completed. A permissive Act, giving the Athenæum full power to effect a junction with the Institute, was passed during the last Session of the Provincial Parliament, and since then the requisite deeds have been executed, and the valuable Library and Collection of Minerals have been transferred to the Canadian Institute. The importance of the addition thus acquired to the Library can scarcely be too highly estimated, as it consists, in all, of 800 volumes, including the Transactions of various of the leading Scientific and Literary Societies of Great Britain, as well as other works of a strictly scientific character. The Council recommend to their successors the duty of completing and continuing the valuable serial publications thus acquired; and of cultivating that intercourse with the Scientific Societies not only of Britain, but of Europe, which may secure an interchange of a class of publications so beneficial to the Institute.

The Minerals added to the Museum, in consequence of this amalgamation, it is believed will also prove a valuable addition to the collections of the Institute; but the difficulties attendant on their removal, and the very brief period that has elapsed since the completion of the requisite legal deeds for effecting the union with the Athenæum, have prevented a minute examination of them; and the Council would suggest the appointment of a small Committee, to superintend their classification, and to report on their nature and value.

The duty will devolve on the new Council to adopt means for carrying out, in the most liberal spirit, the conditions annexed to the acquisition of the Library of the Athenæum, whereby the Institute becomes bound to afford the public free access to the joint Library, under such restrictions as may be found requisite for its safety. In thus establishing a Library

of Reference, specially designed to afford facilities for scientific and literary research, the Council feel assured that the members will hail it as an additional step in furtherance of the objects of the Institute, rather than as a condition detracting in any degree from the value of the increase made to the collections.

The Council avail themselves of this opportunity to record the obligations under which they, as well as all the members of the Institute, are laid to Oliver Mowat, Esq., one of their number, by whom all the requisite legal deeds, for effecting the union of the Athenæum with the Canadian Institute, have been gratuitously prepared and executed.

The additions made to the Library, by purchase, during the past year, include some works of value, among which the Council have been indebted to Lieutenant-Colonel Lefroy's good services, for enabling them to acquire seventeen volumes of the Philosophical Transactions, wanted to complete the Library set. But the Council have been induced to curtail their expenditure, in this and other respects, in anticipation of the inevitable outlay attendant on the resumption by the Government of the rooms provided for the use of the Institute in Government House.

The following List comprises the additions which have been made to the Library, by purchase, during the past year:—

Books Purchased for the Library.

Hand Book of Chemistry, by Leopold Gmelin, Professor of Chemistry in the University of Heidelberg, &c., &c., Vols. 1 to 8.....	8
Physiological Chemistry, by Prof. C. G. Lehman, translated by George E. Day, M.D., F.R.S., Vols. 1 & 2.....	2
Life of the Hon. Henry Cavendish, including abstracts of his more important scientific Papers, and a critical inquiry into the claims of all alleged discoveries of the composition of Water, by George Wilson, M.D., F.R.S.E., Lecturer on Chemistry, Edinburgh.....	1
Elements of Chemical and Physical Geology, by Gustav Bischof, Ph. D., Prof. of Chemistry and Technology in the University of Bonn; translated from the manuscript of the author by Benjamin H. Paul, F.C.S., & J. Drummond, M.D., Vol. 1.....	1
Life of John Dalton, by Wm. C. Henry, M.D., F.R.S.....	1
The Planetary System, its Order and Physical Structure, by J. P. Nicholl, LL.D., Prof. of Astronomy in the University of Glasgow, &c.....	1
Encyclopadia Metropolitana, or System of Universal Knowledge. Third edition enlarged; second division applied sciences: Photography.....	1
Atlas of Physiological Chemistry, consisting of microscopic Figures, by Dr. Otto Funke, a Supplement to Lehman's Physiological Chemistry.....	1
A Pamphlet accompanying do., by the same author.....	1
Report of Sixth Anniversary Meeting of the Cavendish Soc. London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science, January, 1855.....	1
February, ".....	1
March, ".....	1
April, ".....	1
May, ".....	1
June, ".....	1
The Ethnological Journal—a Magazine of Ethnographical and Antiquarian Science. Edited by Luke Burke, Esq. New series, published quarterly.—No. 1, Jan., 1854.....	1
Philosophical Transactions for the years 1817-18-21-22-23-24-25, two Vols.—26, two Vols.—27-28-29-30-31-32 and 33—total Vols.....	17

The following books have been bound, and added to the Library, from the Periodicals received during previous years:

Journal of the Franklin Institute, 1851.....	2	
" " " " 1852.....	2	
Athenæum, 1840.....	1	} Gift from Lt. Col. Lefroy.
" " " " 1841.....	1	

Athenæum, 1851.....	1
" " " " 1853.....	1
Transactions of the Board of Agriculture of Upper Canada, 1853.....	1
Journal of Education, Upper Canada, 1853.....	1
The Artizan, 1851.....	1
" " " " 1852.....	1
" " " " 1853.....	1
London Quarterly Review, 1852.....	1
" " " " 1853.....	1
North British Review, 1852-3.....	1
Westminster, " 1852.....	1
Edinburgh, " 1852.....	1
" " " " 1853.....	1
Blackwood, July to December, 1852.....	1
Civil Engineer and Architect's Journal, 1852.....	1
Anglo American, Vol. II. }.....	4
" " " " III. }.....	
" " " " IV. }.....	
" " " " V. }.....	
Appleton's Mechanics' Magazine, 1851.....	1
" " " " 1852.....	1
" " " " 1853.....	1
Art Journal, 1853.....	1
" " " " 1854.....	2
Blackwood's Magazine, 1854.....	1
Westminster, 1851.....	1
London Quarterly, 1854.....	1
Edinburgh Review, 1854.....	1
Illustrated London News, 1853.....	2
" " " " 1854.....	2
Journal of the Franklin Institute, 1853.....	2
" " " " Society of Arts, London, 1852-3.....	1
Civil Engineer and Architects' Journal, 1853, Vol. XVI.....	1
Journal of Education, 1854.....	1

The Council have great pleasure in acknowledging the liberality with which contributions continue to be made to the Library; and they feel assured that nothing is wanted but a permanent building, with suitable accommodation for the adequate display of the collections, to secure for the Institute a Library and Museum, alike creditable to itself, and of practical benefit in advancing the cause of science in the Province. The following are the donations which have been received since last report:—

Donations to the Library.

The Geology of the Island of Arran, by A. C. Ramsay.....	1	} A. H. Armour.
Handbook for Field Service, edited by Captain Lefroy, Royal Artillery.....	1	
*Report of the Comrs. of Public Works for the years 1853 and 1855.....	1	} Capt. Lefroy.
*Return relating to Judicial Officers in L. Ca.....	1	
*Titles & Documents relating to the Seigniorial Tenure, in return to an address of the Legislative Assembly, 1851.....	1	} Hon. W. B. Robinson.
*Edicts, Ordinances, Declarations, and Decrees relative to the Seigniorial Tenure, required by an address of the Legis Assem., 1851.....	1	
*Relation abrégée de quelques Missions des Pères de la Comp. de Jesus dans la Nouvelle France.....	1	
Transactions of the Literary and Historical Society of Quebec, Vols. I. & II.....	2	} A. E. Meredith.
Annual Report of the Normal, Model, and Grammar Schools in U.C., year 1853.....	1	

From Mr. Bohn, per A. H. Armour:—

Cowper's Works, Vol. IV.....	1	} Stand. Library.
" " " " Vols. V. & VI.....	2	
Hungary, its History and Revolutions.....	1	
History of Russia from the earliest Period... 1	1	
Locke's Philosophical Works, Vol. II.....	1	

Those marked thus (*) are Pamphlets.

Journal of the Royal Geographical Society, with Maps and Illustrations, Vol. 24, 1851.....	1	From the Societies.	Journal of the Legislative Council, 1848.....	1	Hon. P. de Blaquière.
Quarterly Journal of the Royal Geographical Society, Vol. XI., Part 2, No. 42, May, 1855....	1		Do. do. Vol. VIII., 2nd Session of Third Parliament, 1849, Part I.	2	
Map of the Province of Canada and the Lower Colonies, showing the Connection by Steam Navigation with the United States and with Britain, by the Route of the Great Salt Lakes, &c., prepared for Commissioners of Paris Exhibition, by Thomas Keefer, C. E.	1	Author, per Dr. Chewett.	Do. do. Vol. IX., Third Session of Third Parliament, 1850.....	1	Hon. P. de Blaquière.
Mercator's Projection, &c., by the same author, for the Commissioners.....	1		Do. French	1	
Report of a Geological Survey of Wisconsin, Iowa, and Minnesota, and incidentally of a portion of Nebraska Territory, made by instructions from the United States Treasury Department, by David Dale Owen, United States Geologist.....	1	Hon. J. M. Brodhead.	Appendices. No. I. & No. II., Vol. IX., 1850... 2	1	Hon. P. de Blaquière.
Illustrations of ditto	1		Journal of the Legislative Council, 1851.....		
*Report of the Niagara Railway Suspension Bridge.....	1	J. M. Street.	Do. do. Vol. XI.....	1	Hon. P. de Blaquière.
*Report of the Proceedings of Select Committee on Charges against the late Administration..	1		Do. do. Vol. XI.....	1	
*T. C. Tache's Report on Canada, for the Commissioners of Paris Exhibition.....	1	From Department, Quebec.	Legislative Council Sessional Papers, No. I., Vol. VIII., 2nd Session 3rd Parliament, 1849. 1	1	Hon. P. de Blaquière.
*Return for Copies of Documents relative to the Construction of Lighthouses and Piers below Quebec, and relating to Tenders and Contract for Tug Boats plying on the St. Lawrence below Quebec.....	1		Do. French		
*The American Journal of Insanity, Vol. XII., No. 2.....	1	Exchange.	Do., No. II., French	2	Hon. P. de Blaquière.
*Recherches Sur Les Eaux Minérales du Canada, par M. T. Sterry Hunt, de la Commission Géologique du Canada.....	3		Canada Legislative Council Sessional Papers:—	1	
Journal and Transactions of the Board of Agriculture of Upper Canada, No. 3, Vol. I., Oct. 1855	2	Board.	No. 4, Vol. XI., 1st Sess. 4th Parl., 1852-3. 1	1	Hon. P. de Blaquière.
A Descriptive Catalogue of the London Trades Tavern and Coffee House Tokens, Current in the 17th century, presented to the London, England, Corporation Library, by Henry Buy Hanbury Beaufoy.....	1		5, do. do.....		
Documents relating to the Colonial History of the State of New York, Paris Documents, 1631-1744, Vol. IX.....	1	From the Corporation Library, London, England, per A. H. Armour.	6, do. do.....	1	Hon. P. de Blaquière.
Italian Navigation—Report on the Agricultural Canals of Piedmont and Lombardy, addressed to the Hon. E. I. Com., by Capt. R. Baird Smith, F.G.S., &c. Vols. 1 and 2	2		7, do. do. 2	1	
Patent Office Reports, 1854, Agriculture.	1	Hon. J. M. Brodhead, per A. H. Armour.	8, do. do.....	1	Hon. P. de Blaquière.
Minutes of the Committee of Council on Education, with Appendices and Plans of School Houses, 1839-40	1		9, do. do.....	1	
Do. do. 1841, Vol. I. 1	1	Rev. W. Agar Adamson, D.C.L.	Statutes of Canada, Vol. III., 1851	2	Hon. P. de Blaquière.
Do. do. 1845, Vol. I. 1	1		Do. 1852-3, Part I.,	1	
Minutes of the Committee of Council on Education, with Appendices and Plans of School Houses, 1845.....	1	Rev. W. Agar Adamson, D.C.L.	Do. 1852-3, 4th Parliament, 16th Victoria.....	1	Hon. P. de Blaquière.
Do. do. England and Wales, 1	1		Do. 1851-5, Part I.....	3	
Do. do. Schools of Parochial Unions, 1847-8-9	1	From Lieut.-Col. Lefroy, R.A.	Do. do. " II.....	3	Hon. P. de Blaquière.
Do. do. 1848-9, Correspondence, &c. Do. do. Correspondence, Tabulated Statements of Grants, &c., 1848-49-50, Vol. I. 1	1		Regents of the University, State of New York.	1	
Do. do. do. do. Vol. II. 1	1	Hon. J. M. Brodhead, per A. H. Armour.	Census of the Canadas, 1851-2, Vol. I.	1	Hon. P. de Blaquière.
Do. do. do. do. Vol. II. 1	1		Trade and Navigation, 1850	1	
Do. do. Financial Statements, &c., and Reports by Her Majesty's Inspectors of Schools, 1850-51	1	Hon. J. M. Brodhead, per A. H. Armour.	Edicts et Ordonnances, Vol. II.	1	Hon. P. de Blaquière.
Do. do. Schools of Parochial Unions in England and Wales, &c., 1850-51-52	1		Total (half-bound Books).....	34	
Do. do. Correspondence, &c. 1851-2. 1	1	Rev. W. Agar Adamson, D.C.L.	*Return Plank or Macadamized Road, &c. 185 1	1	Hon. P. de Blaquière.
Do. do. do. 1852-3. 1	1		*Annual Report of Inspectors of Provincial Penitentiary		
Total.....	12		*Reports of Commissioners on Discipline and Management of the Provincial Penitentiary. 1	1	Hon. P. de Blaquière.
			*Reports of Commissioners on Public Works, 1850		
			*Do. 1851	1	Hon. P. de Blaquière.
			*Summary of Proceedings of the Legislative Assembly, 1st Session, 5th Parliament, 1854	1	
			*Prize Essay. Alex. Morris.....	1	Hon. P. de Blaquière.
			*Canada, by Hon. F. Hincks	1	
			*Reports 1st and 2nd, Inquiry into Public Income and Expenditure	1	Hon. P. de Blaquière.
			*Report of Inquiry into Public Departments ... 1	1	
			*Political Catechism, in French		1
			*Public Accounts for the year 1852	1	
			*Annual Report of the Post Master General, for the Year ending 5th of April, 1852	1	Hon. P. de Blaquière.
			*Report Commissioners of Public Works, 1851. 1	1	
			*Report of Select Committee on Charges against the late Ministry, 1854		1
			*Seignorial Tenure, J. C. Tache.....	1	
			*Public Accounts, 1853	1	Hon. P. de Blaquière.
			*Report on the Riot at Chalmers' Church.....	1	
			*Report on Accidents on Great Western Railway. 1	1	Hon. P. de Blaquière.
			*Second Report on Public Accounts, 1853		
			*Report on the Management of Public Lands ... 1	1	Hon. P. de Blaquière.
			*Report on Agricultural Societies in L. Canada. 1		
			*Documents—Bureau of Agriculture.....	1	Hon. P. de Blaquière.
			*Journal of the Transactions of the Board of Agriculture of Upper Canada, No. II., Vol. I. ... 1	1	
			*Do. No. III., Vol. I.		1
			*Roman Catholic Bishop of Toronto, &c., on Separate Common Schools	1	
			*Seven Letters on the Common School System... 1	1	Hon. P. de Blaquière.
			*Correspondence on Separate Schools		
			*Annual Report of the Normal, Model and Common Schools, Upper Canada, 1851	1	Hon. P. de Blaquière.
			*Do. 1853	1	
			*Report on Ice Bridge at Quebec	1	Hon. P. de Blaquière.
			*Heat and Ventilation, &c.....	1	
			*Philosophie des Chemins de Fer	1	Hon. P. de Blaquière.
			*Report on the St. Lawrence and Ottawa Junction Railway.....	1	
			*Report on organizing the Militia.....	1	Hon. P. de Blaquière.
				1	

*The Upper Canada Journal	1	
*Report on Cause of Fire in Parliament Buildings, 1854	1	
*Report on North Shore Railway	1	
*Report on Admiralty Tariff of Fees	1	
*Return—Contracts to the Junction Canal	1	
" Schools in the Ottawa District	2	
" connected with Grand Trunk Railroad	1	
" Montreal Harbour	1	
*Papers—Late Welland Canal Company	1	
*Statement of Expenditure of £30,000 in aid of Settling Vacant Lands in Lower Canada	3	Hon. P. de Blaquière.
*County Lotbiniere Election Committee	1	
*Report—Catalogue of Books in Library of the Legislative Assembly	1	
*Orders of the Court of Chancery	2	
*Dispatches—referring to Seigneurial Tenure in Lower Canada	1	
*Estimate of Expenses of Civil Government, 1853	1	
*Loose Sheets—The Statutes of Canada	1	
*Logan's Geological Survey—Report of Progress, 1848-49	1	
*Do. 1850-51	1	
*Do. 1851-52	1	
	58	

The above list of donations, it will be observed, includes no additions to the Museum. This, there can be little doubt, is mainly ascribable to the want of any adequate means for the classification or display of the objects acquired for this purpose; and it is with sincere satisfaction that the Council anticipate the speedy possession by the Institute of a Hall for its Museum, wherein may be accumulated illustrations of every branch of science, and of the historical antiquities and ethnological relics specially pertaining to the aboriginal races of Canada and the New World.

The following papers have been read at the ordinary meetings of the Institute, during the session 1854-5:—

Communications.

- H. COWING, Esq.—"Description of a new Steam Plough and Portable Steam Engine for general purposes," with illustrative plans. 2nd Dec., 1854.
- Prof. BOVELL, M.D.—"On some specimens of Infusoria obtained from Rice Lake and the River Humber,—and on an interesting specimen of *Plumatella* found in Rice Lake." 16th Dec., 1854.
- Prof. BOVELL, M.D.—"Remarks on the Respiratory Organs of the Lobster,—and on some peculiarities of the Intestinal Canal of the Bear;" illustrated by prepared specimens. 16th Dec., 1854.
- Prof. WILSON, LL.D.—"On some Conchological Relics of the Red Indians of Western Canada, illustrated by specimens of shells and other relics taken from Indian Mounds near Lake Huron." 6th Jan., 1855.
- Professors IRVING and CHERRIMAN—"On the Eclipse of May 26th, 1854." 13th Jan., 1855.
- Prof. CHAPMAN—"Some observations on Carbonate of Lime as an igneous product." 13th Jan., 1855.
- Prof. CHAPMAN—"On the object of the Salt condition of the Sea." 20th Jan., 1855.
- Prof. CHERRIMAN, M.A.—"On the Meteorological results of 1854." 20th January, 1855.
- Prof. BOVELL, M.D.—"On the transfusion of Milk, as practised in the Cholera Sheds at Toronto in 1854." 27th Jan., 1855.
- Prof. WILSON, LL.D.—"On traces of the use of Movable Types, and imprinting with Coloured Pigments, amongst the Romans of the Second and Third Centuries." 27th Jan., 1855.
- Major LACHLAN—"An account of an extraordinary Sudden Fall in the Waters of the Niagara River, in March 1848, caused by a temporary obstruction of the outlet of Lake Erie by Ice." 3rd February, 1855.
- Prof. HIND, M.A.—"A Practical Illustration of a mode of Manufacturing Gun Cotton." 3rd February, 1855.
- Tnos. HENNING, Esq.—"On the Asteroids," 10th February, 1855.
- Professor BOVELL, M.D.—"Some Observations on Microscopic Pre-

parations of Chalk, from Barbadoes, containing Fossil Infusoria." 10th February, 1855.

SANFORD FLEMING, Esq., C.E.—"Explanation and Mode of Use of Sang's Platometer." 17th February, 1855.

Professor WILSON, LL.D.—"On Some Physical Elements of Ethnological Classification, and their Bearing on the Question of the Unity of the Human Race." 17th February, 1855.

Professor HIND, M.A.—"On the North American Drift." 24th February, 1855.

Rev. Professor HINCKS—"On the Classification of Birds." 3rd March, 1855.

Professor CROFT, D.C.L.—"Results of Analyses of some Spurious Mexican Coinage." 10th March, 1855.

Rev. W. BLEASDELL, M.A.—"On the Indian Tribes of Canada." 10th March, 1855.

Major LACHLAN—"On the Union of Lakes Erie and St. Clair." 17th March, 1855.

T. C. CLARKE, Esq., C.E.—"On Railway Truss Bridges." 17th March, 1855.

Professor CROFT, D.C.L.—"Remarks on a Specimen of Bitumen from the Western District." 17th March, 1855.

Professor CHAPMAN—"Description of a Convenient Method of Tabulating the Organic Remains found in various Strata." 17th March, 1855.

Professor HIND, M.A.—"On the Origin of the Basins of the Great American Lakes." 24th March, 1855.

F. W. CUMBERLAND, Esq., C.E.—"Notes of a Visit to the Works of the Toronto and Guelph Railroad." 31st March, 1855.

PAUL KANE, Esq.—"On the Habits and Customs of the Chinoek Indians." 31st March, 1855.

Prof. CHAPMAN—"Additional Notes on the Saltiness of the Sea, being the substance of a communication to Lieut. Maury, U.S. Navy, Superintendent of the Washington Observatory, arising out of a Correspondence on Prof. Chapman's paper published in the March No. of the *Canadian Journal*." 13th April, 1855.

Prof. CHAPMAN—"Further Views and Authorities in support of observations on an example of igneous origin of Carbonate of Lime." 14th April, 1855.

ANNEX HOOB, Esq.—"Description of a new Astronomical and Surveying Instrument." 14th April, 1855.

T. C. CLARKE, Esq., C.E.—"On the Action of the Ice upon the Railway Bridge at Rice Lake." 21st April, 1855.

Prof. HIND, M.A.—"On the occurrence of Crystallized Carbonate of Lime in the Native Copper of Lake Superior." 21st April, 1855.

SANFORD FLEMING, Esq., C.E.—"Notes on the Welland Canal." 21st April, 1855.

While the Council believe that the above list includes some original papers not less creditable to the Institute than any that have been produced in former years, they feel precluded from any special notice of them, owing to the unusually large share that the members of Council have had to take in this department of the ordinary proceedings. The foregoing list, it will be seen, includes 33 papers, of which the very large proportion of 24 have been contributed exclusively by members of Council. This is a state of things which they feel it to be their duty specially to bring under the notice of the members at large. So numerous a body as the Institute now is, ought to include a much greater number of working members; and the Council are led to believe that their apparent supineness arises, in part at least, from the mistaken idea that communications can only be made in the form of elaborate essays. They would strongly urge on their successors, and on the members at large, the encouragement of brief communications, in greater number, as at once more calculated to give general interest to the ordinary meetings, and to elicit such results of personal knowledge and observation as are best calculated to add to the true value of the published proceedings. Short notices of natural phenomena, features of local geology, objects of natural history, and the like subjects, derived from personal observation, must be readily producible by many members who have

hitherto borne no active part in the Society's proceedings, but whose contributions would most effectually promote the objects which it is designed to accomplish. Among the papers communicated during the past year, the Council have pleasure in referring to three on engineering works of the province, which were appreciated by the members as acceptable contributions to a department to which previous reports have referred, only to express regret at its neglect.

The anticipated resumption for public use, of the apartments occupied by the Institute in the Government House, consequent on the removal of the seat of government to Toronto—to which attention was specially directed in the last Annual Report,—led the Council to devise plans for preventing the best interests of the Institute being affected thereby. The results of these are already known to the members. Temporary rooms, in a convenient locality, have been secured on advantageous terms, and are now occupied, and in use for the regular weekly meetings. The munificent gift by George William Allan, Esq., one of the Vice-Presidents, of a valuable site in Pembroke-street, whereon to erect a permanent Hall for the Institute, was acknowledged in the report of last year; and a general meeting, called for the purpose, authorized the Council to accept the gift, and to take all requisite steps for the erection of a suitable building.

In furtherance of this, two successive grants of £500 each have been made by the Legislature, and an appeal by the Council to the members generally has already been so far responded to, that the Council have to acknowledge a subscription list, which though as yet only including the names of sixty-eight members, out of more than four hundred, amounts to the sum of £716 10s. F. W. Cumberland, Esq., having further liberally offered his valuable services as architect, immediate steps were taken for commencing the permanent building, and on the 13th of November, His Excellency the Governor General was graciously pleased to lay the foundation stone, in the presence of the Council and a large body of the members.

On the evening of the same day, the members of the Institute assembled, by invitation, to a *Conversazione* at Moss Park, the residence of G. W. Allan, Esq., Vice-President, when His Excellency the Governor General again honoured them with his presence. An interesting collection of objects of natural history and works of art was provided for inspection. Professors Bovell, Croft, Cherriman and Hineks, and Mr. Glen, exhibited a variety of preparations by means of microscopes they had contributed for the use of the members; and papers were read: by Professor Wilson "On Some Associations of the Canadian and English Maple," and by Paul Kane, Esq., "Notes of a Trip to Lord Selkirk's Settlement on Red River, Hudson Bay Company's Territory." The *Conversazione* proved a highly agreeable reunion, attracting an unusually numerous attendance of members, and placing the Institute under additional obligations to the Vice-President for bringing them together, in circumstances calculated to give a fresh stimulus to the proceedings of the ensuing session, and to have a permanently beneficial effect on the Society.

The Council have much pleasure in congratulating the members on so auspicious a commencement of operations for providing permanent accommodation for the Library and Museum, and a suitable Hall for their meetings, in a building exclusively devoted to the use of the Institute. They recommend to their successors to carry out the object with as little delay as possible; while at the same time it is their duty to remind the members that further liberality on their part will be requisite to enable the Council to execute the plans furnished by the architect, even in a modified form.

The rapid increase in the number of the members of the Institute has forced on the notice of the Council the impossibility of meeting future applications for the early numbers of the Journal, or of obtaining complete sets to present to corresponding Societies; and as the only alternative open to them was the reprinting the earlier numbers at a considerable cost, or commencing a new series: after mature consideration they have determined on the latter course as in all respects most conducive to the best interests of the Society. The necessity of such a change has led to a reconsideration of the whole plan of the Journal, with a view to the more effectual accomplishment of the objects for which it was instituted, and the Council have accordingly, after much deliberation, prepared a scheme for conducting the new series of the Journal, to be submitted to the consideration of the members, at the Annual General Meeting. In laying this plan before the Institute, the Council feel bound to refer to the continued success of the Journal, under its present management, and to record their sense of the zeal with which Professor Hind has fulfilled his duties as editor of the series which it is now proposed to bring to a close.

The Canadian Journal—New Series.

1. The *Journal* to be published in octavo form, each alternate month, beginning with January, 1856.
2. All "Original Communications" to be inserted first, under this or some similar general heading, and whether long or short, to have invariably the name or initials of the author.
3. Original Reviews to form the Second Division in each number, and Reports of the Meetings of the Institute and other Societies, the Third Division.
4. All matter derived from published sources, to be printed in small type, and to form a distinct division, or appendix, under the title of "Scientific and Literary Excerpts," or some other similar heading.
5. The conduct of the *Journal* to be entrusted to an Editing Committee, to be annually nominated by the Council from the general body of the Members of the Institution, at their first meeting in November.
6. The Council to elect one of their Editing Committee as Convener, who shall perform the duties of General Editor in the conduct of the *Journal*, receiving and transmitting communications and works for review, to the members of the Committee to whom their subjects pertain: and exercising the general oversight requisite for the successful issue of a periodical publication.
7. The Convener to summon the Committee, once at least in the interval between the publication of each number, to deliberate on the contents of the succeeding number.
8. To be incumbent on each Member of the Editing Committee to endeavour to obtain original communications of interest and value in his own department, in addition to his own personal contributions.
9. The duties of the Editing Committee, to be classified and divided among its members, according to the following subdivisions, subject to alteration or addition by the Council:—I. Geology and Mineralogy. II. Physiology and Natural History III. Ethnology and Archaeology. IV. Agricultural Science. V. Chemistry. VI. Mathematics and Natural Philosophy. VII. Engineering and Architecture.

The Council have much pleasure in congratulating the members on the highly satisfactory results shown by their financial statement for the present year, notwithstanding the extraordinary expenditure unavoidably incurred, in consequence of the removal from the rooms hitherto occupied, free of cost, in Government House, and the increase in the items of salary and rent, which the Treasurer's accounts show, in comparison with last year. The following statement, it will be seen, includes a sum of £150, received from the Athenæum, being the balance of two annual grants of £100 each, made by the Legislature to the Athenæum, for the purpose of carrying out the special objects which the Canadian Institute has now undertaken to accomplish. Of this sum, the Council recommend that £75 be added to the Building Fund, as an object in which the Library department is specially interested, and that the remainder be expended on books. The subjoined statement exhibits a balance in favour of the Institute of £1438 18s. 4d.

This, however, it must be borne in remembrance, not only includes the special Government Grant of £1000 to the Building Fund, but also the sum of £187. 2s. of arrears and money due on account of Journal, no portion of which has yet been received by the Treasurer. The balance from 1854 also embraced, in like manner, the arrears of the year. In addition to this, there remain several outstanding accounts, including one of Messrs. Jacques and Hay, for fitting up the rooms now occupied by the Institute, in York Buildings, and for providing the requisite shelving for the large additions to the Library, consequent on the acquisition of the valuable collection of Books hitherto pertaining to the Toronto Athenæum, as well as the considerable additions acquired by donation and purchase. After all accounts are discharged, there will still remain a balance in hand, some portion of which the new Council will probably deem it advisable to transfer to the Building Fund.

ESTIMATE OF THE PRESENT POSITION OF THE
CANADIAN INSTITUTE.

	£	s.	d.
Cash Balance from last year		85	16 3
“ for Sale of Journal	£124	1	1½
“ “ Subscriptions received	301	11	5
“ Waste Paper sold		2	6 10
“ Due by Subscribers on account of Journal	£ 49	8	9
“ Arrears due by Members	137	13	3
“ Government Grant for 1854		250	0 0
“ “ “ for 1855		250	0 0
“ “ “ in aid of Building		1000	0 0
“ due on union of the Athenæum with the Institute		150	0 0
	£2363	17	7
Paid Cash on account of the publication of the Journal			
for 1854	£83	1	2
“ Ellis & Co., for engraving Logan's Geolo- gical Map and the Victoria Bridge, &c.	84	1	4
“ Proof Reader	32	10	0
“ Publication of Toronto Harbour Reports.	63	19	0
“ Publication of the Journal for 1855	286	13	7
		550	5 1
“ Sundries on account of the Institute	155	11	6
“ for Library Books and Periodicals	67	1	4
Balance due Maclear & Co. on account of Journal	52	0	5
“ “ Armour & Co. on account of Library	15	14	3
“ Assistant Secretary's Salary, to date	12	10	0
“ “ H. Piper, on account of the Institute	2	11	3
“ “ H. Rordens	1	6	3
“ “ Jacques & Hay for new Shelves in Library	30	5	0
“ “ Ogilvie & Co.'s account against Institute	2	14	2
“ Editor of Journal	50	0	0
“ Reader	5	0	0
		924	19 3
Estimated Excess in favor of the Institute	£1438	18	4

COPY OF AUDITORS REPORT, 1855.

The Auditors beg to report to the Council of the Canadian Institute, that they have examined the Accounts for the year ending the 30th of November, 1855, as shown by the Cash Book, the Treasurer's account and corresponding Vouchers, and which shew a balance of One Thousand Two Hundred and Seventy-three Pounds Seventeen Shillings and Eight Pence; £1000 of which is invested and £273 17s. 8d. in the Bank and Treasurer's hands, and which balance appears to them as correct.

D. CRAWFORD, }
SAMUEL SPREULL. } Auditors.

Toronto, 8th Dec., 1855.

CANADIAN INSTITUTE.

In closing this Report, the Council beg leave to congratulate

the members of the Institute on the very promising aspect which its affairs present, and in resigning their duties to their successors, to express their earnest hope that the day is not very far distant, when this Institution will be recognized as one contributing to the advancement of the Province in an intellectual progress commensurate with its material prosperity.

The President having nominated Messrs. Harman and Mortimer scrutineers, the election of officers for the ensuing year was proceeded with by ballot.

Upon the reception of the Report of the Scrutineers, the President announced the election of the following gentlemen to the undermentioned offices respectively:—

President:

G. W. ALLAN, Esq.

First Vice-President—JAMES BOVELL, M.D.

Second Vice-President—E. A. MEREDITH, Esq.

Recording Secretary—P. W. CUMBERLAND, Esq.

Corresponding Secretary—THOS. HENNING, Esq.

Treasurer—DALRYMPLE CRAWFORD, Esq.

Librarian—SANDFORD FLEMING, Esq.

Curator—PROFESSOR CHAPMAN.

Council:

Professor WILSON, LL.D.

Professor HIND, M.A.

Professor CROFT, D.C.L.

SAMUEL THOMPSON, Esq.

Professor CHERRIMAN, M.A.

OLIVER MOWAT, Esq.

The following gentlemen were elected members:—

John W. Dawson, F.G.S. Montreal.

Rev. W. A. Johnson

Rev. John Taylor

Arthur Carter (jun. men.)

Donogh O'Brien do.

The names of the following candidates for membership were read:—

Robert Selby Cameron

Thos. S. Hill

Dr. Haswell

C. E. Anderson

W. McDonald Dawson

G. W. Wickstead

Edmund Morris

Joseph T. Kerby

For Life Membership:—

John Page

The following donations were announced:—

For the Library.

From the Hon. J. M. BRODHEAD, of Washington, per A. H. ARMOUR:—

1. Message and Documents from the President of the United States to the Senate—1854 and 1855. Parts I. & II.
2. Address on the presentation of the Sword of General Jackson.
3. Andrews' Report on Colonial and Lake Trade—1852.
4. Maps to accompany the above.
5. Commerce and Navigation—1853.

“ “ 1854.

“ “ 1855.

From A. H. ARMOUR, Toronto:

Arcadian Geology, by John William Dawson, F.G.S.

For the Museum.

From the Rev. G. BELL, Simcoe, N. .

A specimen of Fossiliferous Limestone.

From W. COUPER, Toronto:

Specimens of Worms found in Grasshoppers at Montreal.

From W. W. BALDWIN, Toronto:

A box of Minerals.

The thanks of the Institute was ordered to be transmitted to the Hon. J. M. Brodhead; Mr. Armour; Rev. G. Bell; W. Couper, and W. W. Baldwin, for their respective donations.

A paper was read by Prof. Bovell, "On some points in the Natural History of the Leech."

Also a paper by G. J. Hodgins, Deputy Superintendent of Schools, "On a specimen of the Proteus of the Lakes."

It was resolved that the specimen produced, together with the paper read by Mr. Hodgins, be referred to Prof. Bovell, Croft, and Chapman, to consult with Mr. Hodgins thereon, and to report to the Institute.

The following resolutions were then submitted, and passed by acclamation:

1. That the cordial thanks of the Institute be presented to Sir John Beverly Robinson, Bart., for his kind and efficient services as President of the Institute for the past two years.

2. That the thanks of the Institute be presented to the Vice-Presidents and other Officers for their zealous services during the past year.

COPY OF INDENTURE RELATING TO THE UNION OF THE CANADIAN INSTITUTE AND TORONTO ATHENÆUM.

THIS INDENTURE, made the twenty-eighth day of November, one thousand eight hundred and fifty-five, between the Toronto Athenæum of the one part, and The Canadian Institute of the other part; Whereas, by an Act passed in the eleventh year of the Reign of her Majesty, Queen Victoria, intituled, "An Act to Incorporate the Toronto Athenæum," power was given to certain persons therein named to form themselves into an Association for the formation of a Public Library and Museum, as therein mentioned; and Whereas an Association was formed accordingly; and Whereas a Royal Charter was granted on the fourth day of November, one thousand eight hundred and fifty-one, to an Association called the Canadian Institute, for purposes of a similar character; and Whereas the said two Bodies, being desirous of a union thereof, did, prior to the passing of the Act hereinafter mentioned, intituled, "An Act to Amend an Act to Incorporate the Toronto Athenæum," agree upon the terms and conditions for such union, subject to the obtaining of an Act authorizing the same, and which terms and conditions were to the effect following, that is to say—

1. That the Library formed by the Books of the two Institutions, with such additions as may be made from the common funds, should constitute a Library to which the Public should have access, for reference, free of charge, under such regulations as may be adopted by the said Canadian Institute, in view of the proper care and management of the same.

2. That the members of the said Athenæum should become members of the said Canadian Institute.

3. That the Governors of the Athenæum should be elected Life Members of the said Canadian Institute.

4. That all members of the said Athenæum, who should have paid their subscriptions for the current year, prior to or at the period of the union of the two bodies, should be considered as members of the said Institute, and entitled to receive the Journal published by the Institute for the present year without further charge, it being optional with them to retire from the Institute at the close of the present year, should they desire to do so.

5. That each of the Life Governors of the said Athenæum, upon being elected Life Members of the said Institute, should also be entitled to the said Journal, free of charge, should they desire to receive the same.

6. That there should be handed over to the said Canadian Institute by the said Athenæum, upon the union of the said

two bodies, the sum of one hundred pounds of the money of the Athenæum.

That upon the arrangements for the amalgamation being assented to by both bodies, the Books and Minerals belonging to the said Athenæum should be transferred to the Canadian Institute, and arranged in their rooms, and that during the ensuing Summer months the Library should be opened for the Public, under proper regulations, at least one day in the week.

And it was thereupon agreed by and between the said two bodies, that the necessary steps should be taken to obtain the sanction of the Parliament of this Province to the union aforesaid.

And Whereas, by an Act passed in the eighteenth year of the reign of her Majesty Queen Victoria, intituled, "An Act to amend an Act to Incorporate the Toronto Athenæum," it was enacted that the members of the Toronto Athenæum should have power to transfer and convey to the Canadian Institute such and so much of the Books, Minerals, and other property of the said Toronto Athenæum, whether held absolutely or in trust, as they might decide upon so conveying, and upon such conditions as they might think advisable, which conditions, if accepted by the said Canadian Institute, should be binding.

And Whereas, since the passing of this Statute, the said members of the Toronto Athenæum have decided upon conveying to the said Canadian Institute, upon the conditions hereintofore referred to, all the Books and Minerals now belonging to the said Toronto Athenæum, and Whereas, such conditions have been accepted by the said Canadian Institute.

And Whereas, the members of the said Athenæum have been duly received and become and now are members of the said Canadian Institute, and the Governors of the said Athenæum have been duly elected Life Members of the said Canadian Institute, and the said members of the said Athenæum have, or will, at or before the execution of these presents, hand over to the said Canadian Institute the said sum of one hundred and fifty pounds.

Now this Indenture Witnesseth, that for the purpose of completing the said Union, and in consideration of the premises and also in consideration of the sum of Ten Shillings of lawful money of Canada now paid by the said The Canadian Institute to the said the Toronto Athenæum, receipt whereof is hereby acknowledged, the said the Toronto Athenæum doth render and by virtue of the power in that behalf contained in the said act passed in the eighteenth year of the Reign of Her present Majesty intituled "An Act to amend an act to incorporate the Toronto Athenæum and under and by virtue of all other powers in this behalf, grant, assign, transfer, convey and set over unto the said The Canadian Institute all the Books and Minerals whatsoever now belonging to the said the Toronto Athenæum, to have, receive and take all such Books and Minerals hereby assigned, or intended so to be, unto the said the Canadian Institute absolutely forever.

In Witness whereof the President of the said Athenæum hath hereto set his hand, and the said Athenæum hath hereto, by the said President, affixed the common Seal of the said Athenæum. And the President of the said Canadian Institute hath hereto set his hand and the said Institute hath hereto, by the said President, affixed the Corporate Seal of the said Institute the day and year first above written.

Signed, sealed and delivered
in the presence of
E. CHADS HANCOCK,
Sec. Toronto Athenæum.

SAMUEL THOMPSON,
Pres't Athenæum.
J. B. ROBINSON,
Pres't Canadian Institute.

Alphabetical List of Members of the Canadian Institute.

Names.		Residence.		Names.		Residence.	
Adamson, Rev. W. A., (D.C.L.)	Toronto,	C.W.		Cameron, Angus	Toronto,	"	
Allan, G. W.	"	"	Moss Park.	Cameron, Dr. A.	Owen Sound,	C.W.	
Anderson, C. E.	"	"		Cameron, Peter	Toronto,	C.W.	
Andrew, Professor W.	Quebec,	C.E.		Cameron, R. Selby	"	"	Canada Co. Office.
Armour, A. H.	Toronto,	C.W.,	Wellington St.	Cameron, J. M. A.	"	"	
Armstrong, W.	"	"	Queen "	Cameron, Hon. Malcolm	Port Sarnia,	"	
Arnold, John	"	"	Peter "	Cameron, John	Toronto,	"	Duke Street.
				Cameron, Hon. J. H., M.P.P.	"	"	The Meadows.
				Cameron, Hector	"	"	Wellington St.
				Cameron, Col. K.	Beaverton,	"	
Badgley, Prof. F.	"	"	Bay "	Campbell, C. J.	Toronto,	"	Com. Bank.
Bain, James	"	"		Campbell, Major T. E., C.B.	St. Hilairo,	C.E.	
Baker, Hugh C.	Hamilton,	"		Campbell, E. C.	Niagara,	C.W.	
Baldwin, Hon. Robt. (C.B.)	Spadina, near Toronto,	C.W.		Campbell, W. D.	Quebec,	C.E.	
Baldwin, W. W.	Oakridges,	C.W.		Carier, Dr.	Nelson,	C.W.	
Baldwin, Robt. Junr.	Spadina, near Toronto,	C.W.		Carter, Arthur	Toronto,	"	Trinity College.
Baldwin, W. A.	Mashquoteth, near Toronto,	C.W.		Carruthers, F. F.	"	"	Ann Street.
Baldwin, Maurice S.	Toronto,	C.W.,	Duke Street.	Carlyle, Arch.	Orillia,	"	
Barclay, Rev. J.	"	"	"	Cassels, W. G.	Toronto,	"	
Barron, F. W.	"	"	U. C. College.	Cayley, F. M.	"	"	
Bartlett, Rev. T. H. M.	Kingston,	"		Cayley, W. F.	"	"	
Battersby, W.	Toronto,	"		Chapman, Prof. E.	"	"	Yorkville.
Battersby, Leslie	"	"		Cherriman, Prof. J. B.	"	"	Yorkville.
Beatty, G.	"	"		Chewett, W. C., M.D.	"	"	York Street.
Beaven, J. F.	London,	"		Clarke, E., M.D.	"	"	Gen. Hospital.
Beaven, E. W.	Orillia,	"	Trinity College.	Clarke, T. C.	Port Hope,	"	
Beard, Charles	Woodstock,	"		Clarkson, Thos.	Toronto,	"	
Becher, H. C. R.	London,	"		Connor, Skeffington, L.L.D.	"	"	Bay Street.
Becher, Capt., R. N.	"	England.		Copp, W. W.	"	"	Alexander St.
Bell, Rev. Andrew	L'Original,	C.W.		Cortlandt, H. N.	Simcoe, Norfolk,	C.W.	
Bell, Robert, M.P.P.	Carleton Place,	C.W.		Cottle, T. J.	Woodstock,	C.W.	
Bell, Rev. George	Simcoe,	C.W.		Cotton, James	Toronto,	"	Church Street.
Bennett, H.	Toronto,	"		Couper, W.	"	"	Queen Street.
Beresford, W. H.	"	"		Coverton, Dr. C. W.	Simcoe,	"	
Bernard, H.	Barrie,	"		Cowan, Isaac	Toronto,	"	
Berry, Edward	Quebec,	C.E.		Cowdry, Dr. T.	Cobourg,	"	
Bethune, Prof. N.	Toronto,	C.W.,	Richmond St.	Craigie, Doctor W.	Hamilton,	"	
Billings, E.	Ottawa,	C.E.		Crawford, D.	Toronto,	"	Jarvis Street.
Birchall, T. W.	Toronto,	C.W.		Crawford, James	Brockville	"	
Bird, James	Peterboro'	"		Croft, Prof. H.	Tecumto,	"	Yorkville.
Blackie, John	Danville,	C. E.		Crombie, E. M.	"	"	George Street.
Black, James	Ayr,	C. W.		Crooks, Adam	"	"	King
Blake, E. D.	Toronto,	"	Bay Street.	Cull, E. L.	"	"	
Bleasdel, Rev. W.	Trenton,	"		Cumberland, F. W.	"	"	Duke "
Blight, W.	Toronto,	"		Dartnell, E. T.	} Toronto, C.W.,	Peter Street.	
Bogert, J. J.	"	"	Trinity College.	Dartnell, G. H.			
Boomer, A. K.	"	"	Bay Street.	Davies, W. H. R.	Montreal,	C.E.	
Bostwick, A.	"	"		Davies, H. W.	Toronto,	C.W.,	Trinity College.
Boulton, W. H.	"	"	John Street.	Dawson, J. W., (F.G.S.)	Montreal,	C.E.	
Boulton, Hon. H. J.	"	"	Wellington St.	Dawson, W. McDonald	Toronto,	C.W.,	C. L. Dept.
Bovell, Prof. James	"	"	St. George's Sq.	De Blaquiére, Hon. P. B.	"	"	Yorkville.
Bown, H. T.	Brantford,	"		De Rottenburg, Col. Baron	"	"	
Boyd, Francis	Toronto,	"	Bay Street.	Dennis, J. S.	"	"	
Bradburne, E.	"	"		Dennison, R. L.	"	"	Dundas Street.
Bradbury, J. R.	"	"		Devine, Thomas	Toronto, C.W.		
Brent, J. W.	"	"		Dewe, J.	Toronto, C.W.,		
Bristow Arthur	Weston,	"		Dick, Captain T.	Toronto,	"	Queen St. West.
Brondgeest, J. T.	Toronto,	"	Yorkville.	Dickson, Andrew	Pakenham,	"	
Brough, S.	"	"	Simcoe Street,	Dixon, W.	Toronto,	"	
Brooke, D. Senr.	"	"		Dixon, Joseph	"	"	
Brooke, G.	"	"		Dixon, W.	"	"	
Brown, Geo., (M.P.P.)	"	"	Church Street.	Dodgson, R.	"	"	
Brown, James	"	"	Peter Street.	Donaldson, Captain W.	St. Catherines,	C.W.	
Brown, Phillip	"	"		Draper, Hon. Mr. Justice (C.B.)	Toronto, C.W.,	Yorkville.	
Browne, George	Montreal,	C. E.		Drummond, A.	"	"	Gerrard Street.
Brown, John	Thorold,	C. W.		Duggan, Geo. Junr.	"	"	Adelaide "
Browne, J. O.	Toronto,	"	Yorkville.	Duggan, John	"	"	Bay "
Brunel, Alfred	"	"	Brock Street.	Ellis, J. E.	"	"	King "
Brunskill, Thos.	"	"	Shuter Street.	Ellis, Joseph	Port Hope,	"	
Buchan, David	"	"	Yorkville.	Ellis, John	Toronto,	"	King Street.
Buckland, Prof. G.	"	"	Park Lane.	Ermatinger, James	Stoney Creek,	C.W.	
Buell, A. N.	"	"		Esten, J. H.	Toronto, C.W.,	St. George's Sq.	
Burke, J. W.	Renfrew,	C. W.		Evans, W. C.	Montreal,	C.E.	
Burnet, Rev. R.	Hamilton,	C. W.		Ewart, John, Junr.	Toronto,	C.W.,	Church Street.
Burwell, Lewis	Brantford,	"		Ewart, John	"	"	

<i>Names.</i>	<i>Residence.</i>	<i>Names.</i>	<i>Residence.</i>
Farley, James	St. Thomas, "	Hodgins, J. G.	Toronto, " Bond Street.
Farmer, A. A.	Woodstock, "	Hodgins, Thos.	" McGill Street.
Ferrie, Robert (M.P.P.)	Doon, "	Holcomb, S. F.	Hamilton, "
Fitzgerald, W. W.	Toronto, " Adelaide Street.	Holwell, W. A.	Quebec, C.E.
Fitzgerald, W. J.	Toronto, C. W. Wellington St.	Holland, John	Toronto, C.W.
Fitzgibbon, C.	" " St. George's Sq.	Holland, G. B.	Toronto, C.W., King Street.
Fleming, S.	" " Victoria Street.	Hood, Andrew	Dunnville
Flesher, W. K.	Artemesia, "	Houghton, E.	Port Stanley, C.W.
Forlong, Col. J.	Toronto, "	Horwood, G. C.	Toronto, C.W.
Fornari, R.	" "	Howard, J. G.	" King Street.
Forrest, J. W.	Hamilton, "	Howard, J. S.	" Gerrard Street.
Fowler, Henry	Toronto, " Wellington S.	Howland, W. P.	" "
Freeland, Patrick	" " Bay Street.	Hunt, T. S.	Montreal, C.E.
French, D. O.	" " Bay Street.	Hutcheson, John	Toronto, C.W., Church Street.
Fripp, H. G. R.	" " Yonge Street.	Jacques, John.....	" " Front Street.
Galt, Thomas	" " "	Jamieson, W. M.	" " King Street.
Gamble, W.	" " "	Jarvis, W. B. (Sheriff).....	" " "
Geddes, Rev. J. G.	Hamilton, "	Jarvis, C. H.	Hamilton, "
Gekic, Rev. A.	Toronto, " Yonge Street.	Jarvis, C. B.	Toronto, "
Gibb, Doctor G. D.	London, England.	Johnston, R. J.	Thoroid, "
Gibson, David.....	York Mills, "	Johnston, Rev. W. A.	Toronto, "
Gilbert, James	Toronto, C. W.	Jones, W.	Port Stanley, C.W.
Glen, W.	" "	Jones, C.	Toronto, C.W.
Good, James	" " Yonge Street.	Jones, E. R.	Sarnia, "
Goodenough, R. A.	" " "	Irving, Rev. Prof. G. C.	Toronto, " Trinity College.
Grahame, W. R.	" " Richmond St.	Joseph, J. G.	" " King Street.
Grant, Alexander	" " "	Jukes, Dr. A.	St. Catherines, C.W.
Grant, John	Whitby, "	Kane, Paul	Toronto, C.W.
Grasset, Rev. H. J.	Toronto, " Adelaide Street.	Keefer, Samuel	Montreal, C. E.
Gray, Rev. J.	Orillia, "	Keefer Thomas	" " "
Gregory, T. C.	Windsor, "	Kerby, Jos. T.	Toronto, C.W.,
Grier, Robert J.	Toronto, "	Kingsford, W.	" " "
Gwynne, H. N.	" " "	Kingston, Prof. C.T.	" " University.
Gzowski, C. S.	" " Elm Street.	Kneeshaw Richard.....	" " "
Hagarty, Dr. J. H.	" " William Street.	Lachlan, Major R. ..	Montreal, C.E.
Hale, W. D.	Port Stanley, C.W.	Laidlaw, John	Toronto, C.W.
Hallan, S. W.	Pentanguishene, C.W.	Lambe, W. H.	Montreal, C.E.
Hall, Dr. A.	Montreal, C.E.	Langton, John,	Toronto, C.W.
Hall, G. B.	Nanticoke "	Latour, L. A. Huguet	Montreal, C.E.
Hall, James	Peterboro, C.W.	Lawson, Walter	Guelph, C.W.
Hallowell, Prof. W., M.D.	Toronto, " Duke Street.	Lawford, T. W.	London, "
Hamilton, J. M.	" " "	Lawrason, L.	" " "
Hancock, E. C.	" " Jarvis Street.	Leach, Rev. Dr. W. T.	Montreal, C.E.
Hanvey, Daniel.....	St. Thomas, "	Lefroy, Lieut.Col. J.H., R. Artillery	Woolwich, England.
Harman, S. B.	Toronto, " St. George's Sqr.	Leith, Alexander	Toronto, C.W.
Harrington, John	" " King Street.	Lewis, Rice.....	" " King Street.
Harrison, Hon. S. B.	" " Dundas Street.	Logan, W. E. (F.R.S.)	Montreal, C.E.
Harrington, T. D.	" " "	Logie, A.	Hamilton, C.W.
Harris, John F. J.	London, "	Macaulay, J. J.	" " Carlton Street.
Harris, W. R.....	Toronto, "	Maddison, G. L.....	Toronto C. W.
Harris, T. D.	" " Duke Street.	Macdonell, D.	" " Yonge Street.
Haswell, Dr.	" " "	MacGregor, P.	" " "
Hawke, A. B.	" " King Street West.	Mack, Doctor T.	St. Catherines, C. W.
Hawkins, W.	" " "	Mackenzie, H. M.	Guelph, "
Haycock, T. H.	Chippewa, "	Mackinnon, John.....	Ottawa, "
Helliwell, John	Toronto, "	Macklem, Doctor Thomas C.	Chippewa.
Hemings, G.	" " "	Maclear, Thomas.....	Toronto, C. W., King Street.
Herrick, T. W.	London, "	Macpherson, D. L.	" " "
Herrick, Doctor George	Toronto, " Church Street.	Major, John.....	" " "
Henning, Thomas	" " Queen Street.	Masson, John.....	Hamilton, "
Heward, W. B.	" " Yorkville.	Matheson, W. M.	Toronto, "
Heward, Stephen	" " "	May, Henry.....	Quebec, C. E.
Heyden, L.	" " "	Mayer, S. D.	Toronto, C. W. Adelaide Street.
Heyden, L., Junior	" " "	Mercer, W.	" Simcoe,
Hill, Thomas J.	" " Yorkville.	Meredith, E. A.....	Toronto, "
Hind, Prof. H. Y.	" " Spadina Avenue.	Merrick, J. D.	" " "
Hind, W.....	" " "	Miller, Hugh.....	" " "
Hincks, Hon. Francis	Governor of Barbadoes.	Miller, T. J.	" " "
Hincks, Rev. Prof. W.	Toronto, C.W. Yorkville.	Mitchell, John.....	Montreal, C. E.
Hingston, Dr. W.	Montreal C.E.	Mitchell, James.....	Toronto, C. W.
Hirschfelder, J.	Yorkville C.W.	Moberly, Walter	" " Church Street.
Hodder, Prof. E. M.	Toronto, " Queen Street.	Moffatt, Lewis.	" " Yonge Street.
Hodgins, W.	Hamilton, "		

<i>Names.</i>	<i>Residence.</i>	<i>Names.</i>	<i>Residence.</i>
Monro, George.....	"	Ransom, W. W.....	"
Morphy, G.....	"	Read, D. B.....	Queen Street.
Moodie, J. W. D. (Sheriff).....	Bolleville	Reekie, James.....	Quebec, C.E.
Moore, John.....	Toronto, " King Street.	Reid, J. B.....	Toronto, C.W.
Morris, W. J.....	Perth, "	Reid, Rev. W.....	Knox's College
Morris, Alexander.....	Montreal, C. E.	Rennie, Alex.....	Montreal, C.E.
Morris, Edmund.....	Toronto, C. W.	Richardson, J. H., M.D.....	Toronto, C.W., Bay Street.
Morrison, J. C., (M. P. F.).....	"	Richards, Hon. Mr. Justice.....	" Yonge Street.
Mortimer, H.....	"	Richey, John, Jr.....	" King Street.
Mowat, O.....	" Church Street.	Ridout, Thomas.....	" Bay Street.
Mulholland, John.....	"	Ridout, J. B.....	"
Murney, Edward H.....	Bellerville	Ridout, G. P.....	" King Street.
Murray, Alexander.....	Woodstock, C. W.	Ridout, J. G.....	" Bank U.C.
Murray, H. W. M.....	Toronto, " John Street.	Ridout, Charles.....	" Maria Street.
Murray, A.....	"	Ridout, T. G.....	" Bank U.C.
M'Callum, James, Jr.....	Uxbridge, C. W.	Ritchie, Rev. W.....	Georgina, "
M'Caul, Rev. John, (L.D.).....	Toronto, " Carlton Street.	Roberts, T. P.....	" William Street.
M'Clary, William.....	London, "	Robertson, Charles.....	"
M'Conrad, A. T.....	Toronto, "	Robertson, T. J.....	" Wellington St.
M'Donald, Donald.....	Toronto, " Queen Street.	Robins, S. P.....	Brantford, "
M'Donald, Alex.....	" King "	Robinson, Hon. W. B. (M.P.P.).....	Toronto, " Duke Street.
M'Donell, Alex.....	Hamilton, "	Robinson, Hon. Sir J. B., Bart., Chief Justice.....	" Beverley House.
M'Farlane, Walter.....	Toronto, "	Robinson, W.....	London "
M'Gill, Hon. Peter.....	Montreal, C.E.	Robinson, Christopher.....	Toronto, C. W. Beverley House.
M'Gregor, C. J.....	Stratford, C.W.	Robinson, J. Lukin.....	" Peter Street.
M'Intyre, N. C.....	Toronto, "	Robinson, Joseph.....	Yorkville, "
M'Kenzie, Walter.....	Yorkville, "	Ross, James (M.P.P.).....	Belleville, "
M'Kerras, Rev. J. H.....	Darlington, "	Ross, W. C.....	Toronto, "
M'Lean, Allan.....	Toronto, "	Rossin, Samuel.....	"
M'Nab, John.....	" Church Street.	Rowell, Henry.....	" York Street.
M'Namara, M.....	"	Rubidge, F. P.....	"
M'Master, Wm.....	"	Russell, Dr. F.....	" Duke Street.
M'Phillips, G.....	Richmond Hill, C.W.	Russell, A.....	"
M'Murray, Rev. W.; (D. D.).....	Dundas, C.W.	Rutherford, E. H.....	"
M'Queen, Thos.....	Goderich, "	Ruttan, Henry.....	Coburg, "
Nanton, Augustus.....	Toronto, "	Ryerson, Rev. E.; D. D.....	Toronto, " Victoria Street.
Netting, George.....	" King Street.	Rykert, G. Z.....	St. Catherine's, C. W.
Newton, Doctor J. S.....	Sault St. Mary, U.S.	Rykert, A. E.....	Toronto, C. W. Trinity College.
Nicol, Doctor W. B.....	Toronto, C.W., Adelaide Street.	Sabine, Col. E.; (R. Artillery).....	Woolwich, England.
Noble, Capt. A. R. Artillery.....	Quebec, C.E.	Salter, A. P.....	Chatham, C. W.
Northcote, Henry.....	Toronto, C.W., King Street.	St. George, H. Q.....	Oakridges, "
O'Brien, E. G.....	" Church Street.	Sangster, John. H.....	Hamilton, "
O'Brien, W.....	Barrie, "	Savigny, H. P.....	Barrie, "
O'Brien, Donough.....	Toronto, "	Scadding, Rev. H.,.....	Toronto, " U. C. College.
O'Brien, L. R.....	" Church Street.	Schofield, M. C.....	Berlin, Waterloo, C. W.
Orchard, T. C.....	" Front Street.	Scholefield, C. K.....	Oakville, C. W.
Page, John.....	Matilda, "	Schreiber, Thomas, Rev.....	Toronto, "
Palmer, E. J.....	Toronto, " King Street.	Schreiber, Collingwood.....	"
Pardey, W. H.....	"	Scott, A. F.....	"
Parke, Vincent.....	Toronto, " Adelaide Street.	Scars, S. B.....	Chatham, "
Passmore, F. F.....	" King Street.	Shanly, Walter.....	Toronto, " Wellington St.
Paterson, D.....	"	Shanly, Francis.....	" Bay Street.
Paterson, Peter.....	"	Shier, John.....	Whitby, "
Patrick, Alfred.....	" Gerard Street.	Shortis Ed.....	Toronto, "
Patton, John.....	" King "	Shortt, P. L.....	"
Pell, J. E.....	" King "	Simons, T. M.....	Hamilton, "
Perram, J.....	Tecumseth, C.W.	Simpson, Sir G.....	Lachine, C.E.
Perrin, W. L.....	Toronto, "	Simpson, A. W.....	Toronto, C.W.
Perley, M. H.....	St John's, New Brunswick.	Sladden, W.....	" Church Street.
Perkins, Frederick.....	Toronto, C.W., Peter Street.	Small, Rev. J. W.....	" Queen "
Perkins, George.....	" Wellington St.	Small, Jas. C.....	" Front "
Peterson, H. W.....	"	Small, Dr. John.....	" Duke "
Philbrick, Prof. C. J.....	" Yorkville.	Small, Jos. C.....	Collingwood Harbour, C.W.
Phillips, T. D.....	Paris, "	Smallwood, Doctor Charles.....	Iso Jesus, C.E.
Piper, Hiram.....	" Yonge Street.	Smith, Larratt W., D.C.L.....	Toronto, C.W.
Platt, Samuel.....	"	Smith, William.....	Wocistock, Oxford, C.W.
Platt, George.....	"	Smith, J. F.....	Toronto, C.W.
Polley, W.....	"	Smith, Rev. Prof. J. M.....	Kingston, " Queen's College.
P.ingle, J. D.....	Hamilton, "	Sotheran, G. H.....	Toronto, " Yorkville.
Prosser, T. C.....	Bolton, Albion, C.W.	Spence, Hon. Robt. M.P.P.....	"
Proudfoot, W.....	Toronto, C.W.	Sprague, Hon J. G. (Vice Chan'r.)	" Portland Street.
Pyper, G. A.....	"	Spratt, Robert.....	" Jarvis Street.
Pyper, W.....	" Wellington St.	Spreull, Samuel.....	" Yonge Street.
		Stark, David.....	Montreal C.E.

<i>Names.</i>	<i>Residence.</i>
Stennett, W.	Toronto, C.W.
Stephens, Romeo H.	Montreal, C.E.
Stephenson, Robert (M.P.)	England.
Stevenson, James	Toronto, " Bank of Montreal.
Stewart, Wm.	" " "
Stewart, G. A.	Port Hope, "
Stewart, Chas.	Toronto, "
Storm, W. G.	" " "
Street, R. P.	Gore Bank, Hamilton, C.W.
Street, T. C.	Niagara Falls.
Sullivan, A.	Toronto, C.W., Carlton Street.
Taylor, Rev. John	" " "
Toronto, Rt. Rev. Lord Bishop of... ..	" " Front Street
Thibodo, A. J. (M.B.)	Trenton, "
Thomas, George	" " "
Thomas, W.	Toronto, " Church Street.
Thomas, C. P.	" " "
Thomas, G.	Chatham, C. W.
Thomson, E. W.	York Township, C. W.
Thompson, Samuel	Toronto, C. W.
Thompson, T. J.	" " "
Thompson, J. E.	" " "
Thompson, John	" " John Street.
Todd, H. C.	" " "
Torney, Hugh.....	Ottawa, "
Torrance, T. W.	Montreal, C. E.
Torrance, J. A.	Toronto, C. W.
Turner, C. H.	England.
Turner, Loftus.....	Toronto, C. W.
Turner, H. (M. D.).....	Galt, "
Unwin, Charles.....	Toronto, "
Ure, G. P.....	" " Toruley Street.
Valentine, J. S.	Niagara, "
Vankoughnet, P. M.	Toronto, " Wellington Street.
Vidal, Alex.....	Sarnia, "
Walsh, F. L.	Simcoe, "
Walsh, T. W.	" " "
Walsh, Robt.	Lloydtown, C. W.
Walker, E. A.	Barrie, "
Weatherly, Capt.	Toronto, " Provincial In. Co.
Webster, Jas.	Guelph, "
Weir, Rev. Prof. G.	Kingston, " Queen's College.
Weller, W. H.	Cobourg, "
Wells, Robt.	Toronto, " Park Lane.
Whitney, F. A.	" " Toronto Street.
Whitney, J. W. G.	" " "
Whittemore, E. F.	" " Bay Street.
Whitwell, Rev. R.	Philipsburg, C. E.
Wicksteed, G. W.	Toronto, C. W.
Widder, Fred'k.	" " Lyndhurst.
Williamson, Rev. Prof. J.	Kingston, " Queen's College.
Wilkinson, J. A.	Sandwich, "
Wilkes, G. S.	Brantford, "
Wilson, John M., (M.P.P.)	London, "
Wilson, Prof. D. LL. D.	Toronto, " Yorkville
Wilson, Dr. Jas.	Perth
Wilson, George.	New York.
Wilson, W. M.	Simcoe, C. W.
Woodruff, S. D.	St. Catharines, C. W.
Workman, Dr. B.	Montreal, C. E.
Workman, Dr. Jos.	Toronto, C. W.
Worthington, Thomas.	Wellington, P. E. District, C. W.
Worthington, John.	Toronto, C. W. Temperance St.
Worts, J. G.	" " Front Street.
Wright, Alfred.	" " "
Wright, James.	" " Queen Street.
Wylie, G. B.	" " King Street.
Young, Hon. John.	Montreal, C. E.
Young, Rev. Prof.	Toronto " Knox's College.

HONORARY MEMBERS, 4.

Lefroy, Lt. Col. J. H., R.A., F.R.S. Sabine, Col. E.; R. A., F. R. S., &c.
Logan, W. E.; F. R. S., and G. S. Stephenson, Robert (M. P.)

LIFE MEMBERS, 36.

Barron, F. W. Parkes, Vincent.
Birchall, T. W. Page, John.
Cameron, Hon. J. H. Paterson, D.
Cayley, F. M. Perrin, W. L.
Cotton, James. Proudfoot, W.
Dixon, Joseph. Perkins, George.
Duggan, George, Junr. Robinson, Hon. Sir J. B. Bart.
Duggan, John. Ridout, J. D.
Ewart, John. Ridout, G. P.
Harris, T. D. Ross, W. C.
Herrick, G. (M.D.) Rossell, H.
Hinks, Hon. F. Scadding, Dr. H.
Hutcheson, John. Smith, Larratt, W. (D.C.L.)
Kneeshaw, Richard. Smith, J. F.
Mitchell, James. Stennet, W.
Monro, George. Thomas, W.
Murray, Alexander. Thompson, S.
McCord, A. T. Vankoughnet, P. M.

JUNIOR MEMBERS.

Baldwin, Robert Heyden, L. Junr.
Baldwin, M. S. Mayer, S. D.
Battersby, Leslie Murney, E. H.
Beaven, E. W. Murray, H. W. M.
Bogert, J. J. McGregor, C. J.
Carter, Arthur O'Brien, D.
Crombie, E. M. Phillips, T. D.
Dartnell, G. H. Ridout, J. G.
Davies, H. Rykert, A. E.
Esten, J. H. Simpson, A. W.
Fitzgerald, W. W. Stewart, C.
Fornieri, R. Torney, Hugh
Gilbert, Jas. Turner, Loftus
Hallan, S. W. Wright, James

Honorary Members.....	4
Life Members.....	36
Members	440
Junior Members.....	28
Total.....	608

JAMES JOHNSON,

Assistant Secretary,
Canadian Institute.

Toronto, 31st December, 1855.

The Mastodon Giganteus

In 1852 I sent to the annals of natural history an account of the exhumation of some Mammoth bones in cutting through the drift at the head of Burlington Bay when forming the Great Western Railroad. This I believe was the first notice of the finding of the remains of any of the large extinct Proboscideans within the limits of this Upper Province; and I believe I am again to be the first to record the discovery of fragments of an individual of the allied genus Mastodon which I apprehend to be of the species most common in North America, the Mastodon *Giganteus*.

When at Niagara Falls last autumn my attention was called to some fossil bones in Barnett's museum. They consisted of a beautifully perfect lower jaw, one perfect vertebra, some others, and a rib partially destroyed by fire in consequence of having been thrown on a log heap when cleaning the land. I had been in hopes of visiting the spot where they were found before publishing this notice, but having been unable to do so, I will give Mr. Barnett's own description of the locality:

"The jaw and other remains of the animal were dug up at a farm adjoining that of Mr Hugh Shanon in the Township of

Southold, District of London C. W., on the 13th Nov. 1854.

"Where the bones were found is a swale of blackish peat two or three feet deep, beneath is a whitish grey clay. The bones had not been forced into the clay more than their weight had sunk them when the clay was in a soft state."

The single incisor in the lower jaw which Prof. Owen gives as a distinguishing mark of the *M. Giganteus* is beautifully preserved, the tip is worn and polished by the continued friction of the trunk; it does not seem to have protruded far beyond the integuments; the length of the tooth beyond the bone is about five inches.

The bones can be seen in Barnett's museum.

T. J. C.

Woodstock, Dec. 1855.

Supplementary Remarks

IN BEHALF OF THE ESTABLISHMENT OF A PROVINCIAL SYSTEM OF METEOROLOGICAL OBSERVATIONS.

BY MAJOR LACHLAN, MONTREAL.

Read before the Canadian Institute, January, 1855.

Although greatly disappointed in finding no action taken by the Canadian Institute to bring the important subject of the establishment of a Provincial System of simultaneous Meteorological Observations before the Legislature during the last session of Parliament, I still continue to regard the object aimed at as a desideratum of too much philosophical as well as public interest and value to be abandoned without a further effort in its behalf; and I therefore trust that I shall neither be accused of undue pertinacity nor self-conceit, in bringing the matter once more before the Association, in the hope that the additional arguments and information which I am enabled to advance in its favor will leave no difficulties whatever in the way of a successful movement before the next Session.

As a necessary preliminary to the observations about to be made, it requires to be borne in mind that my first paper on the establishment of Systematic Meteorological Observations throughout British America was read at the Institute so long ago as in April, 1854,* and that my Essay on the periodical Rise and Fall of the great Lakes, was presented in the following month; and that at the conclusion of the reading of the former it was moved by Professor Cherriman that the matter should be referred to the Council, and a select Committee appointed, in accordance with my wishes, to report on the same; and further, that at the next meeting that Committee was duly named; but that owing to some unfortunate or embarrassing circumstances, the only progress made by it during the remainder of that year was reporting, on the 2d December, that, "considering it necessary, before taking any special steps, to obtain information with reference to the working of a similar system in the United States, they had deputed Professor Cherriman to communicate with Professor Henry, of the Smithsonian Institution, on the subject; but that not having received the desired information, they were not yet prepared to take any special action."

Such continued to be the state of matters till the annual meeting of the Institute in January last, when our worthy President judged proper to bring the subject promptly forward in the annual Address in such strong, and to me very flattering, terms, that I naturally expected that immediate decisive

action would follow. In this, however, I was disappointed, Parliament being prorogued six months afterwards without any further steps being taken.

Passing over some lengthy correspondence, which, took place in consequence, I shall here only observe that there appearing to me to have been some obstacle in the way of obtaining from Professor Henry the required information alluded to in the Committee's minute of the 2d December, 1854, I resolved to endeavor, if possible to ascertain what it was, by opening a correspondence with that gentleman myself; and this I accordingly did in the month of June last; and the result, I am happy to say, proved equally successful and satisfactory, I having lately been furnished, by Professor Henry, with nearly all the information I desired, in addition to being favored with a copy of a small volume containing seven of his successive annual Reports to the Smithsonian Institution, which supply many additional interesting particulars.

Deeming it unnecessary to enter into the details of the view all along taken by me of the great philosophical as well as public benefits to be derived from the adoption of my proposition, I am content to refer you to my article on the subject in the II. volume of the *Canadian Journal*, but more particularly to pp. 242 and 3, and to add here, in few words, that I looked forward to the Canadian Institute measures being in concert with the Smithsonian Institution, in fact, adopting the same system, and embracing the same objects as are now successfully carried out in the United States under the direction of that jurisdiction, with the sole addition of a systematic Registry of the periodical rise and fall of the great Lakes; and that it appeared to me that branches of the undertaking, though resting mainly on a philosophical foundation, were, in a provincial point of view, so decidedly and essentially of a useful and beneficial public character that, if appealed to, our government would not hesitate to bear a part in the promotion of them,—and the more so, as forming important necessary links in a great chain of valuable philosophical researches in physical geography now in progress *all over the world*. I, however, considered that the Parliamentary assistance might in the first instance be limited to granting an appropriation sufficient to meet the expense of furnishing a set of well adjusted Instruments for each Station of Observation, and authorizing all such public officers as Harbour Masters, Light-House keepers, and Collectors of Customs, to give their valuable assistance; and that the Commander of the Forces should at the same time be solicited to aid the undertaking, by requesting all Medical Officers in charge of Hospitals to furnish to the Institute a copy of the Meteorological Record transmitted periodically to the Inspector General in London; and that the valuable co-operation of the Governor of the Hudson's Bay Territory should not be overlooked; and further, that every University, College, and other Educational Institution, together with every Literary and Philosophical Society, and every Mechanics Institute, throughout the Province should be invited to lend their assistance; and finally, that the co-operation of the Governments of Nova Scotia, New Brunswick, and Prince Edward's Islands should be invoked in the laudable work.

These, it may be said, are, at best, only the opinions of a single individual; but that much more is required. I have, therefore, the pleasure of adding that they have been encouraged and confirmed by not only your late distinguished President Lieut. Col. Lefroy, and experienced Canadian Meteorological observers, such as Doctors Smallwood, and Craigie, and others, on the one hand, and the talented and energetic Secretary of the Smithsonian Institution at Washington on the

* The Canadian Journal of March, 1854.

other; but also by the harmonious action manifested in behalf of the same great object by not only various Literary Societies and governments in the United States, as well as by the friends of Science in almost every Kingdom and State in Europe; added to the acknowledged valuable results of the extensive chain of Meteorological Researches so long liberally carried on in Asia, under the auspices of the East India Company's Government. But, in short, it appears to me that all that *should* be wanting to ensure an immediate effectual appeal to our own Government in behalf of such an object is to point out in few words what has been so creditably accomplished by our American neighbors alone; and that, I conceive, cannot perhaps be done better than in the language of Professor Henry's 6th Report to the Smithsonian Institution, being that for 1852, (though many improvements and additions have since taken place,) in the hope that the Canadian Institute will be permitted to have the honor of standing in the same relation to the British American Provinces as the Smithsonian Institution does to the great American Union.

According to the document alluded to, the general system of Observations relating to the Meteorology of the Continent of North America, described in previous Reports, had been continued and extended, and then (in 1852) consisted of the following classes:

"1st. *The Smithsonian System proper*, made up of voluntary Observers in different parts of the United States, who report immediately to the Institution.

"2d. *The System of Observation of the University of the State of New York*, re-established under the direction of this Institution, and supported by the State of New York.

"3d. *The System of Observations established under the direction of this Institution*, by the State of Massachusetts.

"4th. *The extended System of Observation made at the several Military Posts of the United States*, under the direction of the Surgeon General of the Army.

"5th. *Separate Series of Reports of Observations by exploring and surveying parties*, in some cases directed, and in part furnished with Instruments by this Institution.

"6th. *Meteorological Records from British America*, consisting of Observations made at the various posts of the Hudson Bay Company, and at the residence of private individuals in Canada.

"In the first three of these classes there are about 200 (since increased to upwards of 300) Observers, distributed over the entire Continent. In the older States they are very thickly distributed, and they are entirely wanting in none.—Texas, Arkansas, the Indian Territory, (Indiana) Missouri, Iowa and Minnesota, have each competent and reliable Observers, reporting directly to the Smithsonian Institution, in addition to those at the Military posts in the same region.

"Further Westward, and more widely separated, the Observers at the Military posts, and those of surveying and exploring parties continue the connection of the System to the Pacific Coast, where the number of Military posts is greater, and private Observations are again found.

"The New York State System embraces 25 (now 38) Academies or Stations, all furnished with new and reliable Instruments, at the expense of the State.

"In Massachusetts twelve Stations are furnished with Instruments in like manner, of which eight have reported.

"In 1852 ninety-seven Military posts reported Meteorological Observations; and for 1853 the number will be greater rather than less.

"The whole number of Stations and Observations available for 1852 were 350; and this number, either reporting directly to the Institution or furnishing their Observations for its use, may be relied upon for the current, year *i. e.*, 1853.

"Besides the Observations derived from this general System, a large collection has been procured from individuals in different parts of the country who have kept records of the weather, in some cases for many years. *This was obtained by issuing a Circular from the Institution requesting copies of any records which might have been kept relative to the Climate of the Country.* The amount of information received in answer to this Circular was far greater than was expected; and much more valuable matter was thus called forth than was previously known to exist."

To the foregoing interesting sketch it is proper to add that I glean from other sources that the first appropriations devoted by the Smithsonian Institution to the advancement of Meteorological Research amounted to \$1,000, and took place in 1848, the year after its foundation, and that it has ever since continued to allot from \$2,000 to \$3,000 annually to the same purpose; but that the State of New York led the way in so meritorious a work no less than thirty years ago, by an annual public grant, enabling the Regents of the State University to make an appropriation for supplying each Academy with the necessary Instruments, and that about five years ago it was enlarged, and the System re-organized, and committed to the regulation of the Smithsonian Institution; and further, that the State of Massachusetts had of late years made a similar appropriation and adopted a similar arrangement, as regards the Smithsonian Institution; and that several other States were following the same laudable examples. In contrast to which I regret to say that though Professor Henry had, in correspondence with Colonel Sabine, the eminent corresponding Secretary of the Royal Society of Britain, been assured, so long ago as 1847, that as soon as a System of Meteorological Observations should be organized in the United States there would be no difficulty in establishing corresponding Observations in the British American Provinces, and he had been encouraged in the same hope by Captain Lefroy. The only regular contributions of importance that appear to have been received from those Provinces, until very lately, have been the Meteorological and Magnetic Observations at the Toronto Observatory, and those by Doctor Smallwood at St. Martin's and Dr. Hall and L. A. L. Latour of Montreal, and Henry Poole, Esq., of Picton, and T. S. Stewart, Esq., of Acadia College, Nova Scotia. Whereas the following abstract Table, framed by me from authentic returns, will show the great number of Observers reporting to the Smithsonian Institution from the different States in the Union in the year 1854:

Abstract number of Meteorological Observers in the different States of the Union, reporting to the Smithsonian Institution in 1854.

Maine,	8	Mississippi,	5
New Hampshire,	7	Louisiana,	2
Massachusetts,	21	Texas,	3
Vermont,	7	Tennessee,	8
Rhode Island,	4	Kentucky,	8
Connecticut,	6	Ohio,	24
New York, (beside Univ'ty)	31	Michigan,	13
New Jersey,	5	Indiana,	10
Pennsylvania,	24	Illinois,	7
Delaware,	2	Missouri,	3
Maryland,	6	Iowa,	8
Virginia,	13	Wisconsin,	13
North Carolina,	4	Minnesota,	6
South Carolina,	4	Oregon,	1

Georgia,	6	California,	3
Florida,	5	Nebraska,	1
Alabama,	7		

It must also be added that while in the published list of Foreign Literary Associations in correspondence with the Smithsonian Institution in 1854, I see in Sweden the names of ten, in Norway five, in Iceland one, in Denmark six, in Russia sixteen, in Holland fourteen, in Germany one hundred and six, in Switzerland fifteen, in Belgium ten, in France sixty-five, in Italy thirty-five, in Portugal one, in Spain four, in Great Britain and Ireland ninety, in Greece one, in Turkey twenty-one, in Africa three, in Asia eleven, in Van Diemen's Land two, and in various States in Central and South America seventeen, I do not observe the name of a single Library Association throughout the whole of the British American Provinces and West Indies! although I learn that a proposal was made by the Smithsonian Institution to memorialize the Canadian Government on the subject so far back as 1851. Why, or how, such should be the case it is not for me to account.—It is sufficient to state the rather startling fact; and I am the more induced to do so, from bearing in mind that it was to the Cosmopolitan liberality of a Briton, who, in his own words, regarded "the man of science as of no country; the world his country; and all men as his countrymen," that the United States are indebted for the foundation at Washington of the noble philosophical "*Establishment for the increase and diffusion of knowledge among men,*" now known by the name of the *Smithsonian Institution*. It is at the same time proper to add that copies of the different published volumes of the "*Smithsonian Contributions*" have very lately been presented to the Natural History Society of Montreal, and it may therefore be presumed that a similar liberal donation has been extended to other literary societies in the Province; and if so, the greater the obligation to endeavor to make some suitable return.

Wishing to encroach as little as possible on the time of the Institute, I beg, in conclusion, to refer the members to the subjoined copy of a highly satisfactory and instructive letter lately received from Professor Henry in reply to more than one communication from me, and to be allowed to add that should any further information be required by the Council, I shall be happy to be the medium of obtaining it, without the necessity of resubmitting the matter to any special committee. And, in the meantime I may be permitted to add here, that in my original paper I ventured to name twenty-six places, as stations of Observation in Canada, between Gaspè and the western extremity of Lake Superior; but that this number might perhaps require to be considerably increased. As, however, the enlightened foresight of the excellent Superintendent of education in Western Canada has already in a great degree met that want, by allotting a set of Meteorological Instruments to each County Grammar School, the number required in that section of the Province would be thereby materially diminished; and should a similar regulation be established in Eastern Canada the same would be the result there. Say, however, that twenty-five extra Stations were required in each section of the Province, the expense of supplying Instruments for the whole, estimated by Lieut. Col. Lefroy at so low as £10 each, but stated in detail by Professor Henry at not less than £30 each, would at the most be £1500 at the outset; and the allowance to fifty Observers, estimated at a medium rate between those granted by the Legislatures of New York and Massachusetts, or say 40 dollars each, would require at most an annual grant of £500 more.

Let Canada set the example of allowing this moderate yet, I am disposed to think, sufficiently liberal fund to the advancement of so laudable a National Work, and recommend a similar line of conduct to the favorable consideration of the Sister Provinces, and I am confident that triumphant success will be the speedy result.

(Copy)

Smithsonian Institute,
Washington, 24th Oct., 1855.

DEAR SIR,—I regret very much that your letters in reference to Meteorology had not met with a more prompt reply. Your first letter failed to reach us; and the second informed us that a printed Pamphlet had been sent; and we delayed our answer in full until we had an opportunity of reading it. It did not, however, come to hand till I was on the point of leaving the city to be absent a number of weeks, and I now embrace the first opportunity since my return to give you the promised information. I hope that, though my letter has in consequence been delayed, it will be in time to answer your purpose in regard to an application for aid from Parliament for establishing a Meteorological Register in Canada.

1st. A series of observations simultaneous with those in the United States would not only be of much local interest in determining the character of the climate in different parts of Canada, but of high scientific importance in ascertaining the laws of atmospheric changes peculiar to the North American Continent. The system of winds which prevail in this Continent can never be properly understood until a series of simultaneous observations are made at intervals from the Gulf of Mexico to near the arctic circle; and no greater favour could be conferred on the science of Meteorology than the establishment of a series of observations in the British possessions in North America. If this were done, all the phases of a winter's storm could be noted from the moment of its rise through all its changes, until its disappearance; and for want of data of that kind, the observations now made within the boundaries of the United States are of much less value than they otherwise would be.

2. In answer to your first question,—"*What course in Canada would be most in accordance with the measures already in progress in the United States under the auspices and direction of the Smithsonian Institution?*" As to the course to be pursued in bringing about so desirable a result; I would suggest, what has already occurred to yourself,—that aid be asked by the Canadian Institute from Parliament, and the Hudson's Bay Company to procure the necessary instruments; that intelligent persons who have a taste for science, residing in different parts of the country be invited to co-operate; that observations be made at all military and trading posts; and that the Returns be reduced and published under the direction of the Canadian Institute, as fully as the means which may be obtained would warrant; that the original manuscripts should be preserved in the archives of the Institute, in order that they may be examined in studying the motion of atmospheric waves, and in tracing the progress of storms.

3. In answer to your second question:—"What number of stations or posts of observation (without reference to those proposed by me) would it be desirable to have established in the British American Provinces: and what particular places would the Smithsonian Institution recommend as best adapted for such purposes?" I would state that it would be desirable to establish as many stations as can be supported, and that a corps of observers be established, though they have no other instruments than the wind vane and rain gauge. In case a

limited number of observers can be supported, it will be well to distribute these as uniformly over the space as may be practicable. It would be desirable that no two be further apart than 100 miles. At present, without a critical examination of the map I am unable to suggest any place of paramount importance.

4th. In regard to your *third* question:—"What are the instruments now in general use throughout the United States; by whom made and adjusted, and their respective prices; and what is the average expense to the public at each Station?" I have to inform you that the instruments now in use throughout the United States are the *Barometer, Thermometer, Psychrometer, Wind van* and *Rain gauge*, made under the direction of the Smithsonian Institute, by James Green, 422 Broadway, New York. They are compared with standards from London and Paris. The Barometer is furnished with an adjustable cistern, and the scale is so arranged as to eliminate the necessity of a correction for capillarity, and the instruments are reliable, and will serve for ascertaining absolute quantities as well as for indicating relative atmospheric changes. The prices are—for a barometer, \$35; thermometer, \$5; psychrometer, \$6 75; rain gauge, \$3. All the observations made under the direction of the Smithsonian Institution are voluntary and gratuitous; the observers under the direction of the State of New York receive \$50 per annum; and those for the State of Massachusetts, \$25.

5th. In answers to:—"are there regular printed forms of Registry, common to all, and can we be furnished with copies?" The Smithsonian Institute prepares and distributes regularly printed forms of registry, which are used by observers generally throughout the United States, which might be copied for distribution by the Canadian Institute.

6th. In answer to the *fifth* inquiry:—"Are there any printed instructions for observing, with the view of ensuring a thorough uniformity with the times, method, and language of registration throughout the whole chain of operations?" Our edition of instructions to observers is exhausted, but another will be published for distribution at the beginning of the year. A new edition is also in the hands of the Stereotypers of the tables necessary for reduction.

7th. Besides operations with meteorological instruments, much valuable information may be derived from the registration of periodical phenomena, such as the first appearance of different animals, the flowering and maturing of different plants. Blank forms for registering those have also been prepared by this Institution.

Accompanying this, we send you a copy of the 7th and 8th Report of the Smithsonian Institution, from which much additional information may be obtained in regard to our meteorological system.

I remain, very respectfully, your obedient servant,

(Signed) JOSEPH HENRY,

Secretary of the Smithsonian Institute.

To Major Lachlan, Montreal.

REPORT OF EDITING COMMITTEE ON MAJOR LACHLAN'S SUPPLEMENTARY REMARKS.

The Editing Committee, to whom Major Lachlan's "Supplementary Remarks in behalf of the Establishment of a Provincial System of Meteorological Observations," were referred, beg to report, that, while appreciating the persevering zeal of the author, his communication appears to them calculated to

convey an erroneous and unjust impression of what has been done, and is now doing, in Canada; as well as of the conduct of the Institute in declining to adopt his recommendation of an immediate application to Parliament, for a grant of money, to establish a Provincial System of Observation. The Institute was aware that already, by Act of Parliament, this object had, in great part, been attained by a provision that Meteorological Observations should be regularly made at the various Grammar Schools in the Upper Province, and that the organization of this system was satisfactorily in progress. When completed, the Institute might be prepared to take steps for the establishment of supplementary stations, where needed; but meanwhile, the application urged by Major Lachlan seemed unnecessary, and, indeed, impracticable, till the number of such supplementary stations could be ascertained. The Institute would also have been at a loss to name the sum to be applied for from Government, on account of the difficulty of estimating one most important and indispensable item, which would appear to have been entirely overlooked by Major Lachlan, viz., the provision of a staff of assistants for the purpose of abstracting, reducing, and preparing for publication, the returns transmitted from the different stations. Information on this head was sought in vain from the experience of the system in the United States, superintended by the Smithsonian Institution. The various details of that system, quoted in Major Lachlan's communication, were well known to members of the Institute interested in this subject; but with regard to this item—the most important of all—no information was obtained from the Smithsonian Institution, nor could be, since it is only within the last few weeks that that body has announced that their arrangements for this purpose have at length been completed.

It appears that the subject of Meteorological Observations in Canada, so far from being neglected, is at present receiving a very considerable share of attention. Only a few months have elapsed since arrangements were completed for placing the Magnetic and Meteorological Observatory on the foundation of Toronto University, and others are under consideration, and have already received the sanction of his Excellency the Governor-General, for providing a staff of educated observers, from the same fund, to be attached to the Observatory as University Scholars. In connexion with this, and in furtherance of the same objects, by a statute of the Council of University College, a Chair of Meteorology has been established in that Institution, and the new Professor, G. T. Kingston, Esq., M.A., will deliver his first course of lectures during the present term, specially designed for training Grammar School Teachers, the Pupil-Teachers of the Normal School, and others, in the use of the requisite instruments, and the scientific application of the results aimed at in such observations.

Finally, the correspondence between Lieut.-Col. Lefroy and the Rev. Dr. Ryerson, in reference to the immediate establishment of thirty stations in Upper Canada, in connection with the Grammar Schools, is in the press, and will be published in a few weeks; and it appears to the Committee, that if anything further is to be done at present, the Institute should limit itself to recommending to the Government the application of the same principle in relation to the Grammar Schools and other educational Institutions of Lower Canada, which is now being brought into successful operation in this section of the Province.

In carrying out the plans already matured or projected, the Committee beg leave to express their opinion that the duties of the Canadian Institute should be strictly limited, as heretofore, to publishing the Observations. The idea of a voluntary association, constituted like the Canadian Institute, undertaking

such duties as are performed by the official staff of the richly-endowed Smithsonian Institution of Washington, is altogether fallacious, and could only lead to disappointment and failure. That portion of its members on whom such duties must devolve, are already called upon to make considerable sacrifices in time and labour, for the successful conduct of the Institute; and if a staff is to be provided, for carrying out such a comprehensive scheme as they trust ultimately to see established in British North America, the Provincial Magnetic and Meteorological Observatory is the only Institution to which it can be proper to have it attached.

CANADIAN INSTITUTE, Jan. 22d, 1856.

MEMORANDUM:

On the steps which have been taken by the Educational Department, to establish a system of Meteorological Observation throughout Upper Canada.

(Read before the Canadian Institute, Jan. 26, 1856.)

BY J. GEORGE HODGINS, DEPUTY SUPERINTENDENT OF SCHOOLS.

As some doubt seems to exist on the minds of some of the members of the Institute, regarding the nature and extent of the means which have been employed to establish meteorological stations throughout Upper Canada, I have deemed it proper to embody in this memorandum, all the information in the possession of the Department of Public Instruction on the subject.

By some of the members it has been felt, that the Institute is liable to censure for not taking the initiative in the matter; and proceeding at once to give practical effect to certain views on the subject, which had frequently urged upon it; but had those gentlemen applied either to Professor Cherriman, or to the Chief Superintendent of Schools, they might have learned what was the nature of the steps which had been taken to carry out an effective system of meteorological observation throughout Upper Canada.

It is now six years, since the subject engaged the attention of our second President, Col. Lefroy. At his suggestion, Dr. Ryerson submitted the matter to the Government; and in June, 1850, a Bill was brought into the Legislature by the Hon. Francis Hincks, containing among other things the following proposed enactments:—

“Whereas it is desirable at Seminaries and places of Education to direct attention to natural phenomena, and to encourage habits of observation; And whereas a better knowledge of the climate and meteorology of Canada will be serviceable to agriculture and other pursuits, and be of value to scientific enquirers: Be it therefore enacted, That it shall be part of the duty of the Master of every Senior County Grammar School, to make the requisite observations for keeping, and to keep, a Meteorological Journal, embracing such observations, and kept according to such form, as shall from time to time be directed by the Council of Public Instruction; and all such Journals or Abstracts of them shall be presented annually by the Chief Superintendent of Schools to the Governor, with his Annual Report:

Every senior county grammar school shall, on or before the last day of November, one thousand eight hundred and fifty-four, be provided, at the expense of the county municipality, with the following instruments:

- One barometer.
- One thermometer for the temperature of the air.
- One Daniel's hygrometer, or other instrument for shewing the dew-point
- One rain-gauge and measure.
- One wind-vane.

And it shall be the duty of the Chief Superintendent of Schools to procure these instruments at the request and expense of the Municipal Council of any county, and to furnish the master of the senior county grammar school with a book for registering observations, and with forms for abstracts thereof, to be transmitted to the Chief Superintendent by such master, who shall certify, that the observations required have been made with due care and regularity.”

It was much to be regretted that, owing to the pressure of other matters, this Bill only reached a first reading before the Legislature adjourned.

In 1851, the Seat of Government was removed to Quebec; and it was not until midsummer, in 1853, that Dr. Ryerson, with the assistance of the Hon. Mr. Hincks, succeeded in getting a bill passed, containing a provision in the identical words just quoted. The year 1854, was chiefly occupied in devising measures for re-organizing the Grammar Schools, and in placing them in a more satisfactory footing in the country. In that year, however, specimens of the instruments designed to be used in making the necessary observations, were procured by Dr. Ryerson in Boston, and New York. I have brought some of these instruments down for your inspection; they are now before you on the table. Upon examination, early in 1855, by Professor Cherriman, (who has kindly aided the Chief Superintendent in this matter) the instruments were considered unsuitable. A second order for instruments, to a London maker, not having been completed in time for establishing the stations in 1855, Dr. Ryerson determined to take no further steps in the matter, until he would visit London and Paris, and with the aid of Col. Lefroy, select such instruments as would be suitable for his purpose. This he has been enabled to do in a most satisfactory manner, as will be seen by the following extract, from a letter on the subject dated the 20th of November last, and addressed to the Secretary of the Province.

Dr. Ryerson says:—“After my arrival in London, I conferred with Col. Lefroy, on the subject of procuring philosophical instruments for the Grammar Schools. Col. Lefroy, so long and favourably known in Canada—with whom the provision of the Grammar School Act originated, (and who had promised, at the time of its adoption, to give me the benefit of his experience and practical knowledge, in giving it effect,) readily aided me by his counsel and advice. I found, on inquiry, and the comparison of catalogues, that some of the instruments could be procured more cheaply in Paris, while it was more advisable to get others made in London. At length Messrs. Negretti & Zambra, (the London manufacturers of philosophical instruments,) agreed to furnish all the instruments required, as low as they could be obtained in Paris, to mark the thermometer according to both the centigrade and Fahrenheit systems, and to make them range as low as 35 degrees below zero; to test all the instruments before packing them, and to deliver them in New York, to a brother of Mr. Negretti, at their own risk—I only to pay the freight. I beg to append to this letter, (marked A) the admirable memorandum with which Col. Lefroy kindly furnished me in London, on the subject of those instruments; and I am happy to be able to add, that Professor Cherriman, (who succeeded Col. Lefroy in the Observatory at Toronto,) has cordially consented to afford me all the aid I may require in the preparation of the tables and instructions necessary to render the system of Meteorological Observations, adopted in the Senior County Grammar Schools, harmonious with that adopted at the Provincial Observatory, and to prepare and transmit the proper returns. Messrs. Negretti & Zambra cannot execute the order for the whole of these instruments, (40 sets, which will be made under the inspection of Col. Lefroy), until February. The cost of the instruments will be from £12 to £15 per set. The system of meteorological observations in Canada, when once established, will be more complete than that of any other part of America.”

The memorandum referred to by Dr. Ryerson, I have

brought down for the information of the members, should they desire it.

In connection with this extract, it may be gratifying to know, that the Governor General highly approves of the contemplated arrangements, and has commissioned Dr. Ryerson to convey to Col. Leffroy, His Excellency's acknowledgments and thanks for his very valuable assistance in this matter.

The outline map of the Counties, exhibited to-night,* and which I have had specially prepared to accompany this memorandum, is designed to shew at a glance, the number and position of the proposed meteorological stations throughout Upper Canada. The position of the Senior County Grammar Schools is indicated on the map by a large black circle—Toronto, the chief and central station, being prominently marked. These will be for some time the principal stations; but as circumstances warrant, the Junior Grammar Schools, will, no doubt, become stations of equal importance and value with the others. I have indicated the position of these junior stations by a black cross. Some additional chief stations, which will be established when the now united counties become separated, I have marked with a square black figure. We have therefore:—

Contemplated Chief Stations	30
Additional Chief Stations	3
Junior Stations.....	40
Total Stations	— 73

From the junior stations it will be seen what are our resources should it be deemed advisable to multiply the Chief Stations and extend our system of observation still further throughout Upper Canada. No time, however, will be lost in establishing the Chief Stations; and it is hoped, that before the close of the present year, many of them will be in successful operation.

These facts and illustrations which I have presented, exhibit in detail, perhaps a little too minutely, all the information which is in the possession of the Department of Public Instruction on the subject. They show, conclusively, that the gentlemen at the head of that Department has never lost sight of the great practical importance, to a new and but partially settled country, of establishing (early in its history,) before its physical condition is materially changed, a complete and comprehensive system of meteorological observation, by which may be tested theories in Physical Science, which are yet unsettled; and by which may be solved questions relating to Natural Phenomena, which have long remained among the sealed mysteries of Nature.

Montreal Natural History Society.

An ordinary meeting of this Society was held in the Museum on Monday evening November 26,—the President, the Lord Bishop of Montreal in the Chair. There were present Drs. Workman, Fraser, Scott, Hingston, Barnston, and Messrs. Henshaw, H. J. Ibbetson, Dutton, and Rennie.—The minutes of last ordinary meeting were read over and approved.—Read a letter from Dr. Hall accompanying his meteorological observations during the last three months which he presented to the Society for preservation in its records.—Ordered that the donation be acknowledged with thanks, and that Dr. Hall be requested to continue his contribution.—The last report of the Upper Canada Board of Agriculture was laid on the table.—Application having been made for a loan of some of the specimens contained in the Museum to enable Mr. Principal Dawson to illustrate the course of lectures upon Natural History he is now engaged in delivering at McGill College, it was Resolved, That upon receiving a list of the specimen's required, and the Principal's obligation to return the same, the Society are willing to accede to his request provided the Cabinet Keeper is satisfied that they can with safety be re-

moved.—The meeting then proceeded to ballot, when the Rev. A. Kemp, Minister of St. Gabriel Street Church was unanimously elected an ordinary member. Several gentlemen were proposed as ordinary members; after which the meeting separated.

A. N. RENNIE, Recording Secretary.

The British Association for the Advancement of Science.

On Alloys of Iron and Aluminium.—By Prof. F. C. CALVERT.—Professor Calvert, in conjunction with Mr. Richard Johnson, has succeeded in producing a great many new alloys, having a definite chemical equivalent composition, and, therefore, bringing a large class of products, called alloys, into the general laws of the present day—Chemistry, the law of definite proportions or equivalents. These gentlemen have succeeded in preparing the following alloys of iron and potassium: *First Alloy*—1 equivalents of iron; 1 equivalent of potassium. *Second Alloy*—6 equivalents of iron; 1 equivalent of potassium. These alloys were prepared with the view of solving one of the great chemical and commercial questions of the day—namely, that of rendering iron less oxidable when exposed to a damp atmosphere, as these gentlemen believe that no kind of coating can be discovered which will resist the constant friction of water, as is the case with iron steamers. But all the alloys which they have produced up to the present time, with the exception of one, are oxidable, although some of them contain as much as 25 per cent of potassium, the most electro-positive metal known, and the one most likely to render iron in that electro-chemical state, and less liable to combine with oxygen, the above alloys of potassium and iron were remarkable for their great hardness. They have also succeeded in producing two new alloys composed of iron, combined with that most valuable and extraordinary metal, aluminium, lately obtained by Mons. St. Claire Deville. These two alloys are composed as follows: *First Alloy*—1 equivalent of aluminium; 5 equivalents of iron. *Second Alloy*—2 equivalents of aluminium; 3 equivalents of iron. The last alloy presents the useful property of not oxidizing when exposed to a damp atmosphere, although it contains 75 per cent. of iron. The following alloys were also described, one composed of 1 equivalent of aluminium, and 5 equivalents of copper; one of iron and zinc, composed of 1 equivalent of iron and 12 equivalents of zinc; and what is interesting respecting this last alloy is, not only its extreme hardness, but that it is produced at a temperature of about 800°, it being formed in a bath of zinc and iron containing 14 tons of metal, and through which iron wire is passed when coated with zinc or galvanised. Messrs. Calvert and Johnston took advantage of having such a large melted mass of metals (zinc and iron) to inquire into the following question, viz., if two metals, when melted together, separate according to their respective specific gravity or form a homogeneous mass combined in definite proportions. They consequently analysed three samples taken from the melted bath, one near top, one in the middle, and one at the bottom. Strange to say, they all presented a different composition, and what is not less remarkable, is, that the upper layer contained the largest proportion of the heaviest metal. These three samples offered the following equivalents and definite compositions:—*Top*—1 equivalent of tin, 11 do. of zinc. *Middle*—1 equivalent of tin, 16 do. of zinc. *Bottom*—1 equivalent of tin, 19 do. of zinc. It would appear from their researches, that by preparing commercial alloys according to fixed scientific rules, instead of mere routine, they hope to produce for commerce cheaper alloys than those now in use. The action of acids on these alloys of copper, zinc, &c., presents this curious fact, viz., that although hydrochloric acid affects violently zinc and tin, still in alloys containing these metals with copper, they are but very slightly attacked by this powerful acid. Similar results were also obtained by sulphuric and nitric acids.

On Some of the General Mechanical Structures of Limestone.—By H. C. SORBY, F.G.S.—The author considers that the only satisfactory method of ascertaining the structure of limestones is to examine thin sections of them with the microscope. The results described in this paper were arrived at in this manner. Limestones have been usually described as more or less crystalline or earthy, but this has reference chiefly to subsequent changes, and not to their original condition. When examined with the microscope, it is seen that to describe them according to their mechanical characters would usually be far better. In this manner they may be very conveniently classed as organic sands or clays, in the same way that we may speak of felspar sand or clay. The organic structure of the minute fragments of which they are composed is often so well preserved, that their nature and relative proportions can be satisfactorily determined. When they have been consolidated, the shrinking of the mass has often produced cracks and joints, after-

* A reduced copy of this Map is published herewith.

wards filled with calcareous spar, and often presenting a beautiful appearance when examined with the microscope, on account of their number and regularity, and showing faults of 1-100th of an inch, or much less. These are totally distinct from slaty cleavage, which can be studied to great advantage in such limestones as have that structure. The author has proposed a theory to account for this, and has shown, that the rocks that possess it have been so much compressed, as shown by a great variety of facts, that the positions of their ultimate particles would be changed in such a manner as give rise to precisely such structure as that which produces cleavage. That this would be a necessary result may be proved both by calculation and experiment. In the case of limestones, it is impossible to suppose that any other than a mechanical cause can have developed the structure seen with the microscope, because the particles whose position has been changed are fragments of organic bodies, and not crystals. Besides this change of position, in many cases minute organic fragments, whose original form and structure are well known, are greatly compressed in the plane of cleavage, as shown by the change in their form and structure; and even crystals of dolomite are broken up, elongated, and their crystalline cleavage planes bent, thus showing that the rock was in a consolidated condition when the change of dimensions occurred, but that the pressure was so intense, and acted so gradually, that the whole mass of rock gave way like iron malleable substances, by the movement of the particles one over another.

On Aurora Borealis.—By Admiral Sir JOHN ROSS.—The communication I had the honor of making to the British Association at Belfast, on the interesting subject of the Aurora Borealis, being verbal, and therefore not entitled to a notice in the Association's valuable transactions of that period; but having subsequently repeated the experiments I then verbally mentioned, I can now confidently lay the account of them before the public, trusting that, when taken into consideration, they will be found corroborative of the theory which I published in the year 1819, and which led to a controversy that shall be hereafter mentioned. It having occurred to me that if my theory was true, namely, "That the phenomena of the aurora borealis were occasioned by action of the sun, when below the pole, on the surrounding masses of colored ice, by its rays being reflected from the points of incidence to clouds above the pole which were before invisible," the phenomena might be artificially produced; to accomplish this I placed a powerful lamp, to represent the sun, having a lens, at the focal distance of which I placed a rectified terrestrial globe, on which bruised glass of the various colours we had seen in Baffin's Bay was placed, to represent the coloured icebergs we had seen in that locality, while the space between Greenland and Spitzbergen was left blank, to represent the sun. To represent the clouds above the pole which were to receive the refracted rays, I applied a hot iron to a sponge, and, by giving the globe a regular diurnal motion, I produced the phenomena vulgarly called the "Merry Dancers," and every other appearance exactly as seen in the natural sky, while it disappeared as the globe turned, as being the part representing the sea to the points of incidence. In corroboration of my theory, I have to remark that, during my last voyage to the Arctic Regions (1850-51), we never, among the numerous icebergs, saw any that were coloured, but all were a yellowish white; and, during the following winter, the aurora was exactly the same colour; and, when that part of the globe was covered with bruised glass of that colour, the phenomena produced in my experiment was the same, as was also the Aurora Australis, in the Antarctic regions, where no coloured icebergs were ever seen. The controversy to which I have alluded, was between the celebrated Professor Schumacher of Altona, who supported my theory, and the no less distinguished M. Arago, who, having opposed it, sent M. Gimard Martens and another to Hammerfest, on purpose to observe the aurora and decide the question. I saw them at Stockholm on their return, when they told me their observations tended to confirm my theory; but their report being unfavorable to the expectations of M. Arago, it was never published, neither was the correspondence between the two Professors, owing to the lamented death of Professor Schumacher. I regret that it is out of my power to exhibit the experiments I have described, owing to the peculiar manner in which the room must be darkened, even if I had the necessary apparatus with me; but it is an experiment so simple that it can easily be accomplished by any person interested in the beautiful phenomena of the Aurora Borealis.

Process for obtaining Lithographs by means of Photography.—Professor Ramsay, F.R.S., of Glasgow, described a process by which

Mr. Robert Macpherson, of Rome, had succeeded in obtaining beautiful photo-lithographs,—specimens of which had been hung up in the Photographic Exhibition in Buchanan-street. The steps of the process are as follows:—

1. Bitumen is dissolved in sulphuric ether, and the solution having been mixed with a small quantity of some soapy substance, is poured upon a lithographic stone previously placed upon a levelling stand. The ether quickly evaporates and leaves a thin coating of bitumen spread uniformly over the stone. This coating is sensitive to light, a discovery made originally by M. Niepce, of Chalons.

2. A negative on glass or waxed paper is applied to the sensitive coating of bitumen, and exposed to the full rays of the sun for a period, shorter or longer according to the intensity of the light, and a faint impression on the bitumen is thus obtained.

3. The stone is now placed in a bath of sulphuric ether, which almost instantaneously dissolves out the bitumen which has not been acted upon by light, leaving a delicate picture on the stone, composed of the bitumen on which the light has acted.

4. The stone after having been carefully washed, may be at once placed in the hands of the lithographer, who is to treat it with gum and acid, after which proofs may be thrown off by the usual process.

Professor Ramsay then proceeded to state that the above process, modified, had been employed with success to etch plates of copper or steel:

1. The metal plate is prepared with a coating of bitumen precisely in the manner described above.

2. A positive picture on glass or paper is then applied to the bitumen, and an impression is obtained by exposure to light.

3. The plate is plunged into a bath of ether, and the bitumen not acted upon by light is dissolved out. A beautiful negative remains on the plate.

4. The plate is now to be plunged into a galvano-plastic bath and gilded. The gold adheres to the bare metal, but refuses to attach itself to the bitumen.

5. The bitumen is now to be removed entirely by the action of spirits and gentle heat. The lines of the negative picture are now represented in bare steel or copper, the rest of the plate being covered with a coating of gold.

6. Nitric acid is now applied as in the common etching process. The acid attacks the lines of the picture formed by the bare metal, but will not bite the gilded surface.

Thermogenic Apparatus.

For some time past there has been a machine at work on the Quai Valony, at Paris, which furnishes a considerable quantity of steam without any other source than that of friction. The machine consists of a cylindrical heater 2 metres long, 50 centimetres in diameter, having throughout its whole length, placed in its centre, a conical tube. The water, which is reduced to vapour, fills the void space between the inner walls of the tube or cylinder and the outer walls of the conical tube. Into the conical tube is passed a cone of wood, covered throughout with a braid of hemp rolled upon it spirally. The wooden cone is traversed by an iron axis, and fills exactly the interior capacity of the tube, so as to rub constantly against its walls. It is put in motion by a fall of water from the Canal St. Martin, so as to make about 400 revolutions per minute. The heat produced by the friction is sufficient to convert the water contained in the cylinder into steam. A thermometer placed within the boiler indicates, at the end of a certain time, a temperature of 130° C. The boiler is strengthened in the ordinary way, and is furnished with safety-valve, stop-cocks, a float, manometer, &c. The vapour reaches a pressure of nearly two and a half atmospheres. A lubricating apparatus constantly conveys to the envelope of the wooden cone the oil required to permit of its surface moving upon that of the interior of the conical tube. This machine holds 400 litres of water. To set it in action requires the power of two horses, it then produces sufficient steam to drive a one-horse engine. The inventors, MM. Beaumont and Major, hope thus to be able to utilise the force of falling water, and convert it into heat. This machine was at work at the Crystal Palace of Paris.

Silvered Porcelain Reflectors.

A new kind of reflector for lights was brought before the notice of the members of the Institution of Civil Engineers, on the 20th ult. It was composed of silvered porcelain, and appeared to possess a very brilliant polish, which was stated to be indestructible. Hitherto reflectors of small sizes only had been produced, but by means now adopted it was expected that they could be made as large as 21 inches in diameter over the mouth. If this manufacture was brought to the perfection that was anticipated, a great economy would result, as the silvered copper reflectors at present used were very expensive originally, were liable to oxidation, and were frequently injured by the care of the attendants in rubbing them to keep the reflecting surfaces bright. The new Porcelain Reflector had been transmitted by the Hon. Major Fitzmaurice to Captain Washington, R.N., by whom it was introduced to the notice of the meeting.

The Canadian Journal.—Close of the Series.

The present number brings the first Series of the *Canadian Journal* to a close. When, in August, 1852, the Council of the Institute ventured to risk the publication of an expensive monthly periodical, the Society did not embrace more than one hundred and fifty members. The *Journal* was "designed to afford a Canadian medium of communication between all engaged or interested in Scientific or Industrial pursuits, to assist and elevate the labours of the Mechanic, to afford information to the Manufacturer, and to administer to the wants of that rapidly-increasing class in British America, who are desirous of becoming acquainted with the most recent inventions and improvements in the Arts, and those Scientific changes and discoveries which are in progress throughout the world."^a

The rapid increase in the number of the Members of the Institute, and the consequent speedy exhaustion of the present edition of the *Journal*, already increased from 500 copies monthly in 1852 and 1853, to 750 copies monthly in 1854 and 1855, has forced upon the Council the necessity of either reprinting the earlier Volumes, or issuing an enlarged edition of a New Series. The latter course has, for various reasons, been adopted, and with it such changes in the form, issue, and general objects of the *Journal*, as have seemed to the Council most in accordance with the present position and encouraging prospects of the Institute. The plan of the New Series will be found in the Annual Report for 1855, page 399 of this Volume.

The subjoined statement of the expenses incident to the publication of the *Journal* during the past year, and the receipts accruing from the sale of the monthly issues during the same period, will not be found uninteresting to those who gave timely and generous assistance and encouragement during the critical period of the first few months of its existence.

Total Expense of the Publication of the Canadian Journal for 1855.....	£380 0 0
Distributed to members, 508 copies monthly, estimated at 12s. 6d. per annum.....	£317 10 0
Subscribers to Journal, not members of the Institute, 46 copies at 15s.....	34 10 0
Distributed to Canadian Literary Societies on account of Government, 60 copies at 15s.	45 0 0
Donations and Exchanges, foreign and Canadian, 43 copies, estimated at 10s.....	21 10 0
	<hr/>
	418 10 0

Balance in favor of the Journal, for 1855..... £37 9 9

Items in the Paris Exhibition.

BEST REDUCING LATHE.—A lathe for copying and reducing irregular surfaces, which is extensively used in the United States for turning gunstocks, boot lasts, &c. The lathe exhibited is shown as executing a reduced bust of the Empress in marble, in which it seems to perform perfectly. A modification of the same machine is shown, reducing medallions in a similar manner.

* See Prospectus.

SAW-MILL MACHINERY.—The cut of an ordinary saw-mill being exactly vertical, and the teeth following one another in one line, a considerable power would appear to be expended in pulverising the saw-dust already cut. In this machine this waste of power is obviated by a motion similar to that given by a man's arm in a saw-pit, and the saw is retired from the wood in the up-stroke. There is said to be a large saving of power by this alteration.

DOORS, WINDOWS, BLINDS, &c.—These are remarkable specimens for quality and cheapness. The doors are pannelled and with moulded jams. The windows are not hung with lines, but open and shut with a catch, and the degree of light may be regulated in the blinds. The makers will execute orders at Montreal at the following prices:—Door and framing complete for 19 francs. The window, 9 francs; the blinds, at 9 francs each. They are made by machinery.

HEAT PRODUCER.—An apparatus for producing heat by friction. A wooden cone wound round with hemp revolves inside a polished brass cone in the centre of a boiler; a slight pressure on the end of the wooden cone ensures its being kept tight inside the brass one, and the hemp being kept profusely lubricated prevents its becoming charred. With 20 square feet of rubbing surface, and a speed of 600 revolutions of the cone per minute, it is said to be capable of evaporating 66 lb. of water in an hour. This apparatus solves the converse of the problem accomplished by the steam-engine, that is, the power being given it produces heat.

Yield of the Copper Mines for 1855.

The total yield of the various mines for the present year was as follows:—

<i>Ontonagon District.</i>		Tons	Tons
Minnesota.....	1035	Adventure.....	80
Norwich.....	200	Ohio T. Rock.....	15
Rockland.....	170	Artec.....	10
National.....	30	Ohio.....	5
Forest.....	100	Merchants.....	3
Nebraska.....	20	Ridge.....	37
Windsor.....	38	D. Houton.....	30
Toltec.....	85		
Total from the Ontonagon District.....			2,176
<i>Portage Lake District.</i>		Tons	Tons
Isle Royale.....	245	Quincy.....	10
Portage.....	48	Pewabic.....	17½
Huron.....	10		
Albion.....	15		
Total from Portage Lake District.....			445½
<i>Keweenaw Point District.</i>		Tons.	Tons.
Cliff Mine.....	1600	Summit.....	4
N. American.....	250	Star.....	5
Copper Falls.....	90	Central.....	48
N. Western.....	90	Engle river.....	3
N. West.....	125	Fulton.....	2
Phoenix.....	5		
Native.....	2		
Total from Keweenaw Point District.....			2,234
<i>Recapitulation.</i>		Tons.	Tons.
Ontonagon District.....			2,176
Portage Lake do.....			325
Keweenaw do.....			2,234
Total.....			4,845

The value of copper on the wharves on Lake Superior is \$440 per ton: total products \$2,000,000. The gain in shipments this year over 1854 is 2,000 tons. The French Government have had a commission examining the Lake Superior mines, in consequence of their supplies being cut off from Russia, the result of which is that American copper was found to be far superior to the English and fully equal to the Russian. It is used in the manufacture of ordnance, and no inconsiderable quantities are consumed in the manufacture of jewelry, percussion caps, and a great variety of other articles. The superior tenacity of American copper is a very strong recommendation in its favour.

Monthly Meteorological Register, St. Martin, Isle Jerus, Canada East.—October 1857,
NINE MILES WEST OF MONTREAL.

BY CHARLES SMALLEWOOD, M.D.

Latitude—45 deg. 32 min. North. Longitude—73 deg. 36 min. West. Height above the Level of the Sea—118 Feet.

Day	Barom. corrected and reduced to 32° Fahr.		Temp. of the Air.		Tension of Vapor.		Humidity of Air.		Direction of Wind.			Velocity in Miles per Hour.			Rain in Inches	Weather, &c.	
	6 A.M.	2 P.M.	6 A.M.	10 P.M.	6 A.M.	10 P.M.	6 A.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.
1	29.654	29.697	57.0	60.4	468	404	98	99	S b E	S b E	S b E	8.37	0.92	2.86	1.811	Rain.	Cum. Str. 10.
2	468	480	57.6	68.0	481	580	100	98	S b E	S b E	S b E	7.50	0.60	0.31	2.530	Do.	Rain.
3	472	481	57.1	66.1	473	574	99	96	E N E	S b E	S b E	11.13	0.23	7.21	0.213	Cir. Str. 10.	Cir. Str. 6. Auro.
4	451	480	56.8	61.0	475	520	99	95	W N W	W N W	W N W	6.13	0.13	6.13	0.032	Do. 6.	Str. 9. [Bar.
5	480	488	56.2	68.1	477	582	94	85	S b W	S b W	S b E	9.51	0.68	0.63	...	Do. 5.	Clear.
6	492	492	57.7	69.4	447	634	90	89	S W	S W	S S W	1.11	2.31	17.30	...	Do. 10.	Rain.
7	521	516	63.4	60.2	246	266	92	80	W S W	S W	S W	22.80	9.60	4.67	0.361	Cir. Str. 5.	Clear.
8	719	688	77.6	65.2	226	231	91	92	S W	S W	S W	8.93	3.90	2.48	...	Do. 4.	Clear.
9	770	735	79.7	69.4	204	462	95	89	S S W	S S W	S S W	0.73	3.63	2.70	0.200	Str. 2.	Rain.
10	992	900	80.084	60.0	263	338	91	89	W N W	S W	S W	2.93	2.23	1.40	...	Cir. Str. 4.	Clear. Aurora E.
11	803	744	79.715	61.3	227	389	80	80	E N W	S S E	S W	1.35	11.83	17.40	0.300	Do.	Cir. Cum. Str. 4. Rain.
12	704	755	75.3	49.3	274	263	91	98	W S W	S S E	W N W	6.30	4.07	7.32	1.643	Rain.	Do.
13	589	489	69.8	67.7	386	422	99	89	E N E	S S E	S S E	6.09	21.14	16.10	0.600	Rain.	Do.
14	789	741	72.9	62.3	260	274	91	91	S S E	S S E	S S E	5.26	1.47	7.07	0.121	Clear.	Do.
15	714	748	69.9	60.1	214	261	99	98	W b N	S S E	S S E	3.72	6.02	1.60	...	Do.	Do.
16	719	891	81.0	61.4	210	274	91	81	W N W	W N W	W N W	5.92	13.00	8.42	...	Cir. Str. 5.	Do. 8. Aurora B
17	992	883	84.7	31.0	161	214	85	91	W b N	W S W	S S W	4.93	5.11	5.50	...	Clear.	Cir. Str. 10.
18	737	742	79.5	41.0	268	281	90	93	W S W	W S W	S b E	7.65	5.2	0.21	0.110	Cir. Str. 10.	Do. 10.
19	810	657	73.0	40.0	254	450	99	63	E b N	W b E	S b W	0.21	0.22	0.87	...	Clear.	Clear.
20	755	732	83.6	46.0	313	440	95	81	S S W	W b W	W N W	1.26	2.06	0.58	...	Do.	Do.
21	804	664	80.0	66.1	262	323	79	83	N E	N E	N E	8.21	16.06	16.46	...	Clear.	Cum. Str. 10.
22	674	762	72.0	46.0	201	264	81	79	W S W	W b S	N W W	16.42	16.62	17.32	...	Cir. Str. 10.	Do. 8.
23	784	757	77.7	34.5	178	225	91	90	W b N	S W b S	S S W	6.25	3.03	1.50	...	Cir. Str. 10.	Do. 10.
24	870	698	68.8	33.2	161	197	89	91	N W W	N E b N	S S W	0.11	4.30	17.82	...	Snow.	Do. 10.
25	850	512	60.6	39.4	196	214	97	94	W N W	W S W	S S E	6.16	9.12	14.92	0.900	Cir. Str. 6.	Do. 10.
26	783	740	68.0	30.6	178	207	92	76	W N W	W S W	S S E	18.12	4.90	4.93	...	Cir. Str. 10	Do. 10.
27	493	416	69.7	30.2	231	272	99	86	S b E	S W	S W	10.15	2.21	10.83	0.090	Rain.	Do. 4.
28	290	451	63.4	32.1	182	191	91	94	W N W	W N W	W N W	8.11	11.82	9.35	...	Cir. Cum. Str. 10.	Do. 10.
29	846	870	69.7	43.1	101	216	91	73	N W	S b E	S b E	22.51	9.75	4.33	...	Str. 2.	Cir. Str. 4.
30	449	565	63.1	52.9	246	201	89	83	W N W	W N W	W N W	4.67	22.40	16.18	0.003	Clear.	Cir. Cum. Str. 4.
31	304	401	69.6	49.1	163	231	88	86	N W W	S S E	S E	0.83	1.92	0.92	...	Clear.	Meteor. 8.40 p.m.

Barometer ... Highest, the 31st day 30.150
 Lowest, the 6th day 29.192
 Monthly Mean 29.695
 " Range 0.958
 Thermometer ... Highest, the 6th day 79.2
 Lowest, the 31st day 27.6
 Monthly Mean 49.85
 " Range 45.6
 Mean Humidity 84.9
 Greatest Intensity of the Sun's Rays 107.6
 Lowest Point of Terrestrial Radiation 21.1
 Amount of Evaporation, 1.40 inches.
 Rain fell on 17 days, amounting to 8.728 inches, raining 98 hours, 35 minutes.
 Snow fell on 1 day, amounting to 2.10 inches, snowing 14 hours 0 minutes.
 Most prevalent Wind, W.S.W. Least prevalent Wind, E.
 Most Windy Day, the 19th; mean miles per hour, 16.45.
 Least Windy Day, the 13th; mean miles per hour, 0.43.
 Aurora Borealis visible on 3 nights. Might have been seen on 5 nights.
 Lunar Halo on the 24th day, at 2.30 a. m. Diam 31.4.
 Eclipse of the Moon, invisible, owing to cloudy weather.
 Sum of the Atmospheric Currents in Miles passed into the Cardinal Points, N. 791.60;
 S. 995.20; E. 741.46; W. 1366.87; Total 4481.62 miles.
 The electrical state of the atmosphere has been marked by very feeble intensity.
 Ozone was in rather large quantity, amounting on several days to complete saturation.
 This is the most windy October on record here. Maximum Velocity 32.14 miles per hour.

Monthly Meteorological Register, Quebec, Canada East, October, 1863.

BY J. H. T. A. NOBLE, B.A., F.R.A.S., AND MR. W. E. D. C. CASPSELL.

Latitude. 46 deg. 49' 2" min. North; Longitude, 71 deg. 16' min. West. Elevation above the level of the Sea, about 200 Feet.

Date.	Barometer corrected and reduced to 32 degrees, Fahr.			Temperature of Air.			Tension of Vapour.			Humid. of Air.			Direction of Wind.			Velocity of Wind.			Rain in Inch.	Snow in Inch.	REMARKS.		
	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.					
	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.	MEAN.					
1	29.698	29.698	29.664	55.8	56.7	53.3	55.1	0.409	0.403	0.372	0.395	95	90	93	92	E	E	E	18.4	18.4	15.2	1.082	
2	576	510	584	56.0	56.8	56.6	56.8	423	391	415	411	100	87	96	94	E	E	E	16.0	21.3	22.7	3.762	
3	386	349	384	57.1	56.8	56.1	56.8	404	413	430	416	97	91	96	95	E	E	E	19.7	16.0	11.3	0.92	
4	486	390	335	55.4	58.9	64.1	66.1	421	438	403	421	98	90	98	96	E	E	E	11.3	15.4	15.2	2.17	
5	430	513	652	498	52.6	58.8	66.1	378	406	421	402	97	83	93	91	E	E	E	12.4	0.0	0.0	0.13	
6	608	340	120	52.8	58.8	55.1	56.2	395	411	430	416	99	99	99	97	E	E	E	0.0	10.0	8.0	0.330	
7	392	499	601	495	42.3	48.4	44.7	215	171	204	197	81	48	78	69	N	N	N	16.0	12.4	6.2	0.330	
8	677	650	717	681	40.9	48.4	43.7	196	246	207	216	77	74	80	77	S	S	S	3.8	3.8	0.0	0.138	
9	742	716	764	787	39.3	46.4	44.7	209	226	261	232	88	62	91	80	S	S	S	6.2	5.2	10.4	0.138	
10	818	984	972	916	41.0	51.5	41.1	239	264	232	246	93	71	91	85	W	W	W	8.8	10.0	3.8	0.138	
11	909	700	687	765	38.2	53.1	51.9	218	257	211	229	95	64	56	71	E	E	E	2.0	21.3	11.3	0.138	
12	711	712	724	710	51.1	56.5	52.0	315	280	315	303	86	63	82	71	E	E	E	12.4	12.4	22.7	4.09	
13	672	631	662	652	51.8	64.0	63.0	365	386	366	372	97	94	93	95	E	E	E	27.8	22.7	21.3	1.584	
14	747	707	682	705	49.3	64.0	48.8	367	315	267	309	91	73	96	86	E	E	E	0.0	3.8	2.0	0.138	
15	675	641	607	674	42.3	51.0	45.4	247	226	237	237	93	62	80	78	W	W	W	5.2	5.2	10.0	0.138	
16	641	715	806	721	35.6	48.6	38.9	242	212	169	204	87	60	72	73	W	W	W	2.0	8.8	11.3	0.138	
17	849	773	710	779	33.6	40.8	38.1	157	161	184	167	81	64	80	75	N	N	N	2.0	8.8	11.3	0.138	
18	614	612	713	656	38.1	44.9	45.3	210	231	260	234	93	79	87	86	W	W	W	0.0	3.8	5.2	0.138	
19	752	696	687	712	45.2	51.4	46.6	273	275	276	276	91	74	88	84	W	W	W	0.0	0.0	0.0	0.138	
20	692	713	761	719	48.0	58.0	51.9	285	347	330	321	87	71	86	71	E	E	E	6.2	0.0	2.0	0.138	
21	842	729	644	709	47.4	45.8	41.8	230	175	250	218	72	57	76	76	E	E	E	32.2	25.4	42.5	3.16	
22	404	361	589	461	43.5	48.5	45.8	278	221	211	237	100	66	74	80	E	E	E	7.3	3.8	10.0	0.138	
23	645	612	708	655	35.6	44.6	39.8	164	182	182	176	79	61	76	72	W	W	W	10.0	0.0	3.8	0.138	
24	817	762	477	685	36.2	56.8	35.4	183	193	199	192	86	92	96	91	S	S	S	3.8	8.8	22.7	0.138	
25	211	189	307	286	39.0	37.0	34.2	231	190	171	200	91	86	91	86	S	S	S	22.7	10.0	17.0	0.138	
26	610	657	603	623	29.3	35.3	35.1	134	146	167	149	82	71	82	75	E	E	E	3.8	8.8	2.0	0.138	
27	445	337	288	367	37.4	41.9	39.0	184	207	208	200	83	79	88	86	S	S	S	3.8	0.0	10.0	0.138	
28	486	196	405	263	35.0	42.4	36.6	187	180	146	171	92	67	70	70	W	W	W	10.1	3.8	3.8	0.138	
29	698	674	653	630	32.0	34.2	34.7	128	119	160	136	71	61	81	68	W	W	W	3.8	5.2	12.4	0.138	
30	843	416	738	499	36.7	43.1	36.8	205	170	150	175	95	62	69	76	W	W	W	3.8	5.2	2.0	0.138	
31	30.063	30.065	30.017	30.017	30.7	39.3	34.5	135	119	160	135	75	60	73	69	W	W	W	6.2	3.8	2.0	0.138	
M	29.6161	29.6256	29.6062	29.6046	43.01	48.64	44.63	0.257	0.256	0.259	0.253	84	72	85	83				9.15	6.97	8.81	9.244	0.1

10th. Min. ter. rad. 30° 3.

21st. At 8 p.m., gusts of wind 48 to 50 miles per hour.
24th. Mountains covered with snow.

28th. 3 a.m., ter. rad. 31° 0.

30th. Min. ter. rad. 21° 0.

Maximum Barometer, 6 a.m. on the 31st.	30.063
Minimum Barometer, 6 a.m. on the 28th.	29.186
Monthly Range	0.877
Monthly Mean	29.6046
Maximum Thermometer on the 6th	60° 4
Minimum Thermometer on the 25th	28° 4
Monthly Range	32° 0
Mean Maximum Thermometer	50.38
Mean Minimum Thermometer	40.00
Mean Daily Range	10.38
Mean Monthly Temperature	45° 33
Greatest Daily Range of Thermometer on 10th.	18.2
Least Daily Range of Thermometer on 3rd	3° 3
Warmest Days, 3rd, 4th, 5th. Mean Temperature	56.1
Coldest Day, 24th. Mean Temperature	32.2
Climate Difference	22.9
Possible to see Aurora on 7 Nights.	
Aurora visible on 7 Nights.	
Total quantity of Rain, 9.244 inches.	
Total quantity of Snow 0.1 inches.	
Pain fell on 16 days.	
Snow fell on 2 days.	