



SIR,

There will be a GENERAL MEETING of the ROYAL IRISH ACADEMY, at their House, No. 19, DAWSON-STREET, on Monday Evening, 13th February, 1871, at 8 o'clock, P.M., precisely, for the election of Members, and the transaction of general business.

Your obedient servant,

WILLIAM K. SULLIVAN, PH. D.

*Secretary, R. I. A.*

---

PAPERS TO BE READ.

I. SAMUEL FERGUSON, LL.D., "On the difficulties attendant on the transcription of Ogham Legends, and the means of avoiding them." (Part 4th.)

II. The Secretary, for CHARLES E. BURTON, Esq., "On Results obtained by the Agosta Expedition to observe the recent Solar Eclipse."

III. The Secretary, for PROFESSOR W. KING and T. H. ROWNEY, Esq., "On the Geological and Microscopic Structure of the Serpentine Marble of Ophite of Skye."

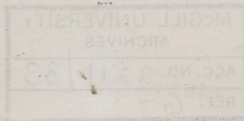
IV. The Secretary, for PRINCIPAL DAWSON, of Montreal, "On Eozoon Canadense."

V. The Secretary, for T. HENRY HUNT, M.D., "On Messrs. King and Rowney's Paper on Eozoon Canadense."

---

NOTICE.

The Members of the Academy whose Subscriptions have been paid up to the 16th March last can be supplied with the recently printed numbers of the "Transactions." Application to be made to the Assistant Secretary.



*Wang*  
*2/11/71*



Sir,  
There will be a GENERAL MEETING of the  
ROYAL IRISH ACADEMY, at their House, No. 13,  
Dawson-street, on Monday Evening, 14th February,  
1871, at 8 o'clock P.M. precisely, for the election of  
Members, and the transaction of general business.

Your obedient servant,  
WILLIAM K. SULLIVAN, P.M.D.  
Secretary, R.I.A.

PAPERS TO BE READ.

- I. Samuel Ferguson, LL.D. "On the difficulties attend-  
ing and on the transcription of Celtic legends, and the means of  
avoiding them." (Part III)
- II. The Secretary, for General E. Burton, Esq. "On  
Results obtained by the Arctic Expedition to observe the  
recent Solar Eclipse."
- III. The Secretary, for Professor W. King and T. H.  
Bowyer, Esq. "On the Geological and Microscopic Structure  
of the Serpentine Marble of Ophite of Skye."
- IV. The Secretary, for Professor Dawson of Montreal.  
"On Lynx Canadensis."
- V. The Secretary, for T. Henry Hart, M.D. "On Musks,  
King and Bowyer's Paper on Lynx Canadensis."

NOTICE.

The Members of the Academy whose Subscriptions have  
been paid up to the 1867 March last can be supplied with  
the recently printed numbers of the "Transactions," Ap-  
plication to be made to the Assistant Secretary.

MCGILL UNIVERSITY ARCHIVES	
ACC. NO.	2211/33
REF.	6



39 Paternoster Row, E.C. LONDON, *October 1877.*

*Now in course of publication at short intervals, in fcp. 8vo. volumes,  
price Eighteenpence each,*

THE  
**LONDON SCIENCE CLASS-BOOKS,**  
**ELEMENTARY SERIES.**

EDITED BY

**G. CAREY FOSTER, F.R.S.**

Professor of Physics in University College, London;

AND BY

**PHILIP MAGNUS, B.Sc. B.A.**

---

**N**OTWITHSTANDING the large number of scientific works which have been published within the last few years, it is very generally acknowledged by those who are practically engaged in Education, whether as Teachers or as Examiners, that there is still a want of Books adapted for school purposes upon several important branches of Science. The present Series of Elementary Class-Books will aim at supplying this deficiency. The works will all be composed with special reference to school-teaching; and, whilst they will be suited to the capabilities and comprehension of boys and girls during their school course, they will afford trustworthy and accurate information, presented in such a way that it may serve as a basis for more advanced study.

In conformity with the special object of the SERIES, the attempt will be made in all cases to bring out the educational value which properly belongs



to the study of any branch of Science, by not merely treating of its acquired results, but by explaining as fully as possible the nature of the methods of inquiry and reasoning by which these results have been obtained. Consequently, although the treatment of each subject will be strictly elementary, the fundamental facts will be stated and discussed with the fulness needed to place their scientific significance in a clear light, and to shew the relation in which they stand to the general conclusions of Science.

In order to ensure the efficient carrying-out of the general scheme indicated above, the Editors are endeavouring to obtain the co-operation, as Authors of the several treatises, of men who combine special knowledge of the subjects on which they write with practical experience in Teaching.

The volumes of the Series will each consist, on the average, of about 180 pages foolscap 8vo. ; and, in order that they may be within the reach of all classes of Schools, they will be published, if possible, at a uniform price of 1s. 6d. It is intended that eventually each of the chief branches of Science shall be represented by one or more volumes.

The following is a list of the works for the publication of which arrangements have already been made. Of these, *Astronomy*, by Professor R. S. BALL, and *Thermodynamics*, by Dr. R. WORMELL, are now ready, price 1s. 6d. each. The remaining works in the list will follow at short intervals. Books on other subjects will be announced as soon as the necessary arrangements with the Authors shall have been completed.



**ALGEBRA.**

By O. HENRICI, PH.D. F.R.S. Professor of Mathematics, University College,  
London.

**ASTRONOMY.**

By R. S. BALL, LL.D. F.R.S. Royal Astronomer, Ireland. With 41 Diagrams,  
price 1s. 6d. [*Now ready.*]

**BIOLOGY, GENERAL.**

By JOHN G. MCKENDRICK, M.D. F.R.S.E. Professor of Physiology,  
University of Glasgow. [*In the press.*]

**BOTANY, OUTLINES OF MORPHOLOGY AND PHYSIOLOGY.**

By W. R. McNAB, M.D. Professor of Botany, Royal College of Science for  
Ireland. [*In the press.*]

**BOTANY, OUTLINES OF THE CLASSIFICATION OF PLANTS.**

By W. R. McNAB, M.D. Professor of Botany, Royal College of Science for  
Ireland. [*In the press.*]

**CHEMISTRY.**

By H. McLEOD, F.C.S. Professor of Chemistry, Indian Civil Engineering  
College, Cooper's Hill.

**GEOLOGY.**

By W. TOPLEY, F.G.S. Assoc. Inst. C.E. of the Geological Survey of England  
and Wales.

**GEOMETRY.**

By O. HENRICI, PH.D. F.R.S. Professor of Mathematics, University College,  
London. [*In the press.*]

**HYDROSTATICS AND PNEUMATICS.**

By PHILIP MAGNUS, B.Sc. B.A. Author of 'Lessons in Elementary Mechanics,'  
Joint-Editor of this Series.



**INTRODUCTORY VOLUME.**

By W. K. CLIFFORD, M.A. F.R.S. Professor of Applied Mathematics and Mechanics, University College, London.

**LAWS OF HEALTH.**

By W. H. CORFIELD, M.A. M.D. Professor of Hygiene and Public Health, University College, London.

**MECHANICS.**

By R. S. BALL, LL.D. F.R.S. Astronomer-Royal for Ireland.

**PHYSICAL GEOGRAPHY.**

By W. TOPLEY, F.G.S. Assoc. Inst. C.E. of the Geological Survey of England and Wales.

**PRACTICAL PHYSICS. (IN THREE PARTS.)**

By FREDERICK GUTHRIE, PH.D. F.R.S. Professor of Physics, Royal School of Mines.

**THE SENSES.**

By JOHN G. MCKENDRICK, M.D. F.R.S.E. Professor of Physiology, University of Glasgow.

**THERMODYNAMICS.**

By RICHARD WORMELL, M.A. D.Sc. Head Master of the Middle-Class Corporation School, London. With 41 Diagrams, price 1s. 6d.

[*Now ready.*]

**VIBRATORY MOTION AND SOUND.**

By J. D. EVERETT, D.C.L. F.R.S.E. Professor of Natural Philosophy, Queen's College, Belfast.

**ZOOLOGY OF THE VERTEBRATE ANIMALS.**

By ALEXANDER MCALISTER, M.D. Professor of Zoology, University of Dublin.

[*In the press.*]

**ZOOLOGY OF THE INVERTEBRATE ANIMALS.**

By ALEXANDER MCALISTER, M.D. Professor of Zoology, University of Dublin.

[*In the press.*]



# TO BE PUBLISHED

AS SOON AS A SUFFICIENT NUMBER OF SUBSCRIBERS OFFER TO WARRANT THE EXPENSE :

## “History of the County of Pictou,”

BY THE REV. GEORGE PATTERSON, D. D.

The following is *substantially* the table of contents, though it will contain many other matters, which cannot be enumerated in a prospectus. In fact the design is that it shall contain full information on every subject of interest connected with the County.

### *Chapter I.—Introductory.*

Situation—Boundaries—Coast—Harbours—Islands—Township Boundaries—Interior—Origin of Name—Natural History.

### *Chapter II.—Pictou before the English Settlement.*

Early French Visitors—Mic-Mac Occupation—Relics—Indian Names—Legends—War with Abénakis—Mohawk Invasion—French Settlements, at Merigomish, Little Harbour, Town Gut and Carriboo—French war vessel stranded at Carriboo—Treaty of Peace with Indians.

### *Chapter III.—First English Settlement of Pictou 1767-73.*

First Grants—Col. Alex. McNutt, Fisher, Wentworth, Philadelphia Company—Their Grant—Arrival of *Hope*—First Settlement—Difficulties—Other Arrivals—First Mill—Notices of First Settlers, Squire Patterson, Harris Family, &c.

### *Chapter IV.—Arrival of Ship Hector and settlement of her Passengers, 1773-76.*

Ship “Hector”—Her Voyage, Arrival, and Landing of her Passengers—Quarrel with Agents of the Company—Hardships—Settlement—First Cargo of Timber—List and Notices of the Settlers—Dumfries settlers driven from P. E. Island by Mice—Arrival in Pictou—Notices of these settlers

### *Chapter V.—Pictou during the American Revolutionary War, 1776-83.*

Effect of War on trade and settlement—Jealousy among settlers—American sympathizers—Capture of vessel at Merigomish—Capture of Capt. Lowden’s vessel—American Privateers—Indian gathering—Wreck of Malignant—Negro Slavery—First settlement in Merigomish—Social State—Religious condition of Population.

### *Chapter VI.—From the close of the American War to the Arrival of Dr. McGregor, 1783-86.*

Eighty-second Regiment—Their grant—List and notices of grantees—Their settlement—Eighty-fourth Regiment—Grant at East Branch, East River—West Branch—Settlement

at these places—Other settlers—Settlers at Tatamagouche and River John—Their previous history—Their first labours—Other settlers—N. P. Olding—Efforts to obtain a minister for the district—Dr. McGregor’s arrival.

### *Chapter VII.—From Dr. McGregor’s Arrival to the Commencement of the French Revolutionary War, 1786-93.*

Dr. McGregor’s first labors—State of County—First Church, &c—Arrival of Emigrants—Commencement of Town—Cochrane Grant—Roman Catholic Immigration—Pictou set apart as separate district—Erection of Jail—Court of Common Pleas—Capt. Lowden and ship building.

### *Chapter VIII.—From the Commencement of the French Revolutionary War to the end of the Century, 1793-1800.*

Effect of War on Trade—Notices of Leading Men, Hugh Denoon, John Dawson, &c—Progress of Settlement—Social Habits—Hunting—Notices of Indians—Arrival of Rev. Duncan Ross—First Presbytery—Contested Election of 1799—First Discovery of Coal.

### *Chapter IX.—From the Beginning of the Century to the Peace, 1800-15.*

Timber Trade—Rum Drinking—Edward Mortimer—Pressgangs—Militia Trainings—Adventures of a Pictonian Immigration from Highlands—Formation of New Settlements, Mill Brook, Mount Thom, New Lairg, McLennan’s Mountain, Four, Six and Eight Mile Brooks, Gairloch, Toney River, and Cape John Shore, West Branch River John—Supreme Court—First Murder in Pictou—Trial—Dr. McCulloch’s arrival and settlement—Rev. John Mitchell—First Bible Society—Rev. Wm. Patrick—Visit of Governor Prevost—Beginning of New Glasgow—James Carmichael.

### *Chapter X.—From the Peace till the Commencement of General Mining Company’s Operations, 1815-27.*

Effect of Peace on Trade—Year of Mice—Year of Frost—First Oat Mill—First Agricultural Society—New



McGILL UNIVERSITY  
 ARCHIVES  
 ACC. NO. 111 25  
 REF. 111 25

Settlements, Upper Barney's River, Blue Mountain and Garden of Eden, Dalhousie Mountain, Earltown and New Annan—Murder by Donald Campbell—Other Murders and Trials—Business Men, George Smith, William Mortimer, John and Abraham Patterson, Henry Hatton—Fisheries—Pictou Academy—Formation of Congregations in connection with the Church of Scotland—Rev. Donald A. Fraser—Rev. K. J. McKenzie—Sabbath School Society—Ballast Pier.

*Chapter XI.—From the Commencement of the General Mining Association till the Division of the County, 1827-36.*

First Coal Mining Operations—John McKay—Adam Kerr—G. M. Association—First Steam Engine—First Steam on Harbour—Deepening East River—First Railroad—*Col. Patriot*—Jotham Blanchard—Pictou *Observer*—Improve-

ment of Roads—Stage Coach—First Temperance Societies—Pictou made a Free Port—West India Trade—Royal William.

*Chapter XII.—From its erection into a Separate County till the Present Time, 1836-76.*

Trade—Shipping—New Mines—Westville—Vale—Manufactories—Church of England—Roman Catholics—Wesleyan Methodists—Baptists—Miscellaneous Information—List of Officers, Members of Parliament, &c.

It will contain about 400 pages, octavo, will be printed on good paper, in clear type, will be strongly bound in cloth, and will be sold at \$2.00.

SUBSCRIBERS' NAME.	RESIDENCE.	NO. OF COPIES.
<p><i>Handwritten scribbles in the bottom left corner of the table area.</i></p>		







39 Paternoster Row, E.C. LONDON, *March* 1876.

TEXT-BOOKS OF SCIENCE, MECHANICAL AND PHYSICAL, ADAPTED  
TO THE USE OF ARTISANS AND OF STUDENTS IN  
PUBLIC AND SCIENCE SCHOOLS.

*Now in course of Publication in small 8vo. each volume containing  
about Three Hundred pages,*

A SERIES OF  
ELEMENTARY WORKS ON MECHANICAL AND PHYSICAL SCIENCE,  
FORMING A SERIES OF  
**TEXT-BOOKS OF SCIENCE**

ADAPTED FOR THE USE OF ARTISANS AND OF STUDENTS IN PUBLIC AND OTHER SCHOOLS.

*Longmans  
Serol = hwl*

THE PUBLICATION of the Series of Books intituled Text-Books of Science was undertaken by Messrs. LONGMANS & Co. in consequence of a belief, based upon the Reports of the Public Schools and the Schools Inquiry Commissions, and on the evidence taken before several Parliamentary Committees, that a want existed of a Series of Elementary Works in the various branches of Mechanical and Physical Science suitable for general use in Schools, Colleges, and Science Classes, and for the self-instruction of Working Men.

The cordial reception given to the various volumes of this Series, as they appeared, by all sections of the Public Press, and the large circulation they have met with, have shewn that Messrs. LONGMANS & Co. were fully justified in their belief in the existence of such a want, and have also warranted the supposition that, as regarded the subjects hitherto treated, the want has now been supplied.

The plan of the Series was originally limited to the subjects selected for the Examination of Candidates for the Whitworth Scholarships, but it soon became apparent, from the widely spread use of the Series both in England and in America, that it would be expedient to enlarge its original scope. Messrs. LONGMANS & Co. have therefore determined to extend their Series, and have accordingly entered into negotiations for the production of works on *Astronomy, Agricultural Chemistry, Chemical Philosophy, Botany, Photography, Mineralogy, Horology*, and other branches of science. The greatest care will continue to be taken to invite contributions from those men only who are acknowledged to be masters of the subjects entrusted to them, and whose names will be a sufficient guarantee for the excellence of their work.



The plan of the forthcoming volumes will be similar to that of those already issued: they are intended to serve for the use of practical men, as well as for exact instruction in the subjects of which they treat; and it is hoped that, while retaining the logical clearness and simple sequence of thought which are essential to the making of a good scientific treatise, the style and subject-matter will be found to be within the comprehension of working men, and suited to their wants. The books will not be mere manuals for immediate application, nor University text-books, in which mental training is the foremost object; they are meant to be *practical treatises, sound and exact in their logic, and with every theory and every process reduced to the stage of direct and useful application, and illustrated by well-selected examples from familiar processes and facts.*

Text-Books *preparing for publication.*

**ELEMENTS OF MACHINE DESIGN.**

With Rules and Tables for Designing and Drawing the Details of Machinery. Adapted to the use of Mechanical Draughtsmen and Teachers of Machine Drawing.

By W. CAWTHORNE UNWIN, B.Sc. Assoc. Inst. C.E. Professor of Hydraulic and Mechanical Engineering at Cooper's Hill College.

**CHEMICAL PHILOSOPHY.**

By WILLIAM A. TILDEN, B.Sc. Lond. F.C.S. Lecturer on Chemistry in Clifton College.

[*In the Press.*]

**STRUCTURAL AND PHYSIOLOGICAL BOTANY.**

By Dr. OTTO WILHELM THOMÉ, Ordinary Professor of Botany at the School of Science and Art, Cologne. Translated and edited by A. W. BENNETT, M.A. B.Sc. F.L.S. Lecturer on Botany at St. Thomas's Hospital.

**PHOTOGRAPHY.**

Captain ABNEY, Royal Engineers, F.R.A.S. F.C.S. Instructor in Chemistry and Photography at the School of Military Engineering, Chatham.

**ASTRONOMY.**

By ROBERT S. BALL, LL.D. F.R.S. Andrews Professor of Astronomy in the University of Dublin and Royal Astronomer of Ireland.

**PHYSICAL GEOGRAPHY.**

By the Rev. GEORGE BUTLER, M.A. Principal of Liverpool College; Editor of 'The Public Schools Atlas of Modern Geography.'

**AGRICULTURAL CHEMISTRY.**

By ROBERT WARINGTON, F.C.S.

**PHYSICAL OPTICS.**

By G. G. STOKES, M.A. D.C.L. Fellow of Pembroke College, Cambridge; Lucasian Professor of Mathematics in the University of Cambridge; and Secretary to the Royal Society.

**SOUND.**

By W. G. ADAMS, M.A. Professor of Natural Philosophy and Astronomy, King's College, London.



**ECONOMICAL APPLICATIONS OF HEAT.**

Including Combustion, Evaporation, Furnaces, Flues, and Boilers.

By C. P. B. SHELLEY, Civil Engineer, and Professor of Manufacturing Art and Machinery at King's College, London.

With a Chapter on the Probable Future Development of the Science of Heat, by  
C. WILLIAM SIEMENS, F.R.S.

**MINERALOGY.**

By H. BAUERMAN, F.G.S. Associate of the Royal School of Mines.

*Text-Books now published.*

**THE ELEMENTS OF MECHANISM.**

Designed for Students of Applied Mechanics. By T. M. GOODEVE, M.A. Barrister-at-Law, Lecturer on Mechanics at the Royal School of Mines. New Edition, revised; with 257 Figures on Wood. Price 3s. 6d.

**METALS, THEIR PROPERTIES AND TREATMENT.**

By CHARLES LOUDON BLOXAM, Professor of Chemistry in King's College, London; Professor of Chemistry in the Department of Artillery Studies, and in the Royal Military Academy, Woolwich. With 105 Figures on Wood. Price 3s. 6d.

**INTRODUCTION TO THE STUDY OF INORGANIC CHEMISTRY.**

By WILLIAM ALLEN MILLER, M.D. LL.D. F.R.S. late Professor of Chemistry in King's College, London; Author of 'Elements of Chemistry, Theoretical and Practical.' New Edition, revised; with 71 Figures on Wood. Price 3s. 6d.

**ALGEBRA AND TRIGONOMETRY.**

By the Rev. WILLIAM NATHANIEL GRIFFIN, B.D. sometime Fellow of St. John's College, Cambridge. Price 3s. 6d.

**NOTES ON THE ELEMENTS OF ALGEBRA AND TRIGONOMETRY;**

with SOLUTIONS of the more difficult QUESTIONS. By the Rev. WILLIAM NATHANIEL GRIFFIN, B.D. sometime Fellow of St. John's College, Cambridge. Price 3s. 6d.

**PLANE AND SOLID GEOMETRY.**

By the Rev. H. W. WATSON, formerly Fellow of Trinity College, Cambridge, and late Assistant-Master of Harrow School. Price 3s. 6d.

**THEORY OF HEAT.**

By J. CLERK MAXWELL, M.A. LL.D. Edin. F.R.S.S. L. & E. Professor of Experimental Physics in the University of Cambridge. New Edition, revised; with 41 Woodcuts and Diagrams. Price 3s. 6d.

**TECHNICAL ARITHMETIC AND MENSURATION.**

By CHARLES W. MERRIFIELD, F.R.S. an Examiner in the Department of Public Education, and late Principal of the Royal School of Naval Architecture and Marine Engineering, South Kensington. Price 3s. 6d.

**KEY TO MERRIFIELD'S TEXT-BOOK OF TECHNICAL ARITHMETIC**

**AND MENSURATION.** By the Rev. JOHN HUNTER, M.A. one of the National Society's Examiners of Middle-class Schools; formerly Vice-Principal of the National Society's Training College, Battersea. Price 3s. 6d.



**ON THE STRENGTH OF MATERIALS AND STRUCTURES:**

The Strength of Materials as depending on their quality and as ascertained by Testing Apparatus; the Strength of Structures, as depending on their form and arrangement, and on the materials of which they are composed. By JOHN ANDERSON, C.E. LL.D. F.R.S.E. Superintendent of Machinery to the War Department. Price 3s. 6d.

**ELECTRICITY AND MAGNETISM.**

By FLEEMING JENKIN, F.R.S.S. L. & E. Professor of Engineering in the University of Edinburgh. New Edition, revised. Price 3s. 6d.

**WORKSHOP APPLIANCES,**

Including Descriptions of the Gauging and Measuring Instruments, the Hand Cutting-Tools, Lathes, Drilling, Planing, and other Machine Tools used by Engineers. By C. P. B. SHELLEY, Civil Engineer, Hon. Fellow and Professor of Manufacturing Art and Machinery at King's College, London. With 209 Figures on Wood. Price 3s. 6d.

**PRINCIPLES OF MECHANICS.**

By T. M. GOODEVE, M.A. Barrister-at-Law, Lecturer on Applied Mechanics at the Royal School of Mines. Price 3s. 6d.

**INTRODUCTION TO THE STUDY OF ORGANIC CHEMISTRY;**

The CHEMISTRY of CARBON and its COMPOUNDS. By HENRY E. ARMSTRONG, Ph.D. F.C.S. Professor of Chemistry in the London Institution. With 8 Figures on Wood. Price 3s. 6d.

**MANUAL OF QUALITATIVE ANALYSIS AND LABORATORY PRACTICE.**

By T. E. THORPE, Ph.D. F.R.S.E. Professor of Chemistry in the Andersonian University, Glasgow; and M. M. PATTISON MUIR. Price 3s. 6d.

**QUANTITATIVE CHEMICAL ANALYSIS.**

By T. E. THORPE, F.R.S.E. Ph.D. Professor of Chemistry in the Andersonian University, Glasgow. With 88 Figures on Wood. Price 4s. 6d.

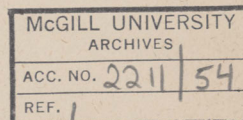
**TELEGRAPHY.**

By W. H. PREECE, C.E. Divisional Engineer, Post-Office Telegraphs; and J. SIVEWRIGHT, M.A. Superintendent (Engineering Department) Post-Office Telegraphs. With 160 Figures and Diagrams. Price 3s. 6d.

**RAILWAY APPLIANCES;**

A Description of Details of Railway Construction subsequent to the completion of the Earthworks and Masonry, including a short Notice of Railway Rolling Stock. By JOHN WOLFE BARRY, Member of the Institution of Civil Engineers. With 207 Figures and Diagrams. Price 3s. 6d.

~~~~~  
London, LONGMANS & CO.





|                   |
|-------------------|
| McGILL UNIVERSITY |
| ARCHIVES          |
| ACC. NO. 2211/69  |
| REF. 64           |

MY DEAR SIR :

ROCHESTER, April 23d, 1875.

I regret exceedingly that my duties are such, that they absolutely forbid my acceptance of your kind invitation to speak at the anniversary in Richmond. Moreover I cannot command the time to write such an essay as you ask of me. I feel impelled however, so great is my interest on the subject of Christian Associations in Colleges, to say a few words, hoping that the results of my experience may encourage you in the effort to establish Associations in all our Institutions of learning.

It seems to me that College Churches are not desirable. As a matter of necessity, students of different religious denominations must be educated together. A College Church representing a considerable majority of the officers and students naturally concentrates and enhances the power and influence of the denomination which it represents. It produces this result both by precept and example. All that is impressive in Christian ordinances and worship, is associated with this particular Church. In times of special religious interest such a Church tends to control and shape to its forms and purposes the efforts and sympathies of all religious students. The temptation and opportunity for illegitimate propagandism are such that none but the most thoughtful and conscientious can escape their sway. Indeed, a natural and proper allegiance to the Church of their choice, would lead them to increase its efficiency as an organization. Unless a Church grows by the absorption into itself of the population around it as well as the congregation whose worship it leads, it will soon become inefficient, useless to its own members—a mere caricature of the vital reality which every Church should be.

Hence the very processes necessary to maintain the life of a College Church involve the utilization of College sympathies, influences and relations for the purposes of propagandism. When such a state of things exists, its tendency is to alienate the feelings and neutralize the efforts of a part of the students of other communions, while the sympathetic and flexible are likely to be absorbed into the College Church. This leads naturally to a division of the spiritual force of the religious men in College, so that the influence of a powerful minority may be practically lost. I do not say that I have described what always takes place in Colleges in which Churches are organized. I have pointed out what appears to be a natural tendency. Such organizations must tend to become inefficient and worthless unless their vitality is maintained by absorbing into themselves the foreign elements with which they come into contact.

College Churches seem to me unnatural and in a certain sense unscriptural organizations. No such Churches are found described in the New Testament. They are not formed in a natural human society. They are not made up of men and women, the old and the young, the rich and the poor, the learned and the unlearned. They do not constitute a natural congregation for a Christian pastor. The preacher unconsciously adjusts himself to the unnatural intellectual demands rather than to the actual spiritual needs of those whom he addresses. He is likely to become an academic instructor in Moral Philosophy, Exegesis and Apologetics, rather than a preacher of Christ crucified to the sinful and sorrowing. All preaching is likely to become dry and hard and unhealthy which is not carefully adjusted to the spiritual necessities of an average congregation of all ages, sexes and conditions.

We believe that College students are more likely to acquire breadth and vigor of moral, intellectual and religious character by worshipping with an ordinary Church and congregation of the denomination to which they severally belong, than by listening to Academic preaching however able. Such worship will be in harmony with their early associations and their deepest and most cherished convictions. The instruction thus received will be likely to take a steadier and firmer grasp upon the conscience, than a form of service and style of preaching to which they have never been accustomed. When all students in our institutions of learning shall worship on Sunday with the Churches to which they severally belong, and shall be organized for religious work in College on the platform of the Young Men's Christian Association, it seems to me that religious effort among them will be attended with less friction, and be more healthy and effective than with one portion associated in a church which is likely from the nature of the case to segregate its members from a minority equally earnest, but holding to different forms of Christian faith.



In a College Christian Association the students meet on a common ground. In their labor for the religious culture of their classmates and associates, the suspicion of propagandism is not likely to arise. Those who are in a condition to need pastoral advice, will naturally seek it from the clergyman, upon whose ministrations they attend on Sunday. When it is desirable for any who have become interested in religion to join a Church, they will naturally be received into the Church where they worship.

It may be said that these views are inapplicable in the case of Colleges situated in small villages, where different religious bodies are not adequately represented. To this objection, it may be replied that a village or city naturally grows up around an institution of learning so soon as it becomes vigorous, even when founded in a situation apart from any centre of population. Nearly all institutions founded within the last thirty years have sought homes in large towns or cities. Whatever may have been the wishes of founders of our Colleges in the past, in the future they will inevitably, by original choice or by the natural growth of population, be found in towns large enough to meet all the requirements of the system here advocated.

By means of these associations, we may best dispose of the charges so unjustly and flippantly made against what are called "Sectarian" Colleges. We retain the unquestioned advantage of making a distinct body of Christians responsible for the general moral condition of an institution, and at the same time protect all students against being illegitimately turned aside from their early religious associations. Taking our stand on the fundamental doctrines, which form the basis of your associations, we are able to organize *all* the moral and evangelical forces in a College, and carry forward Christian labor with that degree of vigor and success which is always generated in an organized body of good men, and directed by common sympathies, aims and purposes.

When we analyse the doctrines of our faith into their elements, we find that the points of agreement among Evangelical Christians are vastly more fundamental, numerous and important than those in which they differ. We have a common morality which is the foundation of our whole system of jurisprudence, our entire social and commercial life. We in common recognise this morality as Christian, having its origin and objective sanction in the personal consciousness of the ever living God. In common we recognise a revelation or uncovering of God's mind and will relatively to man, threefold in form, but one in general aim and purpose. We all reverently accept and honor God's revelation of himself; in the constitution and course of external nature; in the laws of endowments of the human mind; above all in that supplemental revelation of forgiveness and mercy made to man as a sinner, contained in Holy Scripture. In the interpretation and application of the two modes of revelation first named, there are no differences among Christians as such. In the exegesis of Holy Scripture so far as applicable to some details of doctrine, and the forms and subjects of Church ordinances and Church organization, Christians differ and probably always will. When these differences are set forth and compared with each other under the control of the great law of Christian charity, there need be no disturbance of brotherly love, union or Christian regard.

I am by no means certain that the division of Protestant Christendom into sects is an evil so great as it is generally represented. Wherever among men there is moral and mental life breathing an atmosphere of freedom, there will be discussion and difference. Unity in thought is possible only among a people intellectually stagnant and moribund. Unity of action is possible only under the iron rule of a despot. Unfettered activity of mind and will, combined with absolute unity of thought and action are only to be found amid the light and holiness of the New Jerusalem. Unity in religious belief among large bodies of men, when it comes from intelligent conviction, may be made an agency powerful for good, but when it comes to be esteemed an end in itself, and of more value than truth and charity, it is a greater evil than schism. The mutual criticism of political parties, unjust and indiscriminating as it often is, exposes corruption and neglect of duty, and thus promotes vigor and honesty in official action. The same law holds true in religion. In our country no religious organization has been numerous or powerful enough to produce anything approaching a common belief even in a majority. Since the era of independence neither the state nor the general government has been permitted to lend its aid to this end, yet the religious wants of our people have been as well cared for, sound theological truth has been as widely disseminated and Christian love has been as prevalent, as in any country where religious unity has been sought through an established Church, protected by the pains and penalties of civil law. The corruptest period of the Roman Church was the period of its widest prevalence and most absolute external unity. The age of the reformation with its sects and freedom of criticism, was the cause in the Roman Church itself, of a renewal in purity and vigor. The external unity which prevails in the Greek Church as established in Russia, is no measure of its influence in promoting morality or enlightened piety in the empire. The uprising of the sects which followed the Revolution of 1688 in England, was an enormous moral advance upon the profligate age of Charles II. The rise of Methodism though marked by immense secessions from the establishment, is now recognised as having been a moral and religious blessing to England, and even to the English Church itself. The admission of dissenters to degrees in the English Universities, was regarded by the Tory Conservatives as breaking the unity of religious life and instruction in these institutions, but in fact it led to the accession of a large amount of healthy and vigorous moral life. The secession of Chalmers and his compeers from the Scotch establishment marked an era of life and power in the great Presbyterian body.



It is evident to the careful observer that the clear and manifest growth of unity in sympathy and Christian charity for the last half century among Evangelical Christians, is not due to the principle of comprehension, or the breaking down of the lines of honest and manly difference of opinion, but to a real increase of acquaintance of Christian bodies with each other, by working together, where their principles permit a common ground of association and action. It is useless to attempt to break down sects by stifling or repressing the utterance or organization of sincere differences of opinion. Let these remain and even be stated and defended with all clearness and power, and we may still actually approach each other every year in the proportion that we increase in love for our fellow men, and in sympathy of heart and life with our ascended Redeemer.

I look forward with hope to the time when your wide spread organization shall be represented in every Protestant institution of learning in our broad land, when College students delegated from the East and West, the North and the South, shall meet together, not as rival athletes, but as reapers in the great moral harvest waiting to be brought into the garner of our Lord. Where can a more promising field be found for your society's labor than among the thousands of young men in seats of learning? These will, in a few years, furnish a large part of the leaders of thought and action, and from their number you must draw a great part of your most earnest and efficient fellow workers. Let them be trained in your methods and processes during their educational course, and they will be prepared to join the ranks of the young merchants and artisans to increase the influence and power of your Associations, and at the same time become pillars of beauty and strength in the Churches where they worship and partake of the ordinances of our holy religion.

I would that I could be with you and add the emphasis of vocal utterance to these inadequate written words. I beg leave to hope that you will take measures to increase the number and efficiency of Christian Associations in the Colleges and Professional and Scientific Schools of our Country. Let your Secretary visit the young men in these Associations; let them have your sympathy and co-operation; let them be welcomed to your convocations and be made to feel that they have always a place in your hearts and prayers.

Yours very truly,

M. B. ANDERSON.

RICHARD C. MORSE, Esq.



It is evident to the careful observer that the clear and manifest growth of unity in sympathy and Christian charity for the last half century among Evangelical Christians is not due to the principle of comprehension, or the breaking down of the lines of honest and manly difference of opinion, but to a vast increase of acquaintance of Christian bodies with each other by working together, where their principles permit a common ground of association and action. It is useless to attempt to break down sects by sitting or representing the utterance or organization of sincere difference of opinion. Let these remain and even be stated and debated with all clearness and power, and we may still actually approach each other every year in the proportion that we increase in love for our fellow men, and in sympathy of heart and life with our ascended Redeemer.

I look forward with hope to the time when your noble general organization shall be represented in every Christian institution of learning in our broad land, when Colleges and Seminaries, from the East and West, and the North and the South, shall meet together, not as rival athletes, but as co-workers in the great moral harvest, willing to be brought into the garner of our Lord. We can more promising help be found for your Society's labor than among the thousands of young men in seats of learning. These will, in a few years, furnish a large part of the leaders of thought and action, and from their number you may select the best part of your most talented and efficient fellow workers. Let them be trained in your methods and partake of your educational course, and they will be prepared to join the ranks of the young merchants and artisans to give to your Society and power of your Associations, and at the same time become pillars of beauty and strength in the Church, as they worship and partake of our holy religion.

It would be well if you could be with me and add the emphasis of vocal utterance to these inadequate written words. I believe that you will take measures to increase the number and efficiency of Christian Associations in the Colleges and Seminaries of our Country. Let your Secretary visit the young men in these Associations; let them have your sympathy and co-operation; let them be welcomed to your conventions and be made to feel that they have always a place in your hearts and prayers.

Yours very truly,  
M. B. ANDERSON.

Shelburne  
College Association



*Copy Letter from DAVID FORBES, Esq., F.R.S., F.G.S., Member of the Council of the  
Institute of Civil Engineers.*

8th March, 1873,  
11, York Place, Portman Square.

Dear Sir,

In reply to your favour, enclosing a copy of Principal Dawson's Report on the Pictou Iron Mines, and accompanied by samples of the Ores from these Mines, I have much pleasure in stating that the Report impresses me with a very high opinion as to the value of this mineral property, the more so, as I know Dr. Dawson personally as a geologist of the highest standing.

The local circumstances in Nova Scotia, such as the proximity of coal, facility of communication, &c., also appear to me to be so much in favour of making Iron on the large scale in that country, that I have no misgivings as to its success, provided it be entered into with adequate capital and judicious management.

I remain, dear Sir,

Yours truly,

DAVID FORBES.

To EDWARD PRENTICE, Esq.,  
*Conservative Club.*

In another letter, under date the 27th December, 1872, he states that, having read the Reports and examined the Ores, he is of opinion "that Iron of a *superior quality* can be made in Nova Scotia at a *comparatively low rate*;" and adds, "that, if judiciously carried out, with sufficient capital, it cannot fail to prove a commercial success."

---

*Copy Letter from the Director-General of the Geological Survey of Great Britain.*

*Geol. Survey of England and Wales,  
Jermyn Street,*

13th January, 1873.

Dear Sir,

I am well acquainted with Mr. George Dawson. He attended all the classes at the Royal School of Mines during three years. In *every branch* he distinguished himself in the *highest degree*, and he gained the esteem of every one who knew him.

I have the highest opinion of his *ability and integrity*, and I know his range of *knowledge* to be unusually extensive. He also served on the Geological Survey of England for a summer as an amateur, and *proved* in the field that he easily understood and could take part in *all the operations of the Survey in Cumberland*.

Believe me,

Yours very truly,

AND. RAMSAY.

To EDWARD PRENTICE, Esq.



*At the  
Fisher's  
c. 1845*

|                               |
|-------------------------------|
| McGILL UNIVERSITY<br>ARCHIVES |
| ACC. NO. 909A/14              |
| REF. 70                       |



# THE SUNDAY LECTURE SOCIETY.

*At the Preliminary Meeting held, for the formation of the Society, at Freemasons' Tavern, on Thursday, the 25th of Nov., 1869, PROF. HUXLEY, F.R.S., in the Chair, the following Resolutions were passed unanimously:—*

1. That a Society be now formed, under the title of The SUNDAY LECTURE SOCIETY, to provide for the delivery on Sundays in the Metropolis, and to encourage the delivery elsewhere, of Lectures on Science,—physical, intellectual and moral,—History, Literature and Art; especially in their bearing upon the improvement and social well-being of mankind.
2. That if at any time pecuniary profits shall be made, such profits shall be applied to the further promotion of the objects of the Society, and that the Members of the Society shall on no account divide any portion of such profits among themselves.
3. That no musical performances shall be introduced at any Lecture without the sanction of a General Meeting of the Society.
4. That the Society consist of a President and Vice-Presidents and ordinary Members; and that the management of its affairs be by a Committee.

Pursuant to a further Resolution the following Gentlemen have consented to act as the Managing Committee, with power to add to their number and to make the needful arrangements for carrying the objects of the Society into effect, and to draw up rules, or bye-laws, to be submitted to the next General Meeting of its members:—

CRAWFORD, J. G., 52, Gloucester Crescent, Regent's Park, N.W.  
 DOMVILLE, WM. HENRY, 15, Gloucester Crescent, Hyde Park, W.  
 FISHER, RICHARD CHESTER, 2, Plowden Buildings, Temple, E.C., Barrister-at-Law.  
 HODGSON, WM. B., LL.D., 41, Grove End Road, N.W.  
 MARSDEN, MARK E., 42, Doughty Street, W.C.  
 SHAEN, WM., M.A., 8, Bedford Row, W.C.  
 SHORTT, JOHN, LL.B., 4, Garden Court, Temple, E.C., Barrister-at-Law.  
 WESTLAKE, JOHN, M.A., 2, New Square, Lincoln's Inn, W.C., Barrister-at-Law.

The Annual Subscription of Members is £1, giving the privilege of reserved seats at all Lectures. Donations of any amount will be thankfully received.

Subscriptions for the current year (ending the 30th September, 1870) and Donations, also Subscriptions to the Lectures, will be received (if paid by Cheque or Post Office Order) by the Honorary Treasurer, WM. HENRY DOMVILLE, Esq., 15, Gloucester Crescent, Hyde Park, London, W.C., or (if paid in cash) by the Honorary Secretary, JOHN SHORTT, Esq., 4, Garden Court, Temple, E.C.

## *Names of Members, Donors, and Subscribers.*

|                                                                                           |                                                                                                               |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Ackermann, Messrs., 191, Regent Street, W.                                                | Braby, John, Esq., Wimplehurst, Horsham, Sussex.                                                              |
| Addams, Robert, Esq., 59, York Ter., Regent's Park, N.W.                                  | Browne, John, Esq., Elmwood, Bridgwater                                                                       |
| A Lady (per Major-General Le Messurier).                                                  | Browne, Samuel W., Esq., 77, Gloucester Terrace, Hyde Park, W.                                                |
| Alison, S. Scott, Esq., M.D., 85, Park St., Grosvenor Sq., W.                             | Browning, John, Esq., F.R.A.S., 111, Minorities, E.                                                           |
| Anthony, Miss, Wynches Much, Hadham, Herts                                                | Brùère, Wm. Sadleir, Esq., Middleham, Bedale                                                                  |
| Atkinson, George, Esq., Walton-on-Thames                                                  | Burton, Edward F., Esq., 15, Cleveland Gardens, W.                                                            |
| Atkinson, Henry G., Esq., F.G.S., F.A.S., 61, Upper Gloucester Place, N.W.                | Burton, Wm. S., Esq., Inner Circle, Regent's Park, N.W.                                                       |
| Atkinson, J. B., Esq., 13, Carlisle Terrace, Kensington, W.                               | Burt, C. J. T., Esq., Roadside, West Hill, Putney, S.W.                                                       |
| Bain, Professor Alexander, Aberdeen.                                                      | Cairnes, Professor J. E., University College, London, W.C.                                                    |
| Bastard, Thos. Horlock, Esq., Charlton, Blandford                                         | Campbell, Rev. Lewis, M.A., Oxon, Professor of Greek, University of St. Andrew's, Scotland                    |
| Bathoe, Mrs. 6, Bryanstone Square, W.                                                     | Capes, J. M., Esq., Merrow, Guildford, Barrister-at-Law.                                                      |
| Bateson, Hy., Esq., M.D., 116, St. George's Road, S.E.                                    | Carpenter, W. B., Esq., M.D., F.R.S., F.L.S., 56, Regent's Park Road, N.W., Registrar of University of London |
| Bayley, Mrs., 51 Victoria Road, Kensington, W.                                            | Carrington, R.C., Esq., F.R.S., Observatory, Churt, Farnham                                                   |
| Beal, James, Esq., 209, Piccadilly, W.                                                    | Case, Wm., Esq., F.R.C.P.E., Fareham, Hants                                                                   |
| Beecroft, G. A. B., Esq., B.A. and Mus. Bac., Ch. Ch., Oxon., 4, Gloucester Terrace, N.W. | Chitty, Mr. G. W., Wellington House, Deal "Civil Service," (per W. Rossiter, Esq.)                            |
| Bellingham, Mr., 336a, Oxford Street, W.                                                  | Clark, John F., Esq., Bagshot Park, Surrey                                                                    |
| Berry, Miss Ellen, 8, Montpelier Sq., Rutland Gate, S.W.                                  | Cobbe, Miss F. P., 26, Hereford Square, W.                                                                    |
| Bethune, A., Esq., J.P., Blebo, Cupar, Fife, N.B.                                         | Cobbold, T. Spencer, Esq., M.D., F.R.S., F.L.S., 84, Wimpole Street, W.                                       |
| Bicknell, Hen. S., Esq., Clapham Common, S.W.                                             | Cookson, W. S., Esq., 6, New Square, Lincoln's Inn, W.C.                                                      |
| Blyth, Edmund K., Esq., 16, Buckland Crescent, N.W.                                       | Courtauld, Samuel, Esq., Gosfield Hall, Essex                                                                 |
| Bonham-Carter, Mrs., Ravensbourne, Keston, Kent.                                          | Cox, Robert, Esq., 25, Rutland Street, Edinburgh                                                              |
| Bonham-Carter, Miss Alice, Ditto.                                                         | Coxe, Sir James, M.D., Kinellan, Edinburgh                                                                    |
| Bonham-Carter, Miss Elinor, Ditto.                                                        | Crawford, J. G., Esq., 52, Gloucester Crescent, N.W.                                                          |
| Booth, James, Esq., 2, Princes Gardens, W.                                                | Crawshaw, Mrs. Robert, Cyfarthfa Castle, Merthyr Tydfil                                                       |
| Boulderson, H. S. Esq., 17, Gloucester Square, W.                                         | Critchett, George, Esq., F.R.C.S., 21, Harley Street, W.                                                      |
| Bowerbank, J. S., Esq., LL.D., F.R.S., 2, East Ascent, St. Leonard's-on-Sea               | Crookatt, Mrs. C., 23, Queensborough Terrace, W.                                                              |
| Bowen, E. E., Esq., Harrow, N.W.                                                          | Cunnington, John, Esq., 68, Oakley Square, N.W.                                                               |
| Boycott, Thos., Esq., M.D., 7, Gloucester Place, Portman Square, W.                       |                                                                                                               |



- Dalton, Henry R. S., Esq.  
 Dalton, Mrs.  
 Dakyns, J. R., Esq., Geological Museum, 28, Jermyn Street, S.W.  
 Darter, G. B. S., Esq., 2, Fitzroy Square, W.  
 Darwin, Charles R., Esq., F.R.S., Down, Beckenham, Kent  
 Darwin, Erasmus A., Esq., 6, Queen Ann Street, W.  
 Dashwood, Captain F. L., 6, Park St., Westminster, S.W.  
 De La Rue, Warren, Esq., Ph.D., F.R.S., The Observatory, Cranford, Middlesex, W.  
 Dennys, Edward, Esq. (per Mr. Turle, Cromwell Villa, Finchley Road, N.W.)  
 Dicksee, Thomas Francis, Esq., 2, Fitzroy Square, W.  
 Domville, Miss, New Steine, Brighton  
 Domville, Sir Jas. G., Bart.  
 Domville, Miss Sarah  
 Domville, Miss Fanny  
 Domville, Wm. Henry, Esq., 15, Gloucester Crescent, W.  
 Dunlop, Miss Wallace, 5, Connaught Square, W.  
 Dunville, Wm., Esq., Richmond Lodge, Belfast, and 37, Eaton Square, S.W.  
 Erskine, Mrs., 16, Mansion House Rd., The Grange, Edinburgh  
 Evans, Mrs. Lloyd, Dean Lodge, Kimbolton  
 Farrer, Thomas Henry, Esq., 3, Gloucester Terrace, Regent's Park, N.W., Secretary Board of Trade  
 Finch, Arthur E., Esq., 3, Belsize Park Gardens, N.W.  
 Fisher, Robert C., Esq., 2 Plowden Buildings, Temple, E.C., Barrister-at-Law.  
 Fox, John Elliot, Esq., 65, Chancery Lane, W.C.  
 Foxton, Frederick J., B.A., Oxford, Glyn-Gwy, Rhayder, N. Wales, late Incumbent of Stoke Prior, Herefordshire  
 Francis, H. J., Esq., 36, Lincoln's Inn, W.C.  
 Frankland, Dr., F.R.S., Professor of Chemistry, Royal Institution  
 F. R. S.  
 Gamble, John G., Esq., 7, Egbert Street, Gloucester Road North, N.W.  
 Gandar, Thomas F., Esq., 67, Oakley Square, N.W.  
 Gibson, Rev. Robert, Clidcock, near Bridport  
 Gibson, Thos. F., Esq., Broadwater Down, Tunbridge Wells  
 Girdle, George H., Esq., 3, Baxter Place, Edinburgh.  
 Goodall, Miss Julia, 8, Montpellier Sq., Rutland Gate, S.W.  
 Godfray, Amiaux, Esq., 23, Great Percy Street, W.C.  
 Graham, Rev. Allen D., M.A., Oxon, Cossington, Somerset  
 Graham, T., Esq., F.R.S., 4, Gordon Square, W.C. (deceased)  
 Gray, Dr. J. E., F.R.S., V.P.Z.S., and Keeper of the Zoological Department, British Museum, W.C.  
 Gray, Mrs.  
 Grece, Clair J., Esq., L.L.B., Redhill, Surrey, Solicitor  
 Green, Alexander Henry, Esq., Belmont, Monk Bretton, Barnsley, on Geological Survey of Great Britain.  
 Green, Thomas H., Esq., Fellow of Balliol College, Oxford  
 Grey, Mrs. Wm., 18, Cadogan Place, S.W.  
 Grote, Arthur, Esq., Belgrave Mansion, S.W.  
 Grove, William R., Esq., Q.C., F.R.S., 115, Harley Street, W.  
 Grote, George, Esq., F.R.S., 12, Saville Row, W.  
 Hannah, R., Esq., Craven House, Queen's Elms, Brompton, S.W.  
 Hall, Mrs., 106, Brompton Road, S.W.  
 Hammond, J., Lempriere, Esq., Fellow and Bursar of Trinity College, Cambridge  
 Hannen, The Hon. Mr. Justice, 49, Lancaster Gate  
 Harcourt, A. Vernon, Esq., F.R.S., M.A., Reader in Chemistry at Christ Church, Oxford  
 Hardie, Gavin, Esq., 113, Piccadilly, W.  
 Hardwicke, Robert, Esq., 192, Piccadilly, W.  
 Hay, R. B., Esq., 7, Durham Villas, Kensington, W.  
 Heath, Frederick, Esq., 295, Clapham Road, S.W.  
 Hébert, Mdlle. Louise, Bullingham House, Kensington, W.  
 Hertz, Mrs. W. D., 6, Clifton Villas, Bradford, Yorkshire  
 Heywood, James, Esq., F.R.S., 26, Palace Gardens, W.  
 Heyworth, Lawrence, Esq., Yewtree, Liverpool  
 Hicks, Charles T., Esq., Great Holland Hall, Colchester  
 Hickson, W. E., Esq., Fairseat, Wrotham, Kent  
 Hickson, George Esq., Earlswood House, Highbury New Park, N.  
 Hill, Charles, Esq., 23, Oakley Square, N.W.  
 Hill, Benjamin, Esq., Cwmdur, near Clydach  
 Hirst, T. A., Esq., F.R.S., 18, Langham Street, W., Professor of Mathematics, University College, London  
 Hobhouse, Arthur, Esq., Q.C., 16, Devonshire Place, Portland Place, W.  
 Hodgson, Dr. W. B., 41, Grove End Road, N.W.  
 Hole, James, Esq., 50, Thorne Road, South Lambeth, S.E.  
 Holland, W. H. Esq., 102, St George's Square, S.W.  
 Hoppood, James, Esq., Clapham, S.W.  
 Howard, George, Esq., 122, Park Street, W.  
 Huth, Henry, Esq., 30 Princes Gate, W.  
 Jenkyns, H., Esq., 4 Stone Buildings, Lincoln's Inn, W.C., Barrister-at-Law.  
 Johnson, Rev. R. H., Claybrook, Rector of Lutterworth  
 Kater, Mrs., 16, Sussex Gardens, W.  
 Kelly, J. B., Esq., 10, Somers Place, W.  
 Kelsall, Thomas F., Esq., Fareham, Hants  
 King, E. M., Esq., 25, Tavistock Rd., Westbourne Park, W.  
 Lawrence, N. T., Esq., 44, Westbourne Terrace, W.  
 Le Messurier, A. S. L., Esq., 15, Portsea Place, W.  
 Le Messurier, Major-General, 2 Stanhope Ter., Hyde Pk., W.  
 Linton, Mrs. Lynn, 23, Gower Street, W.C.  
 Litchfield, R. B., Esq., 4, Hare Court, Temple, E.C., Barrister-at-Law  
 Lofts, Henry, 99 Mount Street, Grosvenor Square, W.  
 Lushington, Vernon, Esq., 87, Eccleston Square, S.W.  
 Lyell, Sir Charles, Bart., F.R.S., 73, Harley Street, W.  
 Lyell, Lieut.-Colonel Henry, 42, Regent's Park Road, N.W.  
 Macdonald, Rev. A. F., M.A., Lincoln  
 Macfarlane Wm., Esq., Tunbridge Wells  
 Mackay, Robert W., Esq., 41, Hamilton Place, N.W.  
 Mackintosh, A., Esq., 9, Aubrey Crescent, Notting Hill, W.  
 Mainwaring, Gordon, Esq., 94, Gloucester Place, Portman Square, W.  
 Man, William, Esq., Churchfields, Woodford, Essex  
 Marsden, Mark E., Esq., 42, Doughty Street, W.C.  
 Maskelyn, Nevil, S. 112, Gloucester Terrace, Hyde Park, W.  
 McClean, Frank, Esq., 38 Rutland Gate, S.W.  
 Mill, J. Stuart, Esq., Blackheath Park, S.E.  
 Miller, Rowland Esq., Denmark Hill, S.E.  
 Moir, Macrae, Esq., M.A., 3 Pump Court, Temple, E.C., Barrister-at-Law.  
 Moggridge, Rev. Matthew W., Curate of Long Ditton Parish  
 Mordan, Augustus, Esq., 41, City Road, N.  
 Morgan, Delmar, Esq., Ryder Street, S.W.  
 Nettlefold, E. J., Esq., The Grove, Highgate, N.  
 Nettlefold, Frederick, Esq., 20, York Terrace, Regent's Park, N.W.  
 Palmer, T. W., Esq., Brough, Yorkshire  
 Pare, Wm., Esq., F.S.S., Chatfield House, Putney, S.W.  
 Peel, Jonathan, Esq., Knowlmeare Manor, Clitheroe.  
 Pennington, F. Esq., 17, Hyde Park Terrace, W.  
 Pett, Samuel, Esq., 7, Albert Road, Regent's Park, N.W.  
 Pratt, Hodgson, Esq., 8, Lancaster Terrace, Regent's Park, N.W.  
 Pritchard, Andrew, Esq., 87, St. Paul's Rd., Highbury, N.  
 Radford, William T., Esq., M.B., Sidmouth  
 Rankin, G., Esq., 2, Holles Street, Cavendish Square, W  
 Ransom, W. H., Esq., M.D., Nottingham  
 Ransom, Edwin, Esq., Kempstone, Bedford  
 Raymond, John, Esq., 3, King's Bench Walk, Temple, E.C.  
 Read, Mrs., 17, Sussex Place, South Kensington, W.  
 Richardson, — Esq.  
 Rigbye, Miss Harriette, Monk Coniston, Windermere  
 Robinson, W., Esq., 28, Scarsdale Villas, Kensington, W.  
 Robson, John, Esq., B.A., 92, Gower Street, W.C., Barrister-at-law and Secretary University College, London  
 Rogers, Walter Lacy, Esq., 32, Onslow Square, S.W.  
 Romilly, Edward, Esq., 14, Stratton Street, W.  
 Roth, Matthias, Esq., M.D., 16a Old Cavendish Street, W.  
 Ruskin, John, Esq., Denmark Hill, S.E.  
 Salter, Thomas Fisher, Attleborough Hall, Norfolk, Land Agent.  
 Sandwith, Humphry, Esq., C.B., D.C.L., Llwynywormwood Park, Llandoverly  
 Saul, George Thos., Esq., Bow Lodge, Bow, E.



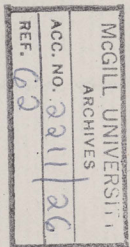
- Schüler, General F, R.A., 94, Marina, St. Leonard's-on-Sea  
 Scott, Thomas, Esq., Mount Pleasant, Ramsgate  
 Shaen, William, Esq., M.A., Fellow of University College, London  
 Shortt John, Esq., LL.B., 2, Brick Court, Temple, E.C., Barrister-at-Law  
 Skerrett, Henry, Esq., Fellow of Trinity College, Cambridge  
 Skerrett, Miss, 41, Beaumont Street, W.  
 Skerrett, Miss H. C. do.  
 Slous, F. L., Esq., 26, Gloucester Road, Regent's Park, N.W.  
 Smith, Joseph Denham, Esq., F.G.S., Kenton Lodge, N.W.  
 Smith, Samuel, Esq., Combe Hurst, Kingston, S.W.  
 Smith, C. B., Esq., Wickham, Hants  
 Smith, Richard, Esq., 7, New Square, Lincoln's Inn, W.C.  
 Smyth, Lieut.-Col. H. A., R.A., 25, Inverness Road, Bayswater, W.  
 Steele, Stephen, Esq., J.P., M.R.C.S.E., Rochester  
 Stepney, Wm. F. Cowell, Esq., 9 Bolton St., Piccadilly, W.  
 Storr, John S. Esq., 26, King Street, Covent Garden, W.C.  
 Storr, Rayner, Esq., 26, King Street, Covent Garden, W.C.  
 Storr, Francis, Esq., Marlborough College  
 Strange, Lieut.-Col. Alexander, F.R.S., India Store Dépôt, Belvedere Road, S.  
 Symonds, Arthur, Esq., 38, Regent's Park Road, N.W., Barrister-at-law  
 Symonds, Rev. W. S., Pendock Rectory, Tewksbury  
 Tagart, Chas. F., Esq., 46, Westbourne Park, W.  
 Tait, Robert, Esq., 14, Queen Anne Street, W  
 Taylor, Miss Helen, Blackheath Park, S.E.  
 Taylor, P. A., Esq., M.P., Aubrey House, Notting Hill, W.  
 Taylor, Mrs P. A., Aubrey House, Notting Hill, W.  
 Thew, Edward, Esq., Shortridge, Alnwick  
 Thomas, Edward Esq., 47, Victoria Road, Kensington, W.  
 Thomas, Herbert, Esq., J.P., 2, Gt. George Street, Bristol  
 Trevelyan, Arthur, Esq., J.P., Tyneholm House, Tranent, East Lothian, N.B.  
 Trevelyan, Sir W. C., Bart., Wallington, Northumberland  
 Trollope, Anthony, Esq., Waltham House, Waltham Cross, Author  
 Troup, J. Esq., 36, Hatton Garden, E.C.  
 Turner, John P., Esq., Canon Hill, Birmingham  
 Turner, R. D. Esq., Percy Vil, Barrington Rd., Brixton, S.W.  
 Twamley, Charles, Esq., 11, Regent's Park Road, N.W.  
 Vance, Alexander, Esq., Caroline House, Hampstead, N.W.  
 Vaughan, Henry, Esq., 2, Cumberland Terrace, Regent's Park, N.W.  
 Vincent, John, Esq., 4, Granville Park, Blackheath, S.E.  
 Voysey, Rev Charles, Healaugh Parsonage, Yorkshire  
 Waley, Jacob, Esq., 20, Wimpole St., W., Barrister-at-Law  
 Walmsley, Sir Joshua, Bournemouth.  
 James W.  
 Webster, Edward, Esq., Ealing, W.  
 Wedgwood, Francis, Esq., Etruria, Stoke-upon-Trent  
 Wemyss, Miss M. E., 1, Foley Place, Gloucester  
 Westlake, John, Esq., 16, Oxford Square, W., Barrister-at-Law, late Fellow of Trinity College, Cambridge  
 Wilkinson, W. M., Esq., 44, Lincoln's-Inn-Fields, W.C.  
 Williams, H. M. Esq., 3, New Square, Lincoln's Inn, W.C., Barrister-at-Law  
 Williams, John, Esq., The Beakes, Smethwick.  
 Willis, Robert, Esq., M.D., Barnes, Surrey  
 Wills, W. H., Esq., Sherrard's Welwyn, Herts  
 Wills, Alfred, Esq., 4, Harcourt Buildings, Temple, E.C., Barrister-at-Law.  
 Wilson, Erasmus, Esq., F.R.S., F.R.C.S.E., 17, Henrietta Street, Cavendish Square, W.  
 Wilson, George Orr, Esq., Dunardagh, Blackrock, Dublin  
 Wilson, Rev. Hy. Bristow, Vicar of Gt. Staughton, Hunts  
 Wilson, John, Esq., M.A., Trinity College, Dublin, 5, Durham Villas, Kensington  
 Wilson, Rowland Knyvet Esq., 7, Stone Buildings, Lincoln's Inn, W.C., Barrister-at-Law  
 Wolley, Rev. John, Beeston, Nottingham, late Vicar of Beeston  
 Woolner, T., Esq., 29, Welbeck Street, W.  
 Wolstenholme, Edward P., Esq., 2, Stone Buildings, Lincoln's Inn, W.C., Barrister-at-Law  
 Worthington, Thomas M., Esq., East Moulsey.  
 Wright, E. Percival, Esq., M.D., F.S.L., Professor of Botany, Trinity College, Dublin  
 Woods, W. S. Grosvenor, Esq., 99, Park Street, W., Barrister-at-Law, Fellow and late Assistant Tutor of Trinity College, Cambridge  
 Yeo, J. W., Esq., 44, Grande Rue, Dieppe.

*Names of those who have expressed assent to the objects of the Society.*

- Adare, The Viscount, 6, Buckingham Gate, S.W.  
 Allan, J. McGregor, Esq., F.A.S.L., 26, Park Street, Camberwell, S.E.  
 Amberley, The Viscount, Rodborough Manor, Stroud  
 Anderton, H. Lyon, Esq., LL.B., Cantab., 35, Gt. Ormond Street, W.C.  
 Applebee, Rev. Jas Kay, 15, Hanley Road, Balls Pond, N.  
 Appleton, Lewis, 4, Rowington Terrace, Soho, Birmingham  
 Baikie, Robert, Esq., M.D., 49, Northumberland Street, Edinburgh.  
 Barley, William, Esq., Oaken, Wolverhampton, Merchant  
 Barlow, H. C., Esq., M.D., 11, Church Yard Row, Newington Butts, S.E.  
 Becker, Miss Lydia E., 28, Jacksons Row, Albert Square, Manchester.  
 Bellhouse, Wm. Dawson, Esq., M.D., 1, Park Street, Leeds.  
 Bengough, Rev. S. E., M.A., 8, Victoria Road, Gipsy Hill, S., Lecturer on Literature and Science  
 Bennett, G. Wheatley, Esq., H.M. Customs, 4, Florence Road, Kennington Place, S.E.  
 Blunt, W. E., Esq., 81, New Bond Street, W.  
 Bogg, Thomas Wemyss, Esq., M.R.C.S., Louth.  
 Bond, Francis T., Esq., M.D., Principal of the Hartley Institution, Southampton.  
 Bonomi, Joseph, Esq., F.R.A.S., 13, Lincoln's-Inn-Fields, W.C., Curator of Sir John Soane's Museum  
 Bowring, Sir John, LL.D., F.R.S., Claremont, Exeter  
 Bray, Charles, Esq., Coventry  
 Carey, Captain W. D., R.A., Shoeburyness  
 Carpenter, Wm. Lant, Esq., B.A., Lond., 12, Brighton Park, Clifton, Bristol  
 Cassal, Charles, 31, Hilldrop Road, Camden Road, N.W., Professor in University College, London  
 Clarke, Rev. C., F.L.S., 47, Charlotte Rd, Birmingham.  
 Clibborn, E., Esq., 19, Dawson Street, Dublin  
 Clinton, Colonel Henry, Earlsbury Park, Royston, Herts  
 Conway, M. D., Minister of South Place Chapel, Finsbury, 51, Notting Hill Square, W.  
 Conwell, Eugene A., Esq., M.R.I.A., Trim, County Meath, Inspector of Schools.  
 Cookson, Montague, Esq., D.C.L., 26, Devonshire Terrace, W., Barrister-at-Law  
 Couldery, Mr. Thomas, 130, Old Kent Road, S.E.  
 Croke, John, Esq., Studley Priory, Oxford  
 Crompton, Henry Esq., 23, Westbourne Terrace, W., Barrister-at-Law.  
 Crosskey, Rev. Henry W., F.G.S., 28, George Road, Edgbaston, Birmingham  
 Daun, Robert, Esq., M.D., F.R.S.E., 6, Picardy Place, Edinburgh  
 Davies, Rev. Chas. Maurice, D.D., 155 Queen's Road, Bayswater, Principal of West London College.  
 Davis, J. Barnard, Esq., M.D., F.R.S., Shelton, Staffordshire  
 Davis, W. S., LL.D., Stamford Villa, Cheltenham, Principal of the Academy of Science, Cheltenham  
 Dove, John E., Esq., Field Cottage, Eden Grove, Holloway, N.  
 Fawcett, Lieut.-Colonel John, Drayton Place, St. Heliers  
 Fuller, William, Esq., M.B., Oswestry, Salop  
 Furnival, Frederick J., Esq., 3, Old Square, Lincoln's Inn, Barrister-at-Law.  
 Gibb, Sir G. Duncan, Bart., M.D., LL.D., 1, Bryanston Street, Portman Square.



- Glover, Rev. Benjamin, West Street, Crewe.  
 Graves, Richard, Esq., J.P., The Cliffe, Warwick  
 Greenwell, Rev. Wm. M.A., Rector of St. Mary in the  
 South Bailey, Durham  
 Griffiths, Edwin T., Esq., M.D., Grove House, Vauxhall  
 Road, Birmingham  
 Guise, Sir William V., Bart., F.L.S., Elmore Court,  
 Gloucester  
 Holl, William, Esq., Elderster House, London Road, Wor-  
 cester  
 Hankin, Charles Wright, Esq., B.A., Oxon, Head Master  
 of King Edward VI's Grammar School, Southampton  
 Hawkes, Henry, Esq., Grampian House, Birmingham  
 Hearne, Edwin, Esq., M.B. London, F.R.C.S. Southampton.  
 Hennell, Miss Sara S., Coventry  
 Hewett, George A., Esq., Banbury  
 Hill, M. D., Esq., Q.C., Heath House, Stapleton, Bristol  
 Holyoake, George Jacob, Waterloo Chambers, Cockspur  
 Street, S.W.  
 Houghton, Rev. W., Preston Rectory, Wellington, Salop.  
 Hughes, George, Esq., J.P., Upper Deal  
 Hutchinson, Rev. Wm., Howden Vicarage, Yorkshire  
 Hutchinson, Jonathan, Esq., F.R.C.S., 4 Finsbury Circus, E.  
 Huxley, Thos. Henry, Esq., LL.D., F.R.S., F.L.S., 26,  
 Abbey Place, St. John's Wood, N.W., Professor of  
 Natural History in the School of Mines, Jermyn Street.  
 Inman, Thomas, Esq., M.D. London, 21, Rodney Street,  
 Liverpool, Physician to the Liverpool Royal Infirmary  
 Jacob, Henry L., Esq., 23, Hamilton Square, Birkenhead,  
 Dental Surgeon  
 James, Edward Hill, Esq., Birmingham  
 Jenchen, H. D., Esq., Kilmorey House, Norwood, S.E.,  
 Barrister-at-law  
 Jones, J., Esq., F.R.C.S., 53, Blenheim Crescent, Notting-  
 Hill, W.  
 Kalish, William, Esq., 4 Thornhill Grove, Manchester,  
 Professor of Languages  
 Kell, S. C., Esq., Merchant, Bradford  
 Kennedy, R., Esq., 3, Blackfriars Road, S.W.  
 Kirkman, Rev. Thos. P., M.A., F.R.S., Croft Rectory,  
 Warrington  
 Klein, Julius, Esq., M.A., Ph.D., 130, Downham Road, N.,  
 Principal of Wilton College, New North Road, N.  
 Lapworth, Mr. W. J., Stafford, Photographer.  
 La Touche, Rev. J. D., Stokesay Vicarage, Craven Arms  
 Leckerby, John, Esq., J.P., F.G.S., Scarborough  
 Lettis, Miss Sarah, 12 St. George's Road, Great Yarmouth.  
 Mackay, Charles, Esq., LL.D., Reform Club, S.W., Mem-  
 ber of the Royal Antiquarian Society of Denmark  
 Martineau, R. F., Esq., 18, Highfield Road, Edgbaston  
 Martineau, Robt., Esq., J.P., 18, Highfield Road, Edgbaston.  
 McCance, David, Esq., Clifden, Belfast  
 McClelland, James, Esq., F.R.S.E., F.A.S.L., 32, Pembridge  
 Square, W.  
 MacCormac, Henry, Esq., M.D., Belfast.  
 Middleton, J., Esq., F.G.S., 79 Cambridge Terrace, Hyde  
 Park, late Principal of Government College, Agra.  
 Mills, Richard Horner, Esq., A.M., Trinity College, Great  
 Denmark Street, Dublin.  
 Monkhouse, W. Cosmo, Esq., Lessness Heath, Belvedere  
 Morgan, Shadrack, Lambert Street, Stockton-on-Tees.  
 Myers, Rev. Edward, F.G.S., 3, Yew Tree Rd., Birmingham  
 Nawley, George, Esq., 40, Gower Street, W.C.  
 Nesbitt, W., Esq., M.A., Strandtown, Belfast, Professor of  
 Latin, Queen's College  
 Newmarch, Wm., Esq., F.R.S., Clapham Common, S.W.  
 Nichols, Francis M., Esq., F.S.A., Lawford Hall, Man-  
 ningtree  
 Oliver, Joseph W., Accountant, 46, St. Vincent Street,  
 Birmingham  
 Paulton, A. Walter, Esq., 15, Cleveland Square, W.  
 Perry, John G., Esq., F.R.C.S., 12, Westbourne Street, W.  
 Pessel, George, Esq., Huddersfield, Merchant  
 Phillips, John, Pavin, Esq., L.R.C.S. Edinburgh, 16, High  
 Street, Haverfordwest  
 Plumbe, Mr. Henry Martyn, 3, Alie Place, E.  
 Porter, Rev. John, 16, College Square East, Belfast  
 Price, F. G. H., Esq., F.R.G.S. F.A.S.L., Temple Bar, E.C.  
 Pyefinch, H. V., Esq., 90, Stamford Street, Blackfriars  
 Road, S.E.  
 Raper, R. W., Esq., Hoe Corner, Malvern, Fellow of  
 Queen's College, Oxford  
 Reilly, Francis S., Esq., 2, Stone Buildings, Lincoln's Inn,  
 W.C., Barrister-at-Law  
 Rich, Sir Henry, Bart., 16, Curzon Street, W.  
 Richardson, F. T., Esq., M.D., Harbottle, Morpeth  
 Riviere, William, Esq., 4, Park Terrace, Oxford  
 Roberts, Rev. J. B., Schilhotel, Vicarage, Alnwick  
 Roberts, Martyn, Esq., J.P., F.R.S.E., Pendarren House,  
 Crickhowell.  
 Robertson, G. Croom, Esq., M.A., Professor of Logic,  
 University College, London  
 Roper, Richard S., Esq., F.G.S., Bridge St., Newport, South  
 Wales, Ironmaster.  
 Rossiter, W., Esq., Secretary to the South London Work-  
 ing Men's College, 91, Blackfriars Road, S.E.  
 Rothery, Rev. Wm. Hume, 3, Richmond Terrace, Middle-  
 ton, Manchester  
 Rothery, Mrs. Hume, Ditto  
 Rowan, Mrs., 6, Fulham Place, W.  
 Rowan, Miss do.  
 Rowan, Miss F. do.  
 Schmitz, L., Esq., LL.D., Spring Grove, W., Principal of  
 the London International College  
 Selous, Henry Courtenay, Esq., 28, Gloucester Road,  
 Regent's Park, N.W., Artist  
 Sharp, John, Esq., F.G.S., 2, Mitre Court Buildings,  
 Temple, E.C., Barrister-at-Law  
 Shireff, Miss, 18 Cadogan Place, S.W.  
 Sibree, John, Esq., M.A., Bussage House, Stroud  
 Smith, T. Buckley, Esq., 6, Portland Road, Nottingham,  
 Principal of People's College, Nottingham  
 Spencer, Herbert, Esq., 37, Queen's Gardens, Bayswater, W.  
 Spicer, N. W., Esq., M.R.C.S.E., Chard, Somerset  
 Steinthal, Rev. S. Alfred, 107, Upper Brook St., Manchester  
 Street, Rev. James C., Newcastle-on-Tyne.  
 Swanwick, Frederick, Esq., Whittington, Chesterfield.  
 Tayler, Rev. John J., The Limes, Hampstead, N.W., Pro-  
 fessor of Theology, M. New College (deceased)  
 Taylor, Silas B., Esq., Rue des Fontaines, Dieppe  
 Taylor, Whateley Cooke, Esq., Cork, Inspector of Factories.  
 Teasdale, John, Esq., Nantwich Road, Crewe.  
 Thomas, Rev. John, B.A., 27, Portland St., Huddersfield.  
 Thompson, D'Arcy Wentworth, Esq., Galway, Professor of  
 Greek, Queen's College, Galway  
 Thompson, H. B. S., Birmingham, Assistant Secretary  
 Education League.  
 Thompson, Thomas, Esq., M.D., F.R.S., Hope House,  
 Kew, W.  
 Thruston, Charles F., Esq., Talgarth Hall, Machynleth  
 Timmins, Samuel, Esq., F.R.S.L., Elvetham Lodge, Bir-  
 mingham  
 Turle, Jas., Esq., M.D., Cromwell Villa, 36, Finchley  
 Road, N.W.  
 Tyndall, John, Esq., LL.D., F.R.S., Professor of Natural  
 Philosophy in the Royal Institution  
 Vinen, Edw. Hart, Esq., M.D., F.L.S., F.R.M.S., 17, Chep-  
 stow Villas, Bayswater, W.  
 Wallace, Alfred R., Esq., 9, St. Mark's Crescent, Regent's  
 Park, N.W.  
 Watts, John, Esq., Ph.D., Whitmore House, Old Trafford,  
 Manchester  
 Webb, Alfred, Esq., 177, Great Brunswick Street, Dublin  
 Wheelwright, Rev. George, Crowhurst, Surrey  
 Wilks, Mr. Edwin, Promenade, Cheltenham  
 Wightwick, George, Esq., Portishead, Somerset  
 Williams, Sydney, Esq., 14, Henrietta Street, Covent  
 Garden, W.C.  
 Williamson, Alexander W., F.R.S., V.P.C.S., 12, Fellows  
 Road, N.W.  
 Young, John, Esq., M.D., University of Glasgow, Pro-  
 fessor of Natural History



*Handwritten signatures and initials:*  
 W. H. ...  
 J. ...



REPORT OF THE DIRECTORS  
OF THE  
Pictou Gas-Light Co., for the year ending, March, 1870.

*Pictou, 14th March. 1870.*

The Directors of the Pictou Gas Light Company beg leave, in retiring from office, to submit the following Report of the Company's affairs for the past year.

As will be seen from the Financial Statement, there is an increase of upwards of Two Hundred Dollars in their balance: and that virtually the Company has made Six per cent. on the Capital invested during the year; but as some of the receipts had to be applied for the payment of last year's dividend, they deem it more prudent to declare but Four per cent. for the present year, payable on the 27th inst., thus leaving the Stock on hand clear.

If the receipts increase in the same proportion, as they have done during the past year, they can, (unless some unforeseen casualty take place,) declare Six per cent. at the next Annual Meeting.

The coal used during the year has been superior to that of any former year.

The following gentlemen were elected Directors for the current year.

JAMES IVES, Esq., PRESIDENT.

A. P. ROSS, Esq.,

DANIEL HOCKIN, Esq.,

W. H. DAVIES, Esq.,

WM. GORDON, Esq.,

A. J. PATTERSON, Esq.,

JAMES YORSTON, Esq.

WILLIAM JACK, SECRETARY.

*Dividend payable at Pictou*



Dr.

The PICTOU GAS-LIGHT COMPANY in Account with W.M. JACK, Secretary

Cr.

1870.

|                                                       |          |            |
|-------------------------------------------------------|----------|------------|
| March 7th,—To Cash paid Dividends for year ending 1st |          |            |
| March, 1869                                           | \$532.80 |            |
| "    Coal account from Pictou Mines, \$981.29         |          | 981.29     |
| "    Cannel do. from A. G. K., & Co. 137.50           | 1,118.79 |            |
| "    Interest account,                                | 183.84   |            |
| "    Stock account A. G. Kidston & Co.                | 363.74   |            |
| "    Renewal and Repairs                              | 390.11   |            |
| "    County and Poor Rates, &c.                       | 68.70    |            |
| "    Printing, Advertising and Office Expenses        | 14.95    |            |
| "    Duties on Goods,                                 | 21.03    |            |
| "    Truckage account                                 | 35.82    |            |
| "    A. Thomson, Manager's Salary                     | 480.00   |            |
| "    M. McDonald Fireman's do.                        | 240.00   |            |
| "    Wm. Jack, Secretary's, do.                       | 120.00   |            |
| "    Balance                                          | 583.88   |            |
|                                                       |          | \$4,153.66 |

1869.

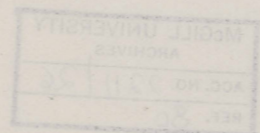
|                          |  |            |
|--------------------------|--|------------|
| March 8th—By Balance     |  | \$378.53   |
| 1870                     |  |            |
| March 7th—By Gas account |  | 3,224.67   |
| By Meter account         |  | 172.00     |
| By Coke and Tar account  |  | 354.16     |
| By Material Sold         |  | 24.30      |
|                          |  | \$4,153.66 |

|                                  |          |          |
|----------------------------------|----------|----------|
| Mar. 7th,—By Balance             |          | \$583.88 |
| <b>STOCK ON HAND:</b>            |          |          |
| Coal                             | \$200.00 |          |
| Coal, Tar and Coke               | 50.00    |          |
| Retorts, Pipes, and Fittings     | 250.00   |          |
|                                  | \$500.00 |          |
| Less Balance due A. G. K. & Co., | 198.07   | 301.93   |
| By Balance in Cash and Stock,    |          | \$885.81 |

WM. JACK, Secretary.

We have examined the Accounts, Vouches, &c., and find the same Correct.

A. J. PATTERSON, }  
JAMES YORSTON, } Auditors.





1871

1870

175.00  
65.18  
21.30

1870

1870

|         |
|---------|
| 2300.00 |
| 50.00   |
| 350.00  |
| 3000.00 |
| 198.47  |
| 301.93  |
| 3382.81 |

W.M. JACK, Secretary.

*Put in for deposit to*

|                            |    |
|----------------------------|----|
| MCGILL UNIVERSITY ARCHIVES |    |
| ACC. NO. 2211              | 26 |
| REF. 80                    |    |



THE ROYAL SOCIETY,  
BURLINGTON HOUSE, MAY 9, 1870.

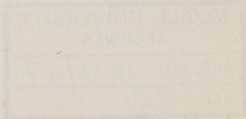
In compliance with the Statutes (Chap. I. Sections 7, 8, and 10), we herewith forward to you the List of Candidates recommended by the Council for Election into the Society; and we are to inform you that THURSDAY, June 2, at 4 o'clock, has been appointed for the Election.

W. SHARPEY, M.D., }  
G. G. STOKES, } *Secretaries.*

SELECTED CANDIDATES.

- William Froude, C.E. . . . . \_\_\_\_\_
- Edward Headlam Greenhow, M.D. . . . . \_\_\_\_\_
- James Jago, M.D. . . . . \_\_\_\_\_
- Nevil Story Maskelyne, M.A. . . . . \_\_\_\_\_
- Maxwell Tylden-Masters, M.D. . . . . \_\_\_\_\_
- Alfred Newton, M.A. . . . . \_\_\_\_\_
- Andrew Noble, Esq. . . . . \_\_\_\_\_
- Capt. Sherard Osborn, R.N. . . . . \_\_\_\_\_
- Rev. Stephen Parkinson, B.D. . . . . \_\_\_\_\_
- Capt. Robert Mann Parsons, R.E. . . . . \_\_\_\_\_
- William Henry Ransom, M.D. . . . . \_\_\_\_\_
- Robert H. Scott, Esq. . . . . \_\_\_\_\_
- George Frederic Verdon, C.B. . . . . \_\_\_\_\_
- Augustus Voelcker, Ph.D. . . . . \_\_\_\_\_
- Samuel Wilks, M.D. . . . . \_\_\_\_\_





THE ROYAL SOCIETY

It complies with the Statutes (Class I Sections 7, 8, and 10) we herewith forward to you the  
List of Candidates recommended by the Council for Election into the Society; and we are to inform you that  
Thursday, June 8 at 4 o'clock, has been appointed for the Election.

W. SHARPEY, M.D.  
G. B. STOKES

*Henry Jones  
June 10/70*

William Froude, C.E.

Richard Haslam Greenhow, M.D.

James Leno, M.D.

Nevil Story Maskelyne, M.A.

Maxwell Tylden-Masters, M.D.

Alfred Newton, M.A.

Andrew Noble, Esq.

Capt. Steward Osborn, R.N.

Rev. Stephen Parkinson, B.D.

Capt. Robert Mann Parsons, R.E.

William Henry Ransom, M.D.

Robert H. Scott, Esq.

George Frederic Vernon, C.E.

Augustus Voelcker, F.R.S.

Samuel Wilks, M.D.



# Canada Sunday School Union.

Montreal, October 1871.

Dear Sir,

Your attention is invited to the following facts in connection with the work of this Society:—

Thoroughly undenominational in its character, the Object of this Union is to establish Sunday Schools in Destitute Localities, to strengthen weak schools and to furnish aid, information, libraries and useful requisites on easy terms wherever they are required, and at the same time, through its Agents, and by means of Meetings and Publications, to stimulate the zeal and strengthen the hands of Sunday School Teachers and Superintendents throughout the Country.

From the Report of last year it appears that with one permanent Agent and two employed for a portion of the year only, 32 schools were organized, with 125 teachers, and 892 scholars; 164 schools visited, with 794 teachers, and 6626 scholars; and 277 addresses or sermons delivered, all bearing on the important and solemn work of Sunday

School instruction and training. In addition, a large number of families have been visited, and a large amount of juvenile religious literature and aid for teachers circulated.

To support the work thus carried on by the Union, the continuance of the contributions of its friends is required, and inasmuch as it is desirable that the Society should be in possession of means sufficient not only to defray the expenses of the year now closing but also to prosecute its work next year,—a financial position never hitherto attained,—special contributions in addition to those ordinarily given are requested.

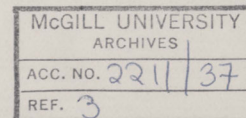
The Committee would urgently commend this matter to your liberality, as an important and fruitful branch of the Lord's work in this country.

The Collectors of the Society will shortly wait upon you, but in the meantime any contributions will be thankfully received if sent to Mr. MUIR, at the Depository, Bible House.

J. W. DAWSON, L.L. D. &c., President.

JAMES COURT, Treasurer.

CHARLES CHAPMAN, M. A., Cor. Sec.





# INDIANAPOLIS MEETING

OF THE

## American Association for the Advancement of Science

### CIRCULAR OF THE LOCAL COMMITTEE.

The objects of the American Association for the Advancement of Science are, "by periodical and migratory meetings, to promote intercourse between those who are cultivating science in different parts of North America; to give a stronger and more general impulse, and a more systematic direction to scientific research in our country, and to procure for the labors of scientific men increased facilities and a wider usefulness."

The following extracts from the Constitution and Resolutions of the Association relate to membership:

"RULE 1.—Any person may become a member of the Association upon recommendation in writing by two members, nomination by the Standing Committee, and election by a majority of the members present."

"RESOLUTION 9.—Associate members may be admitted for one, two or three years, as they shall choose at the time of admission; to be elected in the same way as permanent members, and to pay the same dues. They shall have all the social and scientific privileges of members, without taking part in the business."

The Twentieth Annual Meeting of the Association will be held at Indianapolis, Indiana, commencing Wednesday, August 16, 1871, at 10 o'clock A. M.

It is hoped that all members will be present at the organization of the meeting.

On the afternoon of the first day, the Association will meet at the Academy of Music, where a reception will be extended to them by his Excellency, Conrad Baker, Governor of Indiana; to which, Prof. T. Sterry Hunt, President of the Association, will respond.

Members, and those who wish to become members, are requested, immediately upon their arrival, to register their names at the office of the Local Committee, at the State House, where they will be furnished with member's tickets, and such information as may be desired in regard to accommodations, etc.

The citizens have signified their desire to extend hospitality to the members. There are likewise ample hotel accommodations, and special arrangements will be made with hotel and boarding house proprietors for reduced rates. It is therefore particularly requested that persons intending to be present, will notify the Local Secretary by letter, as early as practicable, and when possible, state the day they will arrive.

It is believed that the Committee will be able to make half-fare arrangements with all the railroads.

The members of the Local Committee will be known by a badge of ribbon.

By order of the Committee.

DANIEL MACAULEY, Chairman.

E. T. COX, Secretary.

Indianapolis, Ind., June 26, 1871.







# American Association for the Advancement of Science.

## TWENTIETH MEETING.

THE titles of papers should be handed in as early as possible, in order to secure their presentation to the Association. Each title should be written on a separate slip of paper, with the author's name and address, and an estimate of the number of minutes required to read the communication. As soon as practicable after entering the titles, the paper itself, or an abstract, must be handed to the Secretary; and until all these conditions are complied with, no title can appear in the programmes.

Names proposed for membership should be written on a separate slip of paper, stating the exact name and post office address, and signed by the proposers.

Members who have not signed the Constitution are requested to do so as soon as possible.

Any errors in the printed list of members in the "Proceedings of the Association," as well as any change in residence, and information respecting the recent decease of members, should be communicated to the Permanent Secretary while in Indianapolis, or sent to him in Cambridge.

Complete sets of the volumes of "Proceedings of the Association" may be had of the Permanent Secretary in Cambridge, at one dollar and fifty cents a volume.

The volume of the Troy "Proceedings" is nearly printed, and will be ready for delivery at or before the Indianapolis meeting.

The admission fee of new members is five dollars, in addition to the annual subscription of three dollars, including the price of the volume of "Proceedings." These dues should be paid at as early a period as possible. They will be received by the Permanent Secretary at the office of the Local Committee. According to Rule 21 of the Constitution, no person shall be considered a member until the dues for the meeting are paid.

Members who do not expect to attend the meeting at Indianapolis are requested to send the assessment of three dollars for the Indianapolis meeting, and also their arrears, to the Treasurer or Permanent Secretary.

Attention is called to the following rule of the Constitution, and Resolutions:

RULE 22. The names of all persons two years in arrears for annual dues shall be erased from the list of members: *Provided*, That two notices of indebtedness, at an interval of at least three months, shall have previously been given.

*Resolved*, That hereafter all members of this Association are particularly desired to forward to the Permanent Secretary, so as to be received before the day appointed for the Association to convene, complete titles of all the papers which they expect to present during the meeting, with an estimate of the time required for reading each, and such abstracts of their contents as may give a general idea of their nature.

*Resolved*, That the foregoing resolution form part of the Circular.—[Proceedings Sixth Meeting, 1852, p. 402.]

JOSEPH LOVERING,  
*Permanent Secretary.*



## EXCURSIONS.

It is proposed by the Local Committee to make two Excursions during the session of the Association, and others can be made if it will suit the pleasure of the members. One to Terre Haute, a distance of 73 miles from Indianapolis, where the Association will remain over night and partake of the hospitality of the citizens. On this excursion, a visit will be made to the celebrated block coal field and blast furnaces of Clay county.

The block coal of Indiana possesses superior qualities for the manufacture of iron and steel, and is attracting more attention at this time than any other coal in the country. A complete map of the mining district around Brazil will be furnished to the members, and it is believed that the trip will prove full of interest to all, and highly instructive in a geological point of view.

The other excursion will be to New Albany, on the Ohio River, where there are a number of interesting manufactories, among them the only finishing plate-glass works in the United States. Besides the many places of geological and general scientific interest, to be seen at New Albany, there is, across the Ohio River at this point, one of the finest railroad bridges in the world, being over one mile in length, without estimating its approaches. The Association will also remain at New Albany over night.

DANIEL MACAULEY, Chairman.

E. T. COX, Secretary.

## SPECIAL NOTICE.

MICROSCOPISTS will please confer, as soon as possible after their arrival, with Dr. W. W. Butterfield at the Reception Room in the State House, in relation to the exhibition and care of any instruments or apparatus they may bring.

A suite of rooms have been secured in the State House for the special use of Microscopists.

|                               |    |
|-------------------------------|----|
| MCGILL UNIVERSITY<br>ARCHIVES |    |
| ACC. NO. 2211                 | 35 |
| REF. 20                       |    |



# British Association for the Advancement of Science.

## FORTY-FIRST MEETING.

COMMENCING 2d AUGUST 1871.

CHAMBERS, 14 YOUNG STREET,  
EDINBURGH, May 31, 1871.

SIR,

WE are desired by the Local Executive Committee to inform you that the next Meeting of the BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, is to be held in Edinburgh, and will commence on *Wednesday, 2d August*, under the Presidency of Sir WILLIAM THOMSON, M.A., LL.D., D.C.L., F.R.S.L. & E., Professor of Natural Philosophy in the University of Glasgow.

The facilities now afforded by the several Railway and Steam Boat Companies to parties travelling from all parts of Great Britain and the Continent, render it probable that this Meeting will be very numerously attended. The local authorities and the representatives of the various scientific societies, as well as all those officially connected with the Association, earnestly desire that the Members and Associates should receive a cordial welcome, and that everything possible should be done to make the visit agreeable and instructive.

The public buildings in Edinburgh, and especially the University Class Rooms, afford ample accommodation for the meetings of the Sections, and from their proximity to each other are eminently convenient.

Edinburgh and its neighbourhood have peculiar attractions for visitors, whether scientific or not. The City itself, especially from its situation, is well worthy of a visit. The whole district, for thirty miles round, is of high interest from the Historic and Antiquarian point of view; and there is an admirable field for the Geologist and for students of Natural History generally.

The Railway Companies, in terms of an arrangement amongst themselves, will convey Members of the Association from any part of Great Britain to and from Edinburgh with 1st or 2d Class Return Tickets, such tickets being available from *Tuesday, the 1st day of August*, until and including *Friday, the 11th day of August*, being the day after the Meeting is concluded. Farther particulars will be given on application, and Cards of Membership forwarded, entitling the party to obtain such Tickets. *Tourists' Tickets* to the North and West Highlands will also be obtained at the principal Railway Stations, available for return within one month, with permission to break the journey at Melrose, Edinburgh, Perth, Dunkeld, Blair-Athole, Aberdeen, Inverness, and any other station where the Train or Steamer stops, either in going or returning.

A List of the principal Hotels and Lodging-Houses has been made up, with a tariff of their charges, which will be available to Members on application.

We shall be glad to know at your earliest convenience, whether it is your intention to be present, and, if required, to give you every information and assistance in the way of providing Lodgings or other accommodation.

ALEX<sup>R</sup>. CRUM-BROWN, } *Honorary*  
J. D. MARWICK, } *Local Secretaries.*



REGISTRATION  
ACCOUNTS  
REV. 1871

British Association for the Advancement of Science

FORTY-FIRST MEETING

COMMENCING 28 AUGUST 1871

CHAMBERS, 14 YORK STREET  
EDINBURGH, MAY 31, 1871

SIR,

We are desired by the Local Executive Committee to inform you that the next Meeting of the British Association for the Advancement of Science is to be held in Edinburgh, and will commence on Wednesday, 28 August, under the Presidency of Sir William Thomson, M.A., LL.D., D.C.L., F.R.S.E., Professor of Natural Philosophy in the University of Glasgow.

The facilities now afforded by the several Railway and Steam Boat Companies to parties travelling from all parts of Great Britain and the Continent render it probable that this Meeting will be very largely attended. The local authorities and the representatives of the various scientific societies, as well as those essentially connected with the Association, earnestly desire that the Members and Associates should receive a cordial welcome, and that everything possible should be done to make the visit agreeable and profitable.

The public buildings in Edinburgh, and especially the University Class Rooms, afford ample accommodation for the meetings of the Sections, and from their proximity to each other are eminently convenient.

Edinburgh and its neighbourhood have peculiar attractions for visitors, whether scientific or not. The City itself, especially from its situation, is well worthy of a visit. The whole district, for thirty miles round, is of high interest from the Historic and Antiquarian point of view; and there is an admirable field for the Geologist and for students of Natural History generally.

The Railway Companies, in terms of an arrangement amongst themselves, will convey Members of the Association from any part of Great Britain to and from Edinburgh with 1st or 2d Class Return Tickets, such tickets being available from Tuesday, the 1st day of August, until, including Friday, the 11th day of August, being the day after the Meeting is concluded. Further particulars will be given on application, and Cards of Membership forwarded, entitling the party to obtain such Tickets. Tickets to London and West Highlands will also be obtained at the principal Railway Stations, available for return within one month, with permission to break the journey at Aberdeen, Edinburgh, Perth, Dundee, Ban-Abschie, Aberdeen, Inverness, and any other station where the Train or Steamers stop, either in going or returning.

A list of the principal Hotels and Lodging-Houses has been made up, with a tariff of their charges, which will be available to Members on application.

We shall be glad to know at your earliest convenience, whether it is your intention to be present, and if required, to give you every information and assistance in the way of providing lodgings or other accommodations.

ALEX. GUTHRIE-BROWN,  
J. D. MARWICK,  
Secretaries

*But Mr  
Guthrie*



*Du Morning Chronicle, Québec.  
19 mai 1871*

PRINCIPAL DAWSON AND EDUCATION  
IN TECHNOLOGY.

Some fifteen years ago, when Mr. Dawson was induced to connect himself with the Protestant Educational movement in Montreal, he was appointed principal of a University, which was to be created, or at any rate called into a new state of being; Faculties had to be organized, and professors gathered from different quarters; but a still greater task was before him, that of providing ways and means. It is true that in the great work which he was called upon to undertake, he has been ably aided by liberal and enlightened men, who have contributed both time and money to the good work, but it is not too much to say, that to his own ability, perseverance and tact, which enabled him to inspire others with the zeal and hope which animated himself, the community is indebted for the high position which McGill University now holds, and the great good which it has already effected, and the name of Dr. Dawson must in after times stand side by side with its first founder.

On assuming his functions, his attention was early directed not merely to the advantages that would be derived, but to the necessity which existed, in providing chairs for teaching Engineering; the attempt was made, but it was soon discovered, that the time was not yet, and though some good was accomplished, some experience acquired, the School of Technology ceased to exist.

It ceased to exist, but it left a deep and lasting impression on the principal of its importance and that from its being an educational necessity the time must come sooner or later for its revival. Dr. Dawson had occasion to visit Britain during the past year, and from what he saw there he drew new inspiration, and on his return took the opportunity in his "Annual University Lecture" to bring under notice what he had seen in the old Country, and to review what was being accomplished, in the various countries of Europe, as regards the now-all important Technical Education. He did not rest here, but with that indomitable energy which has already enabled him to remove mountains, took every opportunity of urging on the authorities of the University and his personal friends, the urgent necessity of delaying no longer, an earnest and united effort for



the revival of classes of Civil Engineering including Mining and Mineral Surveying. In a *private* circular, a copy of which is now before us, he pointed out the openings for professional men, made by the numerous Railways and other public works, now in progress or contemplation, and the desirableness of providing the means of scientific education in this country for our own youth, so as to enable them to take their proper position and identify themselves with the progress of their native land. He showed that Montreal, from its Museums and Factories, and the connexion of its capitalists with Railways, Mining, and other branches of industry offered greater facilities for the establishment of a School of Practical Science, than any other city in the Dominion. The Board of Governors of McGill, had become thoroughly impressed with the importance of the movement, and were desirous of forwarding it, by every means in their power, but in consequence of the deficiency of the revenue of the University, the diminution of the Annual Legislative Grant, and the just claims of the Faculty of Arts, did not feel justified in promising any pecuniary aid from the general funds of the University, but it having been pointed out to them, that the already existing Chair of Mathematics and Physical and Natural Sciences, if supplemented by a Lecturer on Engineering, and an assistant in Natural Science, to undertake the practical teaching in Mining, would in the mean time suffice, they decided to give it their active moral support. Dr. Dawson, with that abnegation of self, which has always distinguished him, proposed that the interest of the money already subscribed for the Chair of Geology, *with such additional sum as he himself would contribute*, should be devoted to secure the services of a competent assistant, and that a person trained in one of the Assistant Schools in the Mother Country should be engaged as Instructor in Engineering, with a salary of \$1,200 and the fees. He showed that the University already possessed the requisite apparatus and collections, and that the experience acquired under less favorable circumstances on the first attempt, would enable arrangements to be now made with every prospect of success. We are happy to know that Dr. Dawson's efforts have been crowned with complete success, and that instead of \$1,200 only, which he asked, the liberality of a few merchants in Montreal to whom the appeal was made, has already provided an annual revenue of \$1,800. Correspondence has been opened with parties fully competent to undertake the required duties, and there is the almost

certain prospect, that in November next, McGill College will have in successful operation its School of Technical Science including every branch of Civil Engineering. We would wish to direct the attention of our readers in Quebec, to what has been effected in Montreal in connexion with Protestant and English Education, and our English speaking population may take a lesson from our French Canadian fellow-citizens in reference to the efforts made for the education of those who speak French in Quebec. We would respectfully ask, have we no merchants in Quebec able and willing to aid in the establishment of a school in Quebec, similar to the one about to be opened in Montreal? Is Quebec always to be a by-word and reproach whenever progress is talked of? We will have something more to say on this subject of education, particularly in connexion with the training of our girls, and will be able to instance Montreal again as an example, which we may follow with much advantage.



McGILL UNIVERSITY  
ARCHIVES  
ACC. NO. 2211 | 34  
REF. 40

CIRCULAR TO MEMBERS

OF THE

American Association for the Advancement of Science.

OFFICE OF THE AMERICAN NATURALIST, PEABODY ACADEMY OF SCIENCE,

Salem, Mass., April, 1871.

SIR: — In order to give the public an early and authentic report of the papers read in the *Geological, Zoological, Botanical, Ethnological, Archaeological, and Microscopical* sections of the twentieth meeting of the AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, to be held at Indianapolis in August next, we propose to issue an extra number of the AMERICAN NATURALIST within a short period (probably not over two weeks) after the adjournment of the meeting, which shall contain abstracts of all papers accepted by the Standing Committee and referred to the above-mentioned sections.

Professor T. STERRY HUNT, the retiring President of the Association, has already forwarded the manuscript of his "Address" for publication in the number. In order that reports of each paper shall be accurately given, we request every member who proposes to communicate papers in any of the above-mentioned Sections to send us abstracts of them in advance of the meeting. The abstracts will be put in type at an early day, and proofs sent to the authors for revision. As the number of the NATURALIST will not be printed until after the adjournment of the meeting, a series of proofs will be in readiness at the meeting for the purpose of allowing authors to make final corrections. It is further proposed to issue wood-cuts in connection with such papers as require them, provided the drawings are received in time to be engraved without delaying the publication, and authors are willing to pay one-half the expense of engraving; the original cuts to be at the disposal of the author as soon as electrotypes have been taken. Papers of general and popular interest, unless too lengthy, will be printed in full if desired by the authors.

As it is intended that the proposed number of the NATURALIST shall contain only such papers as pass the Standing Committee, the editors will reserve the right to leave out of the number any paper that does not pass the Committee, even though it is put in type and the proof corrected by the author. The aim of the undertaking is to give the public an early and correct account of the papers accepted, and the decision of the Association will be followed in every instance.

Should orders for the ASSOCIATION NUMBER OF THE NATURALIST be received in sufficient numbers to defray the expenses it is proposed to follow a similar plan for future meetings. It is thought that the proposed publication will make about 200 pages. All orders to be filled by mail must be accompanied with the cash.

The prices will be as follows:— Single copies 50 cts.; 12 copies for \$5.00. To authors *who have provided abstracts in advance*, 12 copies for \$4.00, or 25 copies or more at the rate of 25 cts. each.

Copies of President HUNT's "Address" will be ready for delivery at the office of the NATURALIST, and at INDIANAPOLIS immediately after the address is delivered, and orders will be received at the rate of 25 cts. for single copies, or at 20 cts. each for ten or more copies.

Address all orders and send abstracts to AMERICAN NATURALIST, SALEM, MASS. Mark all abstracts forwarded, "For Association Number," and give full post-office address on the manuscript. All manuscripts and proofs will be kept strictly private until the publication of the number.

It is hoped that every member of the Association will see the value of the proposed plan of placing the important papers read at the meeting early before the public, and will send their abstracts to be put in type at an early day. The sooner the abstracts are received the better will the plan be carried out.

Believing that we shall have your aid in the proposed publication,

We are, Sir, yours very respectfully,

A. S. PACKARD, JR., and F. W. PUTNAM,

Proprietors of the American Naturalist.

NOTE. We have the pleasure of stating that the proposed plan for the early publication of the papers read in the sections named in this circular has been approved by a large number of the members and officers of the Association, to whom advance copies of this circular were sent.

*Handwritten note:*  
I have  
checked  
the  
manuscript



McGILL UNIVERSITY  
 ARCHIVES  
 ACC. NO. 3211 34  
 REF. H.C.

CIRCULAR TO MEMBERS

OF THE

American Association for the Advancement of Science.

OFFICE OF THE AMERICAN NATURALIST, BRADLEY ACADemy OF SCIENCE.

Salem, Mass., April, 1871.

Sir:—In order to give the public an early and authentic report of the papers read in the Geological, Zoological, Botanical, Ethnological, Archaeological, and Microscopical sections of the twentieth meeting of the American Association for the Advancement of Science, to be held at Indianapolis in August next, we propose to issue an extra number of the American Naturalist within a short period (probably not over two weeks) after the adjournment of the meeting, which shall contain abstracts of all papers accepted by the Standing Committee and referred to the above-mentioned sections.

Professor T. Stuart Hunt, the retiring President of the Association, has already forwarded the manuscript of his "Address" for publication in the number. In order that reports of each paper shall be accurately given, we request every member who proposes to communicate papers in any of the above-mentioned sections to send us abstracts of them in advance of the meeting. The abstracts will be put in type at an early day, and proofs sent to the authors for revision. As the number of the Naturalist will not be printed until after the adjournment of the meeting, a series of proofs will be in readiness at the meeting for the purpose of allowing authors to make final corrections. It is further proposed to issue wood-cuts in connection with such papers as require them, provided the drawings are received in time to be engraved without delaying the publication, and authors are willing to pay one-half the expense of engraving; the original cuts to be at the disposal of the author as soon as electrotypes have been taken. Papers of general and popular interest, unless too lengthy, will be printed in full if desired by the authors. As it is intended that the proposed number of the Naturalist shall contain only such papers as pass the Standing Committee, the editors will reserve the right to leave out of the number any paper that does not pass the Committee, even though it is put in type and the proof corrected by the author. The aim of the undertaking is to give the public an early and correct account of the papers accepted, and the decision of the Association will be followed in every instance.

Should orders for the Association Number or the Naturalist be received in sufficient numbers to defray the expenses it is proposed to follow a similar plan for future meetings. It is thought that the proposed publication will make about 200 pages. All orders to be filled by mail must be accompanied with the cash.

The prices will be as follows:—Single copies 50 cts.; 12 copies for \$5.00. To authors who have provided abstracts in advance, 12 copies for \$4.00, or 25 copies or more at the rate of 25 cts. each. Copies of President Hunt's "Address" will be ready for delivery at the office of the Naturalist, and at Indianapolis immediately after the address is delivered, and orders will be received at the rate of 25 cts. for single copies, or at 20 cts. each for ten or more copies.

Address all orders and send abstracts to AMERICAN NATURALIST, SALEM, MASS. Mark all abstracts forwarded, "For Association Number," and give full post-office address on the manuscript. All manuscripts and proofs will be kept strictly private until the publication of the number.

It is hoped that every member of the Association will see the value of the proposed plan of placing the important papers read at the meeting early before the public, and will send their abstracts to be put in type at an early day. The sooner the abstracts are received the better will the plan be carried out. Believing that we shall have your aid in the proposed publication.

We are, Sir, yours very respectfully,

A. S. PACKARD, Jr., and F. W. PUTNAM.

Proprietors of the American Naturalist.

NOTE: We have the pleasure of stating that the proposed plan for the early publication of the papers read in the sections named in this circular has been approved by a large number of the members and officers of the Association to whom advance copies of this circular were sent.

*Am. Naturalist*



(SOON TO BE ISSUED.)

|                               |
|-------------------------------|
| McGILL UNIVERSITY<br>ARCHIVES |
| ACC. NO. 2211/41              |
| REF. 7a                       |

THE GREATEST ARTISTIC AND LITERARY WORK OF THE DAY,

# UNIVERSAL BIOGRAPHY.

PORTRAITS ON STEEL, BY FINE ENGRAVERS,

WITH

SKETCHES BY EMINENT AUTHORS.

The above is the title of a handsome Work (Folio and Quarto size), 500 or more pages, and will contain Biographical Sketches and carefully engraved Steel Portraits of

PROMINENT PERSONS OF THE NINETEENTH CENTURY.

The design is to include in several volumes sketches of those who are entitled to appreciative memoirs —statesmen, lawyers, financiers, manufacturers, merchants, inventors, etc., etc. No cost or labor on the part of the authors or publishers will be spared to render this one of the most desirable books of the day. Some of the Portraits may be illustrated by the ALBERT TYPE, a new process, by which the Portraits are printed directly from a glass negative with Lithographer's ink. This is one of the most *wonderful inventions* of the age, and it will be the first work of the kind ever produced in THIS COUNTRY OR IN EUROPE. The Steel Engravings and Albert Type Portraits are more natural, and have a softer finish than Porcelain, and ARE ABOUT THE ONLY KINDS THAT NEVER FADE. The Publishers assure all subscribers that copies delivered to them shall be equal to the advance sheets of the Work exhibited by our Agents. The experience of the writers enables them to produce a series of sketches unsurpassed for accuracy. The work will be complete and comprehensive, of its kind, and nearly ONE HUNDRED AND FORTY THOUSAND DOLLARS will be involved in its production; and it is to be hoped the public will encourage the enterprize by their subscriptions. The Portraits are worth the price of the Book. The Autographs, accurately engraved, are a unique and attractive feature of the Work. No library is complete without this superb Historical Gallery of Art.

Biographies of prominent persons are instructive moral lessons for the young. They may stimulate them to exertion, for all attainments that have been accomplished may be repeated. They kindle in the heart and mind a laudable ambition, a desire to excel, in the march for fame and distinction in the great and grand enterprises of the present day, which are so well illustrated by the peculiar freedom of our American Institutions. Biography is in some respects the essence of all other reading. In the lives of eminent persons we find the key to history, the dawning and development of science, the progress of art, and the effects of religion. It is naturally one of the most interesting, as well as one of the most instructive branches of study. The most eminent masters of mental culture have all extolled the advantage of biography as a means of education.

A history of the representative men and women of a community is as indispensable as a Gazetteer which describes its physical condition, or as a dictionary which defines its language. There are many volumes that record the deeds and public services of the great and good who have passed away, and there are others that narrate the lives of *particular* classes of our citizens; but there is no work extant that contains a biography of prominent persons in *every* class. In the "UNIVERSAL BIOGRAPHY" we hope to furnish this great desideratum, and thus supply a deficiency which has been long felt in our literature. Its GREAT UTILITY will consist: 1st. In its giving the reader a knowledge of prominent persons of the nineteenth century. 2d. In its accuracy and impartiality, which will render it most valuable as a work of permanent reference.

*Handwritten signature*



## OPINIONS OF THE PRESS.

[From the *New York Telegram*, March 16.]

"It is the finest book that has ever been published by an American publisher."

[From the *New York Herald*, March 18, 1871.]

"We do not exaggerate when we say that there have been few books published in the United States which can compare with this in elegance of execution. It is a massive volume, printed with large, clear type, on heavy gilt-edged paper. The binding is a model of chaste and handsome work. In fact, the mechanical execution of the book reflects the highest credit upon the publishers, who have evidently spared no expense in their effort to produce a work which *would equal anything produced in England or France.*

"The contents of the book are very interesting. They comprise numerous sketches of prominent persons of this city and other parts of the country. Biography is the most difficult branch of literature, and, to be entertaining, must be well written. At the same time, as it has been well said, biographical works are the most valuable of all literary productions, because they combine all the records of the world's progress. History, after all, is but the narration of the deeds of men, and is, consequently, nothing more than a general biography of the men who made themselves conspicuous in the country written on. So, in like manner, the History of the United States is to be found in the lives of individuals whose prominence as 'men of progress' are illustrations of the progressiveness of a republic. In the present series sketches are given of numerous distinguished Americans. Among the writers who contributed to the Work are J. A. PATTEN, and other equally well known biographers. As we stated in the foregoing, the mechanical execution is superb; the numerous steel engravings which embellish the book are admirable, and the general appearance is decidedly 'taking.' The publishers, the NEW YORK AND HARTFORD PUBLISHING COMPANY, of No. 41 Park Row, in this city, deserve credit for the enterprise they have displayed in producing a work so unexceptionable in every respect."

[From the *Telegram*, of January 23.]

**MEN OF MARK.**—Written by the best Talent of the Country; beautifully illustrated with Steel Portraits of Eminent Engravers. New York: Hartford Publishing Company, No. 41 Park Row, New York. Royal octavo, 847 pages.

"We say, without hesitancy that this is one of the most entertaining as well as useful books published this season. There is no more delicate and difficult branch of literature than biography, and there is none that requires to be better done to be well done. The most subtle shading, the finest touches, as well as the bolder and broader delineations of the stronger outlined characteristics are essential to success. Only this rounds into symmetrical perfection the whole; only this gives to the sketch life, vigor, tone, reality, completeness. Biography is nothing more nor less than an epitomized history of the country. It is gratifying to know, and the fact is plainly apparent in reading the sketches, that the best talent in the country has been employed in their preparation, as stated in the title page, and it is also equally clear that the portraits are the work of first class artists. Altogether, in the variety of the biographies given in the scholarly style of their production, and in its magnificent mechanical execution "Men of Mark" is a fine work and reflects the highest honor alike upon American genius and American handicraft. Printed in large, clear type, on heavy, gilt edged paper, and most elegantly bound, it makes a large and beautiful book. Every household that can afford the book should have one. No better or more instructive book could be placed in the hands of the young. A healthy and laudable ambition is here instilled. The foremost men in the grand enterprise of the day are here portrayed. Every biography expresses the precept of living example. We promise for the book an extended sale.

"A third volume more elaborate and elegantly gotten up than either of these is in course of preparation. The New York and Hartford Publishing Company are supplying a much needed want in literature that it is to be hoped will meet with the encouragement it merits, and inspire them to make still further contributions of equally reliable character to our American literature."

### ONE THOUSAND MALE AND FEMALE AGENTS WANTED.

ONE AGENT'S SUBSCRIPTIONS IN FOUR MONTHS AMOUNTED TO \$16,550.

### LIBERAL COMMISSIONS PAID TO GOOD AGENTS.

Being the most extensive Book Publishers in our line, we can afford to pay Agents larger commissions than any other Company.

For TERMS, CIRCULARS, Etc., Address New York Office,

NEW YORK AND HARTFORD PUBLISHING CO.,

41 PARK ROW, NEW YORK.

(TIMES BUILDING.)

Taking into consideration that we can give you the only kind of a portrait that is unfading, and a complete personal and genealogical history, are not these inducements sufficient for you to devote an hour's time to this IMMEDIATELY?

**One Volume will contain Sketches of New Yorkers.**



REPORT OF THE DIRECTORS  
OF THE  
*Pictou Gas-Light Company,*  
FOR THE YEAR ENDING MARCH, 1871.

---

*Pictou, 13th March, 1871.*

At the adjourned meeting of the Pictou Gas-Light Company, the Directors, in retiring from office, submitted the following Report of the Company's affairs, for the past year:—

The former Manager, ALEXANDER THOMSON, absconded in the month of June last, (yet taking no money belonging to the Company with him), which placed the Directors in a very unpleasant and awkward position, but they are of opinion that a more suitable person has been appointed,—one in whom they can place confidence as to ability and integrity of purpose.

It has become evident that a large sum will be required to meet the current expenditure during the present year as the Gasholder will require to be repaired, the bench for the Retorts will have to be partially rebuilt, and several other repairs that are absolutely necessary to the efficient carrying on of the Works. This state of the Works was unknown to the Directors till it was brought to their notice after the former Manager had left.

Although there is a much larger Stock on hand than formerly, yet they do not deem it prudent to declare more than four per cent. on the Capital invested, (payable 1st April), in anticipation of the large outlay that will have to be incurred during the coming Summer:

JAMES IVES, Esq., PRESIDENT.

A. P. ROSS, Esq.,

DANIEL HOCKIN, Esq.

W. H. DAVIES, Esq.,

WM. GORDON, Esq.,

A. J. PATTERSON, Esq.,

JAMES YORSTON, Esq.

The same Gentlemen were re-elected Directors for the current year.

WILLIAM JACK, SECRETARY.



Dr.

THE PICTOU GAS-LIGHT COMPANY IN ACCOUNT WITH W.M. JACK, SECRETARY.

Cr.

March 13th,—To Cash paid Dividends for year ending 1st March, 1870,..... \$ 532.80

COAL ACCOUNT:

Table with 3 columns: Description, Quantity, and Amount. Rows include Round, Fine, Shale, Lesmahago, and Bog Head.

STOCK ACCOUNT:

Table with 3 columns: Description, Quantity, and Amount. Rows include A. G. Kidston & Co., Hx. Gas Company, Interest Account, Extension of Works, Renewals and Repairs, Printing, Advertising and Office Expenses, County, Poor and School Rates, Duties on Goods, Trackage Account, Lime Account, James D. Merriman, Malcolm McDonald, John McFarlane, and Wm. Jack, Secretary.

To Balance..... 564.22

\$4,376.60

1870.

March 7th,—By Balance.....\$ 583.88

1871.

Table with 3 columns: Description, Quantity, and Amount. Rows include Gas account, Meter account, Coke and Tar account, Material sold, and Rent of Barn.

\$4,376.60

March 13th,—By Balance..... \$564.22

STOCK ON HAND:

Table with 3 columns: Description, Quantity, and Amount. Rows include Coal Round, Fine, Shale, Lesmahago, Tar, Coke, Retorts, Pipes, Fire Brick, &c., per Inventory, and Less Balance due A. G. K. & Co.

By Balance in Cash and Stock.....\$1,209.20

I have examined the Accounts, Vouchers, &c., and find the same Correct.

JAMES YORSTON, Auditor.



ACCOUNTS WITH THEM BACK

Report  
for  
Picture  
work 1/1

MCGILL UNIVERSITY  
ARCHIVES  
ACC. NO. 2211/33  
REF. 44



Office of *Evangelical Alliance,*

21 BIBLE HOUSE, New York.

**GENERAL CONFERENCE POSTPONED ON ACCOUNT OF THE WAR.**

At a meeting of the Executive Committee of the Evangelical Alliance of the United States, held August 5, 1870, the following action was taken by unanimous vote of those present, and with the concurrence of a large number of members, who, being absent from the city, sent their opinions in writing :

The Executive Committee have received, with profound regret, intelligence that the war now raging between France and Prussia renders it probable that the attendance of foreign delegates will be interrupted. Telegraphic dispatches from France and Germany were received immediately after the declaration of war, requesting the postponement of the Conference, because of the inability of the delegates from those countries to attend. To those dispatches a reply was sent by cable, that our arrangements had gone so far that we could not postpone the Conference.

Telegraphic dispatches were then received from Holland, Switzerland, and England, giving the united judgment of the Alliances in all those countries that the Conference, for the reason mentioned, should be postponed. The British organization, in their dispatch, express their decided concurrence in this opinion of the Continental branches. Bishop McIlvaine, of Ohio, and President Aiken, of Union College, being in England, sent to us a joint dispatch, stating that the war and its complications render the attendance of European delegates impracticable, and will destroy the international character of the Conference if it should be held under existing circumstances. Letters, to the same purport, have also been received from a number of eminent gentlemen in Europe, interested in the Conference.

So vast an amount of time, labor, and care has been expended already upon the preparation for the Conference ; so deep is the interest now felt in its approach by the Christian people of this country, and so cheerfully have the friends in the city of New York responded to the call made upon their hospitalities, that nothing but imperative necessity could justify a second postponement of the Conference.

But the Divine Will is most clearly expressed in the mighty events now transpiring in Europe, in the unanimous wish of our brethren there, and in the concurrent opinion of friends of the Alliance at home, who have been consulted as far as practicable.

Our sympathies are warmly enlisted in behalf of the Christian brethren, whose lands are now involved in the miseries of war, and our prayers are and shall be offered that God may avert its calamities from them, and speedily restore unto them the blessings of peace. And we recognize fully, as we should feel in our own case, with war raging in the midst of them, and with the imminent possibilities of other European countries being involved therein, that men holding positions of influence and usefulness, men of wisdom



and power, whose counsel is required in social and public affairs, should not at such a time put the ocean between them and their families, their official duties and their country.

The General Conference requires the presence of these brethren, and, without them, it must lose its character and its object as an International Evangelical Council. To postpone the Conference until a more convenient season is, therefore, inevitable. But the Infinite Wisdom which has ordered this result will, we have no doubt, also over-rule the postponement to the furtherance of the Gospel, and to the accomplishment of still greater and better results than we could have reached by the Conference of the present year. Therefore, be it

*Resolved*, 1. That the Executive Committee of the Evangelical Alliance of the United States with great reluctance yield to the expressed desire of the Alliances in Great Britain, France, Germany, Holland and Switzerland, that the General Conference, which was to be held in New York, September, 22, 1870, be postponed on account of the war in Europe, which renders their attendance impracticable: and the Conference is hereby postponed, at least for the present year, and until such time as the providence of God shall open the way for its successful convocation.

2. That notice of this action be sent to all the European and American delegates who have been invited to attend, and that it be published in the papers.

3. That the thanks of the Executive Committee are hereby presented to those families and proprietors of hotels who proffered their hospitalities to the expected members of the Conference, and we cherish the hope that at no distant day they may yet welcome their guests with the return of peace. And that our thanks are also returned to those railroad and steamship companies, and all others, who by donations of money or otherwise, have contributed to promote the success of the Conference.

4. That the Executive Committee has received with great satisfaction the generous invitation of the Christian people of Buffalo, for the foreign delegates to visit Buffalo and Niagara Falls as their guests, and in returning our hearty thanks for the same, we express the hope that at another time the hospitalities of the people may be enjoyed by the foreign members of the Alliance.

5. That an outbreak of war between Christian countries in the nineteenth century furnishes an occasion for deep humiliation before God, while we redouble our prayers and labors for the coming of that day when the Prince of Peace shall reign among the nations, and they shall learn war no more.

6. That we thankfully rejoice in the happy influence which the preparations for the Alliance Conference have already exerted in bringing Christians from all denominations into closer fellowship and co-operation, and that we call upon the friends of the Alliance throughout the United States, especially in the South and West, to continue their efforts, to organize branch Alliances, to hold Alliance meetings, and thus to promote the great cause of Christian union and the success of the General Conference, whenever it shall be convened.

WILLIAM E. DODGE, *President*.

S. IRENÆUS PRIME, }  
PHILIP SCHAFF, } *Cor. Secy's.*

*J. Dawson*

*Montreal*  
*Canada.*

|                               |
|-------------------------------|
| McGILL UNIVERSITY<br>ARCHIVES |
| ACC. NO. 221/28               |
| REF. 21                       |



# American Association for the Advancement of Science.

NINETEENTH MEETING AT TROY, AUGUST 17th, 1870.

## CIRCULAR OF THE LOCAL COMMITTEE.

THE objects of the American Association for the Advancement of Science are, "by periodical and migratory meetings, to promote intercourse between those who are cultivating science in different parts of North America; to give a stronger and more general impulse, and a more systematic direction to scientific research in our country, and to procure for the labors of scientific men increased facilities and a wider usefulness."

The following extract from the Constitution relates to membership:

"RULE 1. Any person may become a member of the Association upon recommendation in writing by two members, nomination by the Standing Committee, and election by a majority of the members present."

The time for holding the nineteenth meeting of the Association has been changed, by consent of the Standing Committee, and the meeting will commence WEDNESDAY, AUGUST 17th, 1870, at 10 o'clock, A. M. For the general good of the meeting, it is hoped that all who can, will be present at the organization.

It will be the aim of the Local Committee to make the sojourn of the members of the Association in Troy pleasant, as well as profitable in a scientific point of view. The usual local courtesies will be extended.

The Committee is giving attention to the facilities for coming to and returning from the city over all routes of travel, and it is hoped that arrangements will be made with the railroad companies, by which half fare will be secured for those attending the meeting.

Members, and those who wish to become members, are requested, immediately on their arrival, to register their names at the office of the Local Committee, where they will be furnished with a member's ticket, and such information as may be desired, in regard to accommodations, etc.

Members of the Local Committee will be in waiting at the Depot, on the arrival of each train.

Special arrangements will be made with the proprietors of several hotels and boarding houses, for the accommodation of members, and many citizens have signified their desire to extend hospitality to members of the Association; but in order that all may be provided for, without confusion or delay, it is requested that persons intending to be present at the meeting, will notify the fact to either of the Secretaries, at as early a day as practicable, and when possible, state the day they will arrive. The Committee will engage rooms at the hotels or boarding houses, for those who request such an arrangement to be made, on receiving early notice.

Copies of this circular will be supplied to those who wish them for distribution among their scientific friends.

A second circular, giving further information, especially as to the routes of travel, and directions for members on their arrival in Troy, will be prepared before August 1st, 1870, but will be sent *ONLY to those signifying their intention to be present.*

Communications should be addressed to B. H. HALL, General Secretary, or H. B. NASON, Corresponding Secretary, Troy, N. Y.

By order of the Committee,

J. A. GRISWOLD, *Chairman.*

B. H. HALL, *Gen'l Sec'y.*

H. B. NASON, *Cor. Sec'y.*

TROY, June 27th, 1870.



## Officers of the Troy Meeting.

WILLIAM CHAUVENET, *President.*

T. S. HUNT, *Vice President.*

JOSEPH LOVERING, *Permanent Secretary.*

C. F. HARTT, *General Secretary.*

A. L. ELWYN, *Treasurer.*

### STANDING COMMITTEE.

WILLIAM CHAUVENET,

T. S. HUNT,

JOSEPH LOVERING,

C. F. HARTT,

J. W. FOSTER,

O. N. ROOD,

O. C. MARSH,

A. L. ELWYN.

### LOCAL COMMITTEE.

JOHN A. GRISWOLD, *Chairman.*

GEO. C. BURDETT, *First Vice Chairman.*

P. V. HAGNER, *Second Vice Chairman.*

BENJ. H. HALL, *General Secretary.*

H. B. NASON, *Corresponding Secretary.*

ADAM R. SMITH, *Treasurer.*

HIS HONOR, URI GILBERT, MAYOR OF TROY.

|                  |                  |                  |                    |
|------------------|------------------|------------------|--------------------|
| E. W. ARMS,      | ROBERT GREEN,    | C. McMILLAN,     | JAMES THORN,       |
| MILES BEACH,     | C. O. GREENE,    | G. W. MAYNARD,   | DUDLEY TIBBITS,    |
| E. W. BOUGHTON,  | DASCOM GREENE,   | G. G. MOORE,     | C. W. TILLINGHAST, |
| IRVING BROWNE,   | C. GRISWOLD,     | A. B. MORGAN,    | M. I. TOWNSEND,    |
| H. BURDEN,       | W. GURLEY,       | G. P. OGDEN,     | J. I. TUCKER,      |
| J. A. BURDEN,    | JAMES HALL,      | J. B. PARMENTER, | D. T. VAIL,        |
| E. CORNING, JR., | WM. HOWARD HART, | C. E. PATTERSON, | S. M. VAIL,        |
| D. COWEE,        | J. C. HEARTT,    | J. B. PIERSON,   | M. R. VINCENT,     |
| G. H. CRAMER,    | J. S. HEARTT,    | A. E. POWERS,    | R. H. WARD,        |
| C. DROWNE,       | A. L. HOLLEY,    | J. R. PRENTICE,  | G. B. WARREN,      |
| C. E. DUTTON,    | C. R. INGALLS,   | D. ROBINSON,     | J. M. WARREN,      |
| WILLIAM FENTON,  | A. G. JOHNSON,   | J. ROMEYN,       | S. ED. WARREN,     |
| J. L. FLAGG,     | G. B. KELLOGG,   | H. ROUSSEAU,     | W. P. WARREN,      |
| JAMES FORSYTH,   | JUSTIN KELLOGG,  | W. P. SEYMOUR,   | D. A. WELLS,       |
| J. M. FRANCIS,   | WILLIAM KEMP,    | W. A. SHEPARD,   | H. B. WHITON,      |
| J. W. FULLER,    | J. S. KNOWLSON,  | N. B. SQUIRES,   | L. WILDER,         |
| E. T. GALE,      | J. H. C. LAJOIE, | G. H. STARBUCK,  | J. H. WILLARD,     |
| H. GNADENDORFF,  | F. B. LEONARD,   | F. S. THAYER,    | W. H. YOUNG.       |
| HANNIBAL GREEN,  | H. C. LOCKWOOD,  | W. A. THOMPSON,  |                    |

### LOCAL SUB-COMMITTEES.

#### On Reception.

MARTIN I. TOWNSEND, JAS. FORSYTH, H. B. NASON, C. W. TILLINGHAST, CHESTER GRISWOLD.

#### On Finance.

JOS. W. FULLER, JAMES A. BURDEN, C. O. GREENE, WILLIAM GURLEY,  
URI GILBERT, DAVID COWEE.

#### On Lodging and Entertainment.

WM. KEMP, WM. A. THOMPSON, WM. H. YOUNG, EZRA W. BOUGHTON, JAS. R. PRENTICE.

#### On Excursions.

JOHN A. GRISWOLD, WM. A. SHEPARD, F. S. THAYER, J. L. FLAGG, WALTER P. WARREN.

#### On Rooms for Meetings.

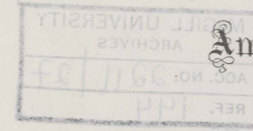
JOHN H. WILLARD, MILES BEACH, GILES B. KELLOGG, J. ROMEYN, JONAS S. HEARTT.

#### On Invitations, Correspondence and Printing.

B. H. HALL, IRVING BROWNE, C. E. DUTTON, G. W. MAYNARD, A. E. POWERS.

#### On Railroads.

E. THOMPSON GALE, GEO. C. BURDETT, DAN'L ROBINSON, GEO. H. CRAMER, A. L. HOLLEY.



## American Association for the Advancement of Science.

### NINETEENTH MEETING.

The titles of papers should be handed in as early as possible, in order to secure their presentation to the Association. Each title should be written on a separate slip of paper, with the author's name and address and an estimate of the number of minutes required to read the communication. As soon as practicable after entering the titles, the paper itself, or an abstract, must be handed to the Secretary; and until all these conditions are complied with, no title can appear in the programmes.

Names proposed for membership should be written on a separate slip of paper, stating the exact name and post-office address, and signed by the proposers.

Members who have not signed the Constitution are requested to do so as soon as possible.

Any errors in the printed list of members, in the Proceedings of the Association, as well as any change in residence, together with any information respecting the recent decease of members, should be communicated to the Permanent Secretary, while in Troy or sent to him in Cambridge.

Complete sets of the volumes of Proceedings of the Association may be had of the Permanent Secretary in Cambridge, at one dollar and fifty cents per volume.

The volume of the Salem Proceedings is nearly printed. Any member entitled to a copy may receive it *by mail*, by sending the postage (fifteen cents) to the Permanent Secretary.

The admission fee of new members is five dollars, *in addition to the annual subscription*, which, including the price of the volume of Proceedings, is three dollars for all members. These dues should be paid at as early a period as possible. They will be received by the Permanent Secretary, at the office of the Local Committee. According to Rule 21 of the Constitution, no person can be considered a member until the dues for the meeting are paid.

Members who do not expect to attend the meeting at Troy, are requested to send the assessment of three dollars for the Troy meeting, and also their arrears, to the Treasurer or Permanent Secretary.

Attention is called to the following rule of the Constitution, and resolutions:

**RULE 22.**—The names of all persons two years in arrears for annual dues shall be erased from the list of members: provided that two notices of indebtedness, at an interval of at least three months, shall have previously been given.

*Resolved*, That hereafter all members of this Association are particularly desired to forward to the Permanent Secretary, so as to be received before the day appointed for the Association to convene, complete titles of all the papers which they expect to present during the meeting, with an estimate of the time required for reading each, and such abstracts of their contents as may give a general idea of their nature.

*Resolved*, That the foregoing resolution form part of the Circular.—[Proceedings Sixth Meeting, 1852, p. 402.]

JOSEPH LOVERING,

*Permanent Secretary.*

CAMBRIDGE, MASS., July 4th, 1870.



Association for the Advancement of Science

WILLIAM OBUVENEL, President  
T. S. BUNT, Vice President  
JOSEPH LOVERING, Permanent Secretary  
F. F. HART, General Secretary

MCGILL UNIVERSITY ARCHIVES  
ACC. NO. 2211/27  
REF. 144

NINETEENTH MEETING  
STANDING COMMITTEE

WILLIAM OBUVENEL, President  
T. S. BUNT, Vice President

The titles of papers should be handed in as early as possible, in order to secure their presentation to the Association. Each title should be written on a separate slip of paper, with the author's name and address and an estimate of the number of minutes required to read the communication. As soon as practicable after entering the titles, the paper itself, or an abstract, must be handed to the Secretary; and until all these conditions are complied with, no title can appear in the programmes. Names proposed for membership should be written on a separate slip of paper, stating the exact name and post-office address, and signed by the proposer. Members who have not signed the Constitution are requested to do so as soon as possible. Any errors in the printed list of members in the Proceedings of the Association, as well as any change in residence, together with any information respecting the recent decease of members, should be communicated to the Permanent Secretary, while in Troy or sent to him in Cambridge. Complete sets of the volumes of Proceedings of the Association may be had of the Permanent Secretary in Cambridge, at one dollar and fifty cents per volume.

The volume of the Salem Proceedings is nearly printed. Any member entitled to a copy may receive it by mail, by sending the postage (fifteen cents) to the Permanent Secretary. The admission fee of new members is five dollars, in addition to the annual subscription, which, including the price of the volume of Proceedings, is three dollars for all members. These dues should be paid at as early a period as possible. They will be received by the Permanent Secretary, at the office of the Local Committee. According to Rule 21 of the Constitution, no person can be considered a member until the dues for the meeting are paid. Members who do not expect to attend the meeting at Troy, are requested to send the assessment of three dollars for the Troy meeting, and also their arrears, to the Treasurer or Permanent Secretary.

Attention is called to the following rule of the Constitution, and resolutions:

Rule 22.—The names of all persons two years in arrears for annual dues shall be omitted from the list of members; provided that two notices of indebtedness, at an interval of at least three months, shall have previously been given. Resolved, That hereafter all members of this Association are particularly desired to forward to the Permanent Secretary, so as to be received before the day appointed for the Association to convene, separate titles of all the papers which they expect to present during the meeting, with an estimate of the time required for reading each, and such abstracts of their contents as may give a general idea of their nature. Resolved, That the foregoing resolution form part of the Circular.—Proceedings Sixth Meeting, 1852, p. 402.

JOHN H. WILLARD, MRS. BEACH, GILES B. KELLONG, J. ROSEYX, JOHN A. HARRIS  
JOSEPH LOVERING, Secretary and Correspondence and Printing.  
H. H. HARRIS, H. H. HARRIS, G. W. HAYDEN, A. E. HARRIS  
JOHN A. HARRIS, H. H. HARRIS, G. W. HAYDEN, A. E. HARRIS  
JOHN A. HARRIS, H. H. HARRIS, G. W. HAYDEN, A. E. HARRIS  
CAMBRIDGE, Mass., July 4th, 1870.

*John A. Harris*  
*July 17*



## RECENT RESEARCHES ON FLIGHT.

OF late the perplexing problem of flight has received a greater amount of attention from physiologists and savants than has been bestowed upon it for years, and the result of their researches and experiences is in a fair way of becoming remarkable for its fruit-bearing character. Whilst abroad such men as Borelli, Straus-Durckheim, Chabrier, Girard, and Marey, have severally given to the world the gist of their labours in this branch of science, at home His Grace the Duke of Argyll and Dr. J. Bell Pettigrew have awakened our deep interest by their views on natural and artificial flight. To the latter is due the honour of giving birth to the celebrated "figure-of-8 wave theory," that is now attracting so much notice in our aeronautical schools.

As early as 1867 Dr. Pettigrew delivered, before the Royal Institution of Great Britain, a lecture in which he propounded that novel theory, and in 1868 he published in the "Transactions" of the Linnean Society an elaborate memoir on "The Mechanical Appliances by which Flight is Attained in the Animal Kingdom." The year after, Professor J. E. Marey, in the "Revue des Cours Scientifiques," bore out Dr. Pettigrew's ideas, by the detail of his experiments with the sphygmograph, with which he succeeded in causing the wings of insects and birds to register their own movements. He says—"But if the frequency of the movements of the wing vary, the form does not vary. It is invariably the same; it is always a *double loop, a figure of 8*. Whether this figure be more or less apparent, whether its branches be more or less equal, matters little; it exists, and an attentive examination will not fail to reveal it." An indefatigable worker, Dr. Pettigrew continued without pausing the task to which he had set himself—and that to him is indeed a labour of love; and in this year's "Transactions" of the Royal Society of Edinburgh we have from his pen a complete monograph on "The Physiology of Wings," in which he treats with equal felicity of both natural and artificial flight. The mass of interesting fact brought to light by the author is too copious to allow of lengthened dissertation, but from it we abstract the following items:—

The wing is generally triangular in form. It is finely graduated, and tapers from the root towards the tip. It is likewise slightly twisted upon itself, and this remark holds true also of the primary or rowing feathers of the wing of the bird. The wing is convex above and concave below; this shape, and the fact that in flight the wing is carried obliquely forward like a kite, enabling it to penetrate the air with its dorsal surface during the up stroke, and to seize it with its ventral one alike during the down and up strokes. The wing is movable in all its parts; it is also elastic. Its power of changing forms enables it to be wielded intelligently, even to its extremity; its elasticity prevents shock, and contributes to its continued play. The wing of the insect is usually in one piece, that of the bat and bird always in several. The curtain of the wing is continuous in the bat, because of a delicate elastic membrane which extends between the fingers of the hand and along the arm; that of the bird is non-continuous, owing to the presence of feathers, which open and close like so many valves during the up and down strokes.

The posterior margin of the insect, bat, or bird, is rotated *downwards and forwards* during extension, and *upwards and backwards* during flexion. The wing during its vibration descends further below the body than it rises above it. This is necessary for elevating purposes. The distal portion of the wing is twisted in a downward and forward direction at the end of the down stroke, whereas at the end of the up stroke it is twisted *downwards* and backwards. The wing during its vibrations *twists and untwists*, so that it acts as a reversing reciprocating screw. The wing is consequently a screw, *structurally and functionally*. The blur or impression produced on the eye by the rapidly oscillating wing is *twisted upon itself*, and resembles the blade of an ordinary screw-propeller. The twisted configuration of the wing and its screw action are due to the presence of the figure-of-8 looped curves on its anterior and posterior margins; these curves, when the wing is vibrating, reversing and reciprocating in such a manner as to make the wing change form in all its parts.

We may further point out that Dr. Pettigrew has not based his ideas on the structure of wings on mere theoretical considerations. Besides elaborate anatomical examination, he has entered with a true experimental spirit into a close study of the visible movements of most of the winged tribe. The very excellent diagrammatic views with which his paper is elaborately illustrated convey at a glance much that it is difficult to express in words. In proof of this the reader need but compare those figures bearing on the wing movements of the butterfly, the dragon-fly, and the bird.

On these and similar deductions from the practical study of natural history, Dr. Pettigrew bases his elements of artificial flight. These are in themselves so interesting and new that we must defer a notice of them to another number of LAND AND WATER.

J. MURIE.







CHICAGO, October 30th, 1871.

***To the Friends and Correspondents of the Chicago Academy of Sciences:***

It becomes the painful duty of the Academy to inform its friends and correspondents that its building on Wabash Avenue, with all its movable property, records and effects, and the scientific materials which had been accumulated since its origin, was totally destroyed in the great conflagration of the 9th instant.

The building was fire-proof; but like all the other fire-proof buildings in the city, many of which were constructed in the most perfect manner to which human art has yet attained, it went down in a fiery furnace of a magnitude which the world has never before seen, and in an intensity of heat which not even stone and iron could resist. The lesson taught by our great disaster is that no building, however admirably constructed, can be considered fire-proof unless it is also isolated. If placed in the midst of a crowd of inflammable structures, it may melt before some great fire as easily as a bolt of iron in a furnace.

To enumerate the losses which the Academy, and indeed we may say the scientific world, has suffered by this fire, might seem at first sight a thankless as it is certainly a distressing task; but it is, nevertheless, a necessary one. It is important on many accounts for scientific men everywhere, to know what has become of scientific materials known to have been in existence, if for no other reason than to save time which might otherwise be spent in its search. And there was far more in the Academy than was generally understood, or even suspected. The materials had been gathered in so short a time, through the aid of kindred institutions, particularly the Smithsonian, and through the open-handed liberality of the Trustees and other citizens of Chicago, that there had as yet been no time for the preparation and publication of a catalogue or enumeration of any kind. It is especially due to the gentlemen last mentioned, who have made possible the accomplishment of such results in the short space of five years, that this enumeration now be made; although only a brief and general statement can be given, since all the papers of the Academy were involved in the general destruction.

The building was of brick, 55 feet by 50 in area, and 50 feet in height. The walls were two feet thick, with an air space in the middle; the floors were of brick and iron; the partitions all of brick; the stairways and principal doors of iron. The windows were protected by iron shutters of extra thickness. The basement was occupied by the packing room, the store rooms, the taxidermists' laboratory, and the heating apparatus. The floor above contained the main hall, the library and meeting room, the Secretary's office, the general work room, the document room, and a dormitory for the Secretary's assistants. The museum occupied the entire upper portion of the building, and was 28 feet in height, and lighted by long windows on both the east and west sides. It was surrounded by two galleries 12 feet in width. The spaces between the windows, both on the main floor and on the galleries, were occupied by air-tight alcove cases, 10 feet by 5, filled with mounted birds and mammals. The table-cases, between the alcoves, consisted of chests of drawers, 8 feet by 3 by 3 in size, with 21 drawers to each, and with show case on the top, all protected by doors made dust and insect-proof. Besides these, there were 19 table cases of black-walnut, with a smaller number of drawers, making in all 40 table cases, with about 780 drawers, filled with minerals, fossils, shells, birds' eggs, bird-skins, small disarticulated skeletons and other specimens. The show cases were occupied by such a selection of these specimens as were most interesting to the general public. The railing of both galleries was surmounted by a shelf, upon which were placed show cases devoted exclusively to insects. The wall cases, on the two unlighted sides of the hall, were chiefly devoted to the alcoholic collection, in thousands of glass jars of all



capacities, from an ounce to a gallon. The main floor was occupied by skeletons of recent and extinct mammalia, by mounted specimens of mammals too large to go in the alcove cases, and by large reptiles and fishes. In the garret were some 15 to 20 chests of large bird-skins, and the basement store-rooms contained large quantities of specimens not yet arranged, and piles of duplicates ready for distribution to kindred institutions, for which distribution a great variety of labels of names and localities had been printed ready for use.

The actual cost of the specimens in the Academy, reckoning cost of purchase or expenses of collection, was not less than \$200,000. The building was crammed from cellar to garret with specimens, and the want of room for accessions constantly arriving, was so strongly felt, that the Trustees were already discussing the necessity of acquiring a new location, and the erection of a larger and more commodious building, with ample space for future additions.

Among the special collections lost by the catastrophe, may be mentioned the following:

1. The Audubon Club collection, consisting of very finely mounted specimens of the game birds and mammals, both of this country and Europe and Asia, about 400 in number.
2. The State collection of insects, recently purchased by the State of the heirs of the late State Entomologist, Mr. B. D. Walsh, for \$2,000, but of great scientific value from the number of types it contained.
3. The cabinet of marine shells purchased of the heirs of the late William Cooper by Mr. George C. Walker, which, with the additions recently made to it, was one of the most complete in the country.
4. The Florida collection made during the past two winters by Mr. E. W. Blatchford, and partly at his expense by the Secretary, containing a full illustration of the Zoölogy of the Florida coast in all its departments.
5. The cabinet of minerals recently purchased by subscription of the estate of the late Col. G. W. Hughes.
6. The splendid series of specimens illustrative of the natural history of Alaska, collected in 1865-69 by Bischoff and the naturalists of the W. U. Telegraph Expedition.
7. The Smithsonian collection of crustacea, undoubtedly the largest alcoholic collection in the world, which filled over 10,000 jars, and contained the types of the species described by Prof. Dana and other American authors, besides hundreds of new species, many of which were described in manuscripts lost by the same fire.
8. The invertebrates of the U. S. North Pacific Exploring Expedition, collected in great part in Japanese seas by the Secretary in 1853-56, which besides crustacea, included in the last item, embraced great numbers of annelides, mollusca, and radiata, most of which remain as yet undescribed, except in manuscripts also lost.
9. The collection of the marine shells of the coast of the United States, made by the Secretary and his correspondents during twenty years of dredgings and general research on every part of the coast from Maine to Texas. Nearly every species was illustrated by specimens from every locality in which it occurs, not only on our own shores, but on those of Europe and the Arctic Sea, and in the Tertiary and Quaternary formations, shewing the effect of climatic influences, geological age, etc. This collection embraced about 8,000 separate lots of specimens.
10. The deep-sea crustacea and mollusca dredged in the Gulf Stream by M. Pourtales, of the U. S. Coast Survey, in the years 1867, '68 and '69, which had been placed in the hands of the Secretary for description.
11. A large collection of the Tertiary fossils of the United States—Miocene and Eocene—gathered chiefly by Dr. Nason in Virginia, and by the Secretary in Alabama.
12. The mineralogical collections of Mrs. S. T. Atwater, Capt. E. H. Beebe and Mr. D. P. Armstrong, which though small, were remarkable for the beauty and value of the specimens they contained. That of Capt Beebe was the best ever made of the Galena minerals, and contained crystals of lead six inches in diameter.
13. The herbarium of the late Dr. F. Scammon, occupying eight large cases, and consisting of over 6,000 species of plants, with large numbers of duplicates.
14. The Scammon collection of ancient Central American pottery and other implements, collected by Dr. Van Patten.
15. The results of the deep-sea dredgings in Lake Michigan, conducted by the Academy in 1870 and 1871; the work of the latter year having been performed by Mr. J. W. Milner.



Last, but not least, the Arctic collections of the late Director of the Academy, Robert Kennicott, made during the years 1859-61. These, although greatly injured by the fire of 1866, still remained as one of the most important features of our museum.

The general collection contained about 2,000 mammals, 30 mounted skeletons, including two mastodons, an African elephant, sea-otter, elephant-seal, etc.; 10,000 birds, 1,000 nests of eggs, and a great quantity of eggs without nests, 1,000 reptiles, 5,000 fishes, including many large sharks and rays, 15,000 species of insects and other articulates, 5,000 species of shells, with immense numbers of duplicates, 1,000 jars of mollusks in alcohol, 3,000 jars or "lots" of radiates, including several hundred corals, 8,000 species of plants, 15,000 specimens of fossils and 4,000 minerals. In Archæology there were about 1,000 specimens, all American; and the Ethnological collection embraced a very fine series of the clothing and implements of the Esquimaux of Anderson River, collected by Robert Kennicott and his Arctic friends, and presented by the Smithsonian Institution.

*Library.*—The library of the Academy consisted of about 2,000 volumes and 5,000 pamphlets, maps and other articles. The volumes consisted chiefly of the publications of other scientific bodies, obtained in exchange for our own. At the time of the fire we were in active correspondence with about 15 domestic and over 100 foreign institutions.

The library of the Audubon Club consisted of about 100 volumes, including a copy of Audubon's great work, valued at \$1,000.

The conchological library of Mr. George C. Walker embraced colored copies of the magnificent modern works of Reeve, Sowerby, Philippi, Dunker, Römer, Kuster, etc., as well as the older ones of Martini, Chemnitz, Regenfuss, etc., etc.

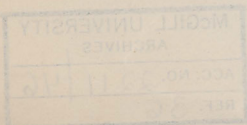
The library of the Secretary consisted almost entirely of works relating to marine invertebrates, and was especially complete in the class of Crustacea—scarcely any publication concerning this class being missing. Many of these works were rare and obtained with difficulty. This library contained most of the smaller works relating to Conchology, and conjoined with that of Mr. Walker, left little to be desired for the study of this subject.

*Publications.*—All the undistributed copies of the first volume of the Transactions, about 250 in number, and 500 copies each of the thirty-five plates, together with the portion of the second volume already printed, and the stereotype plates of the whole, were destroyed. The edition of the new members' hand-book, containing the Constitution and By-Laws, list of members, etc., was in the hands of the binder, whose establishment was also burned. Under this head may also be mentioned the diploma of life membership, recently engraved on steel at an expense of \$1,000, which, with impressions on parchment taken from it, shared the fate of the rest of the property.

A valuable painting by Paul Weber, belonging to Mr. George C. Walker, an original painting by Audubon, belonging to Dr. Velie, and a fine portrait of Robert Kennicott, by Ulke, must be added to the catalogue.

The *Manuscripts* burned were as follows:

1. The records of the meetings of the Academy from its organization to the date of the fire.
2. The manuscript of the Proceedings of the Academy from the date of the last publication (May, 1866) to the present time, which was nearly ready for the press, and contained copies of all the reports and minor papers accepted for publication during that period.
3. The manuscripts of the unprinted portion of the second volume of the Transactions, including illustrated papers by S. S. Lyon, J. W. Foster and Wm. Stimpson.
4. The catalogues of the library and museum, the latter filling 12 folio volumes.
5. The manuscript of the Invertebrate Zoölogy of the North Pacific Exploring Expedition under the command of Capts. Ringgold and Rodgers, in 1853-56; the Shells by the late Dr. A. A. Gould; the Crustacea, Annelida, Nudi-branchiate and Tunicate Mollusca, Holothurians and Starfishes, by Wm. Stimpson. These manuscripts were illustrated by nearly 3,000 drawings by A. Schoenborn and W. Stimpson, many of which were colored. This material was awaiting an appropriation from Congress for publication. A portion thereof (that on the Brachyurous Crustacea) was saved, having fortunately been in the Smithsonian Institution at the time of the fire.





6. The manuscript of the work on the shells of the East Coast of North America, prepared for the Smithsonian Institution by W. Stimpson, illustrated by drawings not only of the shells, but of the soft parts, lingual dentition, ova-capsules and other details. This work had been in course of preparation since 1849, and many of the species illustrated were new to science. About 200 of the drawings had already been engraved on wood, but the blocks were destroyed with the rest of the materials. That portion of the work containing the synonymy of the species already described, was saved, having been in the house of the Secretary at the time of the fire.

7. The manuscripts and drawings of a work on the Crustacea of North America, in preparation for the Smithsonian Institution by Wm. Stimpson.

8. A series of "dredging papers," containing an abstract of the result of explorations by the Secretary on all parts of the coast from Nova Scotia to Florida, and in the Gulf of Mexico, chiefly valuable for the study of geographical and bathymetrical distribution.

9. The descriptions (as far as completed) of the deep-sea crustacea and mollusca dredged in the Gulf Stream by M. Pourtales, prepared by the Secretary. A portion of these descriptions had been published in the Bulletin of the Museum of Comparative Zoölogy.

In cutting short this melancholy catalogue, the Academy desires to renew its thanks to the friends from whom the collections were received, who will ever live in its remembrance, notwithstanding the annihilation of their donations. It would also take this opportunity to express its obligations to the Railroad and Express Companies, through the liberality of which the materials were brought to Chicago at comparatively little expense, and to the Railroad Companies also for the passes which have been freely granted to its agents traveling in all directions for scientific purposes. To the courtesy of Col. Thomas A. Scott of the Pennsylvania R. R. Co. in particular is it indebted for such favors.

The Academy also desires to announce that although now laid prostrate by the terrible disaster it has suffered, it will soon rise to refill its place among its sister institutions. The Trustees have determined to build up again the material interests of the Institution, notwithstanding the terrible losses which they, in common with all of its patrons, have suffered. The publication of its Transactions will soon be resumed. The Academy would therefore take this opportunity to appeal to its correspondents for the donation of their own publications of the past few years, to replace those lost, for which it was also indebted to their generosity.

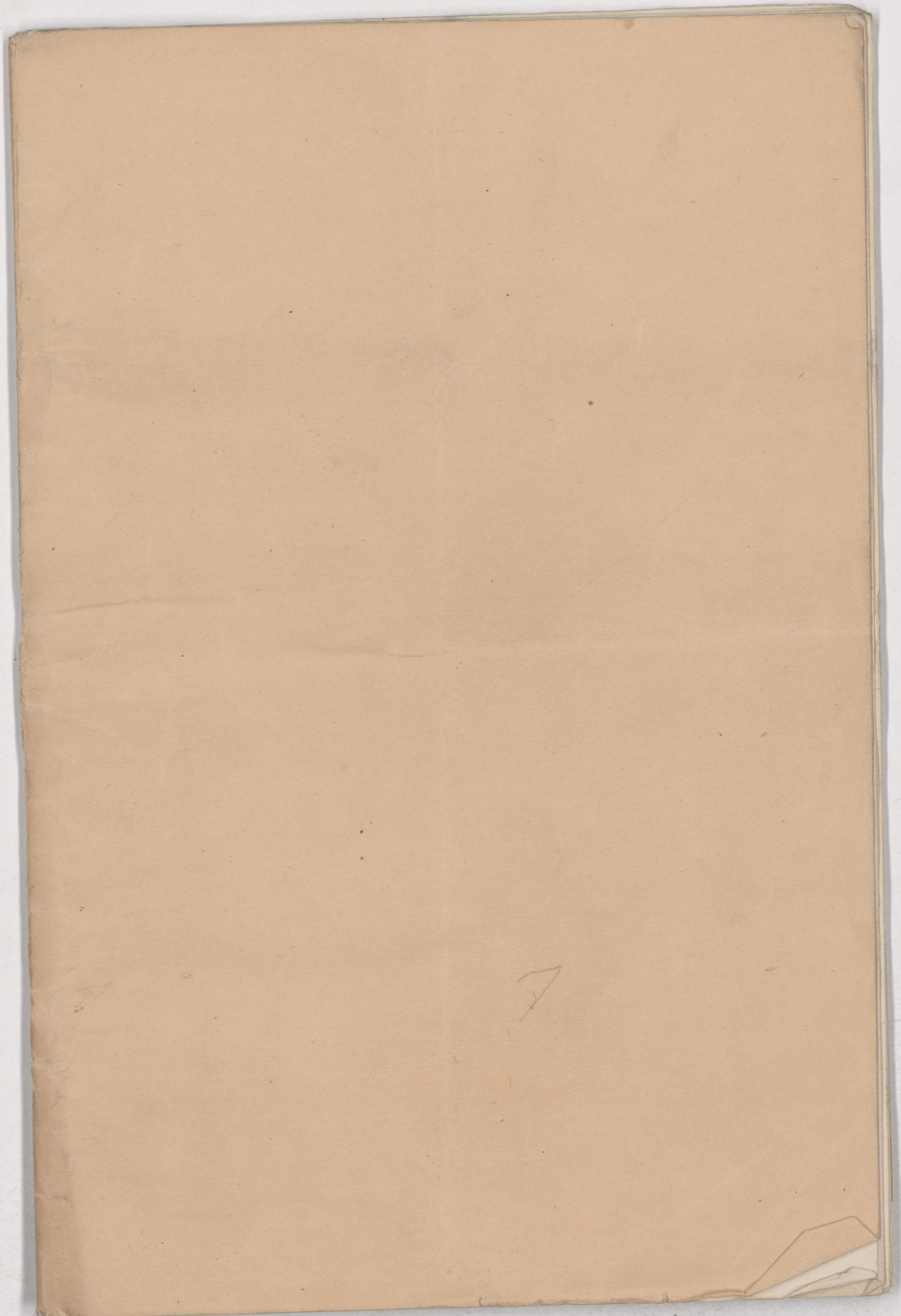
The Academy has already received expressions of sympathy and assurance of aid from many of the principal institutions of the land. With thanks to these, and hopes for the co-operation of others, both in this country and in Europe, in the work of re-establishment, this circular is respectfully submitted.

J. W. FOSTER, *President*,  
WM. STIMPSON, *Secretary*.

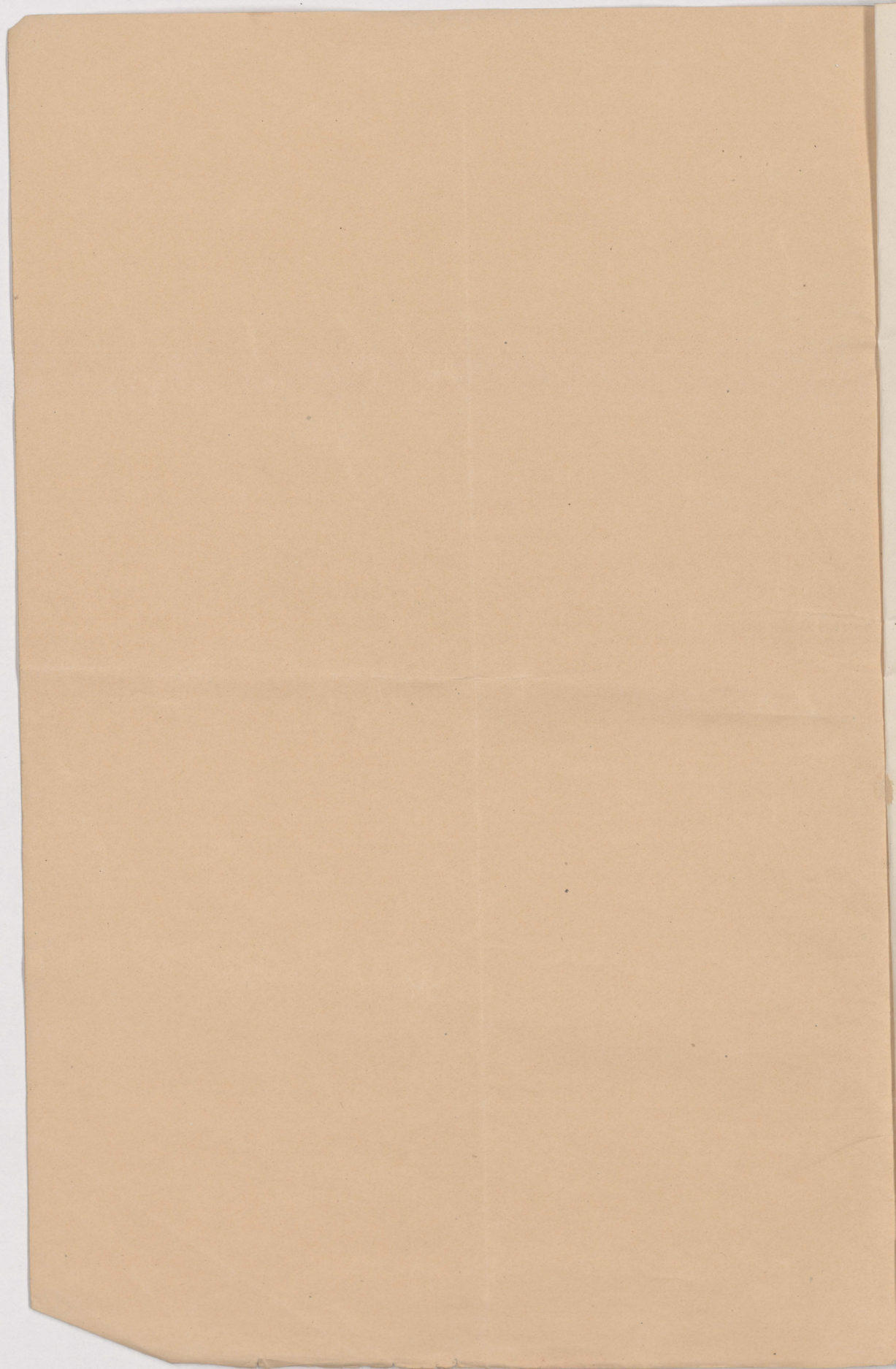
*Chicago Review*  
*Stimpson*

|                               |
|-------------------------------|
| McGILL UNIVERSITY<br>ARCHIVES |
| ACC. NO. 2211/46              |
| REF. 36                       |

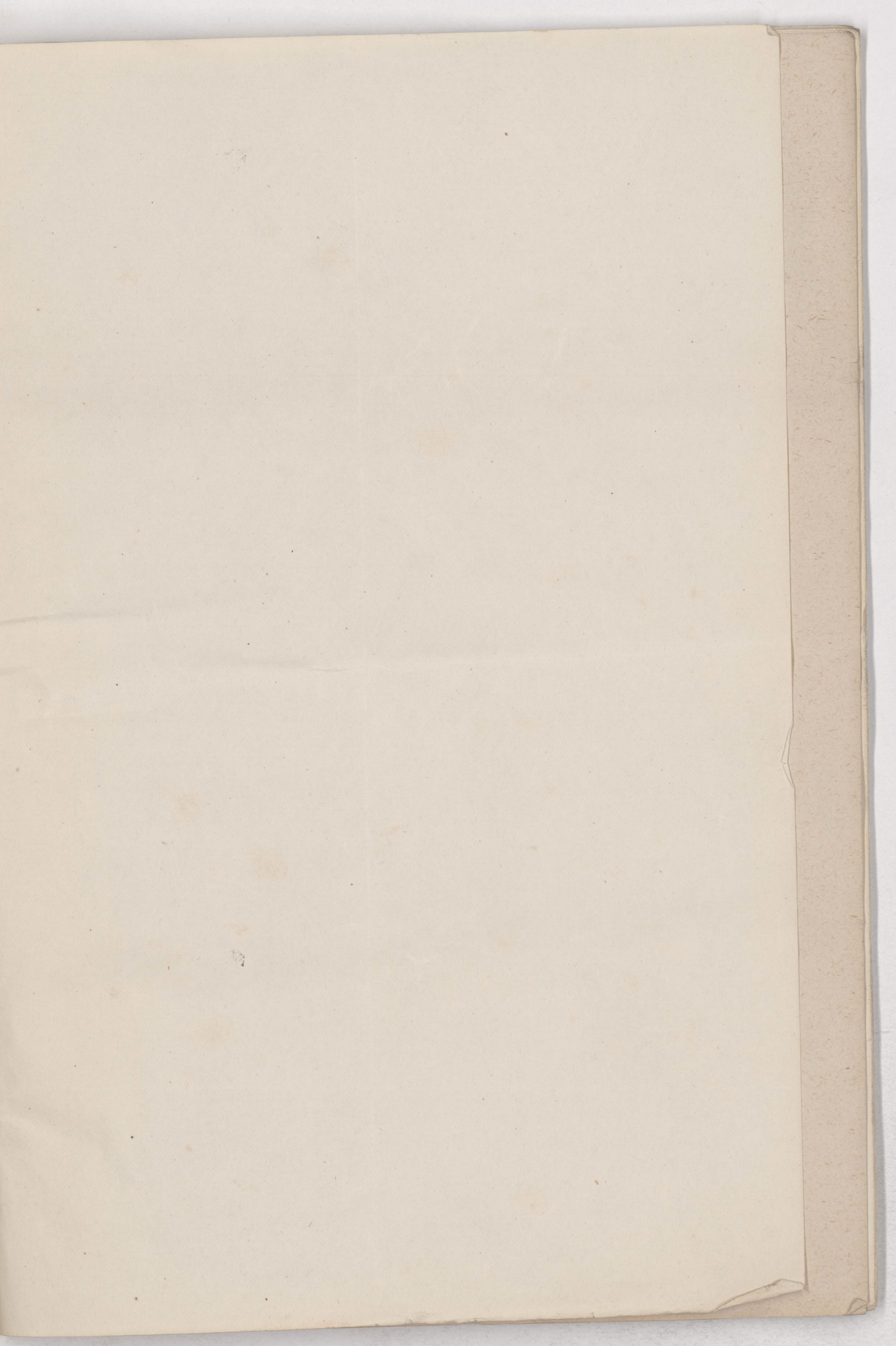




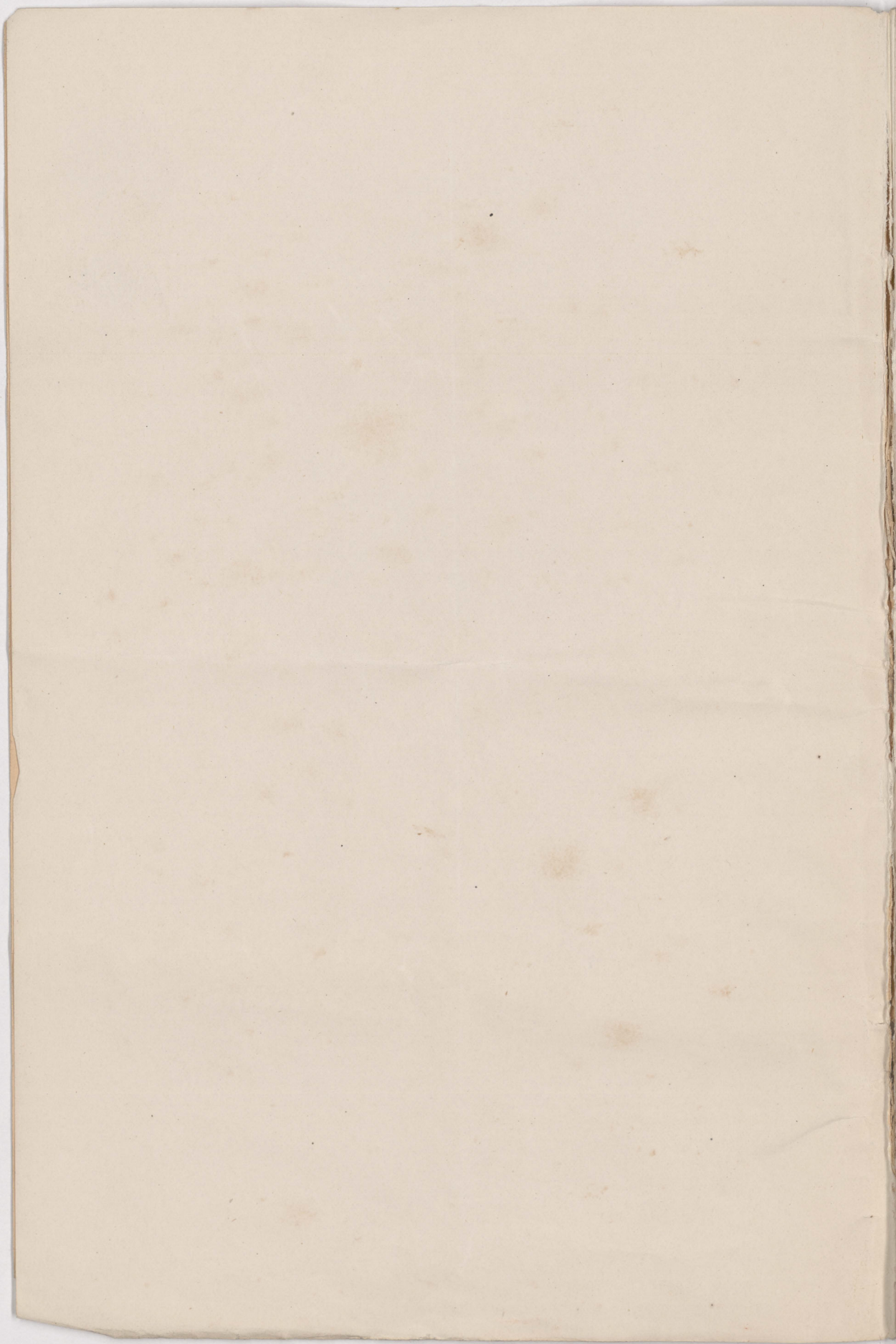




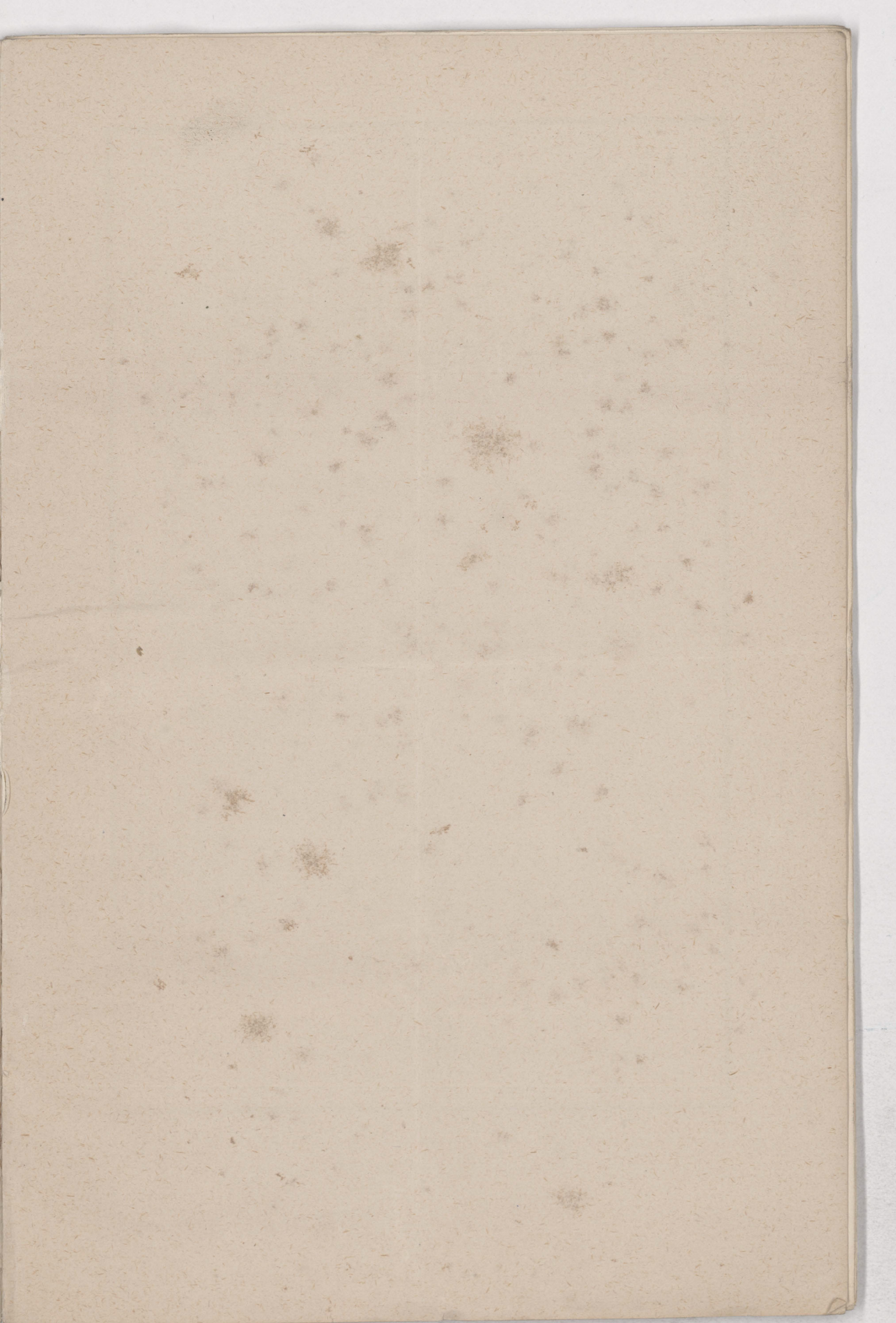




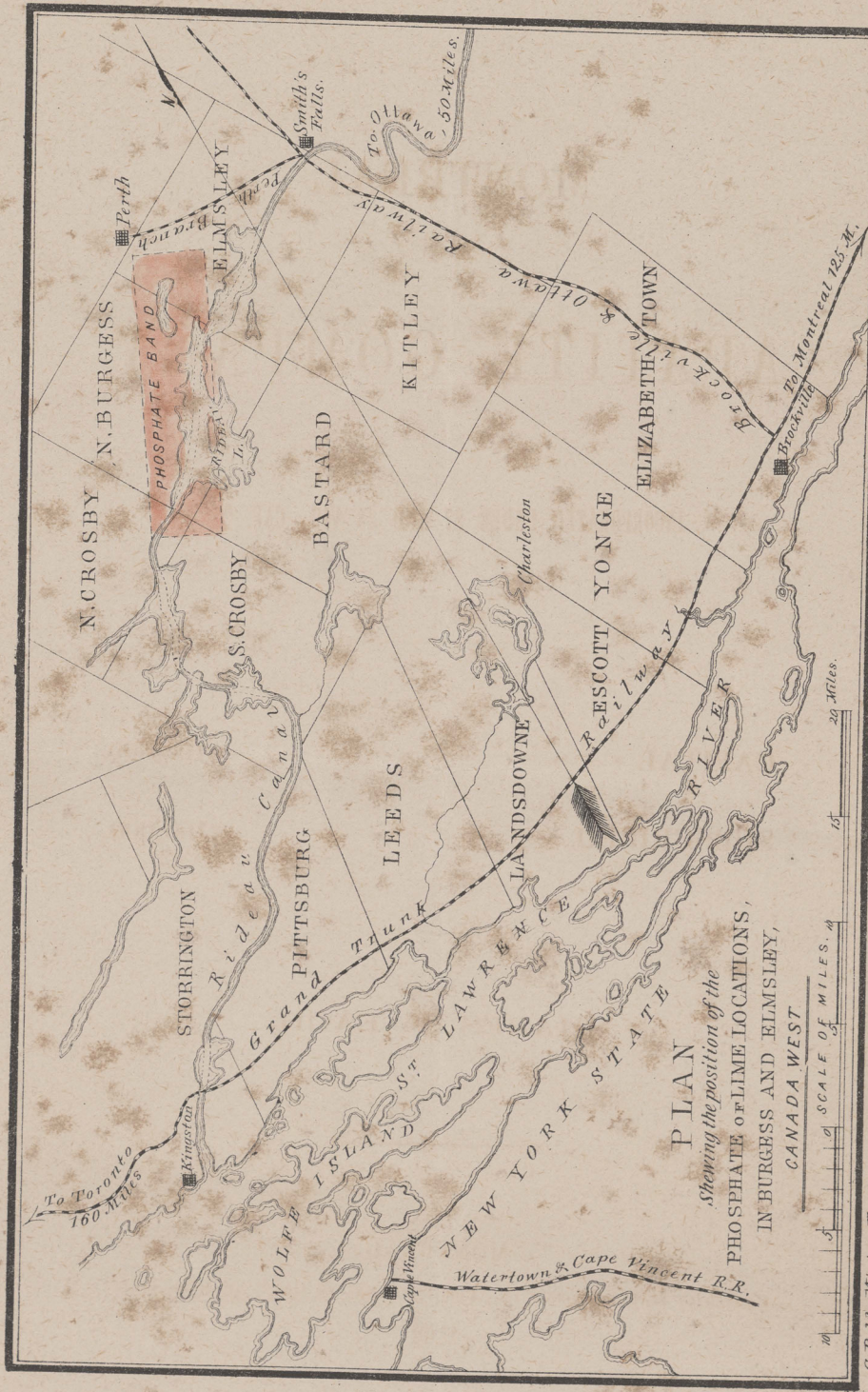












PLAN  
 showing the position of the  
 PHOSPHATE and LIME LOCATIONS,  
 IN BURGESS AND ELMSELEY,  
 CANADA WEST

C. Robb, Mining Engineer.  
 Roberts & Reinhold, Litho. Montl.



MONTREAL

APATITE COMPANY

INCORPORATED UNDER 27 AND 28 VIC., CAP. 23

---

CAPITAL - - - - - \$100,000.

SUBSCRIBED - - - - - \$100,000.

---

SHARES \$5 EACH.

---

MONTREAL:

PRINTED BY M. LONGMOORE & Co., PRINTING HOUSE, 67 GREAT ST. JAMES STREET.

1865.



MONTREAL

APATITE COMPANY

INCORPORATED UNDER THE ACT OF 1854

CAPITAL - \$100,000

SUBSCRIBED - \$100,000

SHARES OF EACH

MONTREAL

Printed by M. Lacombe & Co., Printers, 111, Grand St. East, Montreal.

1888



## MONTREAL APATITE COMPANY.

The Montreal Apatite Company, incorporated under the General Mining Act of Canada, [1864] with a limited liability to the Shareholders, is now being organized for the development of the extensive beds of the mineral, generally known as "Phosphate of Lime," existing on the property of this Company, situated in North Burgess, on the Rideau Canal, about six miles from Perth, C. W.

The explorations of the Geological Survey and the developments of the Rideau Mining Company, on one of the adjoining lots, prove that the quantity in this locality is almost inexhaustible, lying in surface deposits as well as in well defined veins, yielding 90 per cent. Apatite, and capable of being wrought at small expense.

The value of this Mineral as a manure (reduced to a Superphosphate) is now admitted, and bids fair to rival the far-famed guano, adding to the economic minerals of Canada a product as valuable as her Iron, Petroleum, Copper, or Gold.



The demand is limited only by the wants of Agriculture in all parts of the civilized world, whilst the supply, except from these extensive fields of Canada, cannot be met by the deposits of Sweden and Spain.

The property of the Company consists of 170 acres freehold of land and minerals; 527½ acres freehold of minerals; 795 acres leasehold of minerals, subject to an annual rent of \$160. The titles are perfect in every particular.\*

The proximity of this property to the Rideau River, one of the lots fronting thereon, and adjoining the one worked by the Rideau Mining Company, affords facilities for mining and shipping at the lowest possible cost.

The cost of mining, shipping and realizing, is thus estimated per ton:—

|                                             |         |
|---------------------------------------------|---------|
| Mining and Picking, . . . . .               | \$4 00  |
| Cartage, . . . . .                          | 0 50    |
| Freight to Montreal, . . . . .              | 2 50    |
| Loading, . . . . .                          | 0 25    |
| Wharfage at Montreal, . . . . .             | 0 25    |
| Handling, . . . . .                         | 0 25    |
| Freight to Liverpool, . . . . .             | 10 00   |
| Charges, Management and Commission          | 1 50    |
| Allowance for Extras, . . . . .             | 0 50    |
| Interest on Capital, . . . . .              | 0 25    |
|                                             | <hr/>   |
| Total Expenditure, . . . . .                | \$20 00 |
| Value in Britain, France and Germany,       |         |
| £6 10s. stg. ; at 9½ per ct. = \$31.63, say | \$30 00 |
| Margin for profit per ton, . . . . .        | \$10 00 |

\* See page 12 for details.



These charges have been intentionally estimated at a high rate, and may be much reduced by careful management.

By working gangs of men continuously on the several lots, from 100 to 500 tons per week may be obtained.

Assuming, however, 100 tons per week;  $100 \times 52 = 5,200$  tons at \$10 profit, \$52,000 per annum.

The property has been secured at a cost of one-tenth free stock, = \$10,000; and cash \$10,000, payable one-quarter down, and the balance in three equal quarterly payments, without interest.

It is proposed to allot the stock in blocks of 1000 shares, of \$5 each, and to call in 25c. of \$1, thus:—

|                                                                     |         |
|---------------------------------------------------------------------|---------|
| Cash, . . . . .                                                     | \$500   |
| Three months, . . . . .                                             | 250     |
| Six " " . . . . .                                                   | 250     |
| Nine, " " . . . . .                                                 | 250     |
|                                                                     | <hr/>   |
|                                                                     | \$1,250 |
| Multiplied by 18 assessable blocks, . . . . .                       | 22,500  |
| From which deducting the cash payment<br>on the property, . . . . . | 10,000  |
|                                                                     | <hr/>   |
| Leaves a working balance of . . . . .                               | 12,500  |

A sum ample to develop and carry out the mining and shipping contemplated under the present organization. The return thus anticipated is over 230 per cent. per annum on the proposed investment.



The mining enterprizes of Canada are in their infancy, and may be called experimental, but it only requires the judicious investment of the limited means of her people to open up a new and vast field for the development of her resources, the employment of her population, and the advancement of the commercial prosperity of the country.

The following extracts bear on the subject and explain the views of the Geological Commission of Canada, page 759, *Geology of Canada*:—

“Of late years the increasing demand for Phosphates as fertilizers, has drawn attention to the use of the crystalline mineral, Phosphate of Lime or Apatite, of which large quantities have been imported from Norway into England, and attention has recently been turned to the abundant supplies of this substance existing in Canada. According to a letter received in September 1862, from one of the largest manufacturers of Superphosphate in England, he a few years since imported several thousand tons of Apatite from Sweden, and only abandoned its use, because the English Phosphates of Lime could be furnished at lower rates than the Swedish. He writes that the following prices may be expected for Phosphate of Lime in England:—For a mineral containing 90 per cent. of Phosphate of Lime about £6 10s. stg. per ton; for one containing 80 per cent., £5 10s. stg., and for one 70 per cent. £4 10s. A mineral with a



lower per centage than this, would not, it is said, be merchantable."

As to the Assay of Phosphate from an adjoining lot, it is stated :—"What was regarded as an average specimen from one of the beds on the fourth lot gave by analysis, Phosphate of Lime 91.20, fluorid of calcium 7.60, chlorid of Calcium 0.78, insoluble 0.90; 100.48. This mineral Phosphate contains only traces of oxyd of iron; and from its purity it might perhaps be used instead of bone ash on the manufacture of English porcelain."

Mr. Robb, a man of practical experience in Canada, of professional ability and of reliability, states in his Essay on the Mineral Resources of British North America :—

"MINERAL MANURES—PHOSPHATE OF LIME—GYPSUM  
—SHELL MARL.

"*Apatite or Phosphate of Lime.*—This mineral, the constituent elements of which form the base of animal bones, is found in great abundance in the Laurentian rocks of Canada; and although not hitherto brought into very general use as an artificial manure, is plentifully distributed by the hand of nature from the debris of the rocks among the soils, contributing no doubt very materially to their fertility and value. Its occurrence in rocks of such primitive geological age, points to the existence of animal life at a period



vastly earlier than the received geological theories admit.

“The mineral phosphate of lime has for some years back attracted considerable attention both in England and the United States, as a substitute for guano and bone dust. So important is the substance deemed, that the British Government sent commissioners to Estremadura in Spain, where the mineral is found, for the purpose of arranging for its importation into England; but the result was that it did not appear to exist in sufficient quantity; so that the only mineral phosphate now used by the agriculturists in England is obtained from the *crag* on the coast of Suffolk. This, however, is very impure, containing much carbonate of lime and other earthy matters; while the mineral phosphate found in Canada is nearly in a pure, and much of it in a crystalized state. Although it has not yet been mined to any considerable extent, sufficient has been ascertained with regard to its mode of occurrence to render it certain that it can be obtained in very great quantities, and it may be hoped that it will supersede the use of bones, of which probably not less than £400,000 or £500,000 worth are annually imported into England. Besides the use of bone-dust for agricultural purposes, several thousand tons of it are annually used in England for the manufacture of china ware, at a cost of from seven pound to ten pound per ton. Probably the mineral phosphate might be successfully applied



as a substitute for this purpose also. As a manure it has been actually applied to the land with great success; but a good and cheap method of decomposing it, previous to applying it to the soil, is still a desideratum. The usual mode of applying it as a manure, is to grind the mineral to powder, and treat with coarse sulphuric acid; about two-thirds of the phosphate is thus at once liberated, and enters into combination with the soil, while the remaining third will act upon the ground the ensuing year, by becoming soluable by natural agencies.

“This mineral is found very extensively distributed among the Laurentian rocks, both in detached nodules and in crystals; but the most important locality of its occurrence, hitherto discovered, is in the township of North Burgess, where it forms a massive bed of unknown though evidently very great dimensions, which has been quarried to a small extent. Another deposit in the adjoining township of Elmsley, but which, from the direction of the beds, seems to be in the same band, has also been worked a little, and apparently forms an irregular bed in the Laurentian limestone. This bed has been traced upwards of a mile, and seems to be about ten feet wide, of which three feet are nearly pure crystalline apatite, containing about ninety per cent of phosphate of lime, the remainder being mixed with the limestone rock, in which, however, the phosphate greatly predominates. The deposit in North Burgess has the great advantage of



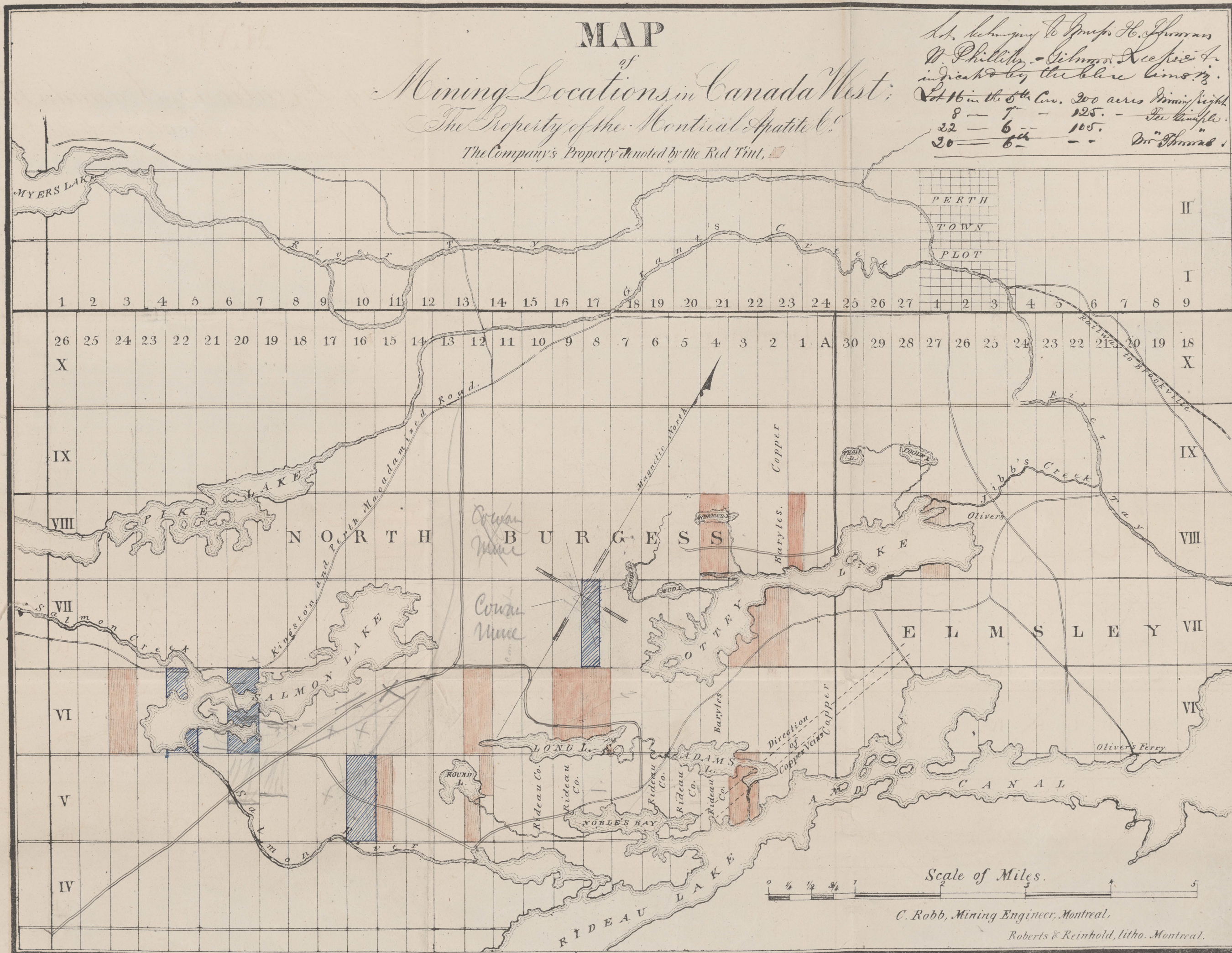
being very easily quarried, and of being situated immediately upon one of the reaches of the Rideau Canal. The mineral is stated to be worth from twenty to thirty dollars per ton in England, the value, of course, varying according to the percentage of phosphoric acid. When we consider the bearing of the phosphate of lime upon the animal and vegetable economy, we must regard the discovery of this substance in such abundance, and so easily accessible, as one of the most valuable of the sources of wealth which has been added to the country during the last few years."

Specimens of the mineral and all information as to the Company may be obtained from the undersigned, at whose office the stock books are opened.

WM. B. LAMBE,  
No. 1 UNION BUILDINGS,  
St. Francois Xavier Street,  
MONTREAL.

# MAP of Mining Locations in Canada West; The Property of the Montreal Asphalt Co. The Company's Property denoted by the Red Tint.

*Sub. belonging to Messrs H. Johnson  
W. Phillips - Gibson & Co. &  
indicated by the blue lines.  
Plot 16 in the 5th Con. 300 acres Mining Right  
8 - 7 - 125. - See map p. 12.  
22 - 6 - 105. -  
20 - 6 - - Dr. Johnson's*





# SPECIAL REPORT

ON PROPERTY OF

## THE MONTREAL APATITE COMPANY

BY

CHARLES ROBB, Esq.,

*Mining Engineer.*

96 St. Francois Xavier Street,  
MONTREAL, 28th June, 1865.

WM. B. LAMBE, Esq., Montreal.

DEAR SIR:

Having been honored with your instructions to visit and report upon certain lots of land in the townships of Burgess and Elmsley, in Canada West, which had been selected for the mining of apatite, or the mineral phosphate of lime, I proceeded thither on the 20th instant, and devoted the remainder of the week to a superficial examination of the property, in so far as it was practicable to do so.

As the lots in question had been but very partially explored by blasting and uncovering the rocks, I considered it necessary, in order to arrive at any definite conclusions as to the probable quantity, mode of occurrence of the mineral, and general prospects of the undertaking, to inspect also some of the lots adjacent to your own, upon which exploratory works had been carried on to a considerable extent.

On the accompanying map, which represents the portions of the townships of Burgess and Elmsley in which the phosphate of lime has been found in available quantity, I have distinguished by the red tint the lots selected by you; and have also marked the lots on which mining operations for apatite are now, and have been during last



season, successfully carried on by the Rideau Mining Company. The following is a list of the various lots selected by you :

|     |                                         |           |                              |                   |        |
|-----|-----------------------------------------|-----------|------------------------------|-------------------|--------|
| 1.  | Lot 27 in the                           | 8th       | Concession N. Elmsley, about | 50                | acres. |
| 2.  | S.W. $\frac{1}{2}$                      | " 1       | " 8th " N. Burgess, "        | 100               | "      |
| 3.  | "                                       | " 4       | " 8th " " "                  | 190               | " *    |
| 4.  | "                                       | " 2 and 3 | " 7th " " "                  | 295               | "      |
| 5.  | "                                       | " 8 and 9 | " 6th " " "                  | 335               | "      |
| 6.  | "                                       | " 12      | " 6th " " "                  | 192 $\frac{1}{2}$ | "      |
| 7.  | "                                       | " 24      | " 6th " " "                  | 200               | "      |
| 8.  | "                                       | " 3       | " 5th " " "                  | 120               | "      |
| 9.  | N.E. $\frac{1}{4}$ & S.W. $\frac{1}{4}$ | 12        | in 5th " " "                 | 100               | "      |
| 10. | SW $\frac{1}{2}$                        | " 15      | " 5th " " "                  | 100               | "      |

Comprising in all 1,682 $\frac{1}{2}$  acres more or less.

The geological horizon to which the deposits of apatite found in this region belong, lies towards the base of the Lower Silurian system of rocks, appearing to occupy a position between the Laurentian limestone and overlying Potsdam sandstone. These formations are here, however, extremely irregular and difficult to trace; such irregularities being indicative of a period of convulsion, and probably attended by powerful chemical reactions. Patches of Laurentian gneiss, granite, and limestone are distributed in a somewhat confused and capricious manner, associated with masses of diorite or greenstone. The deposits of apatite occur at or near the junction of these several descriptions of rock, and appear to me, for the most part, to partake of the character of *segregated veins*, occupying fissures generally (though not always) parallel to the stratification of the rocks, the mineral substances of which they are composed having been gradually eliminated from the surrounding rocks while in a plastic state. Such deposits, although not generally considered so regular or reliable as *true veins*, are frequently found of vast dimensions and amply remunerative in working; and even although exhausted in one place, generally leave sufficient indications in the rock by which to trace the locality of similar adjacent deposits. In some instances the deposits assume the appearance of true veins cutting the rocks, but their real character has not yet been thoroughly tested. The mineral occurs both in the crystallized and compact form, both being, however, equally pure.

So far as yet known, the tract of country in which these great deposits of apatite for the most part occur, occupies a breadth of

\* This lot under offer of sale.



about  $3\frac{1}{2}$  miles, commencing a little beyond the eastern end of Otty Lake, and running in a direction South  $20^\circ$  West, coinciding with the general strike, and extending a little to the south of the Rideau Canal and Lake, or a distance of 8 or 9 miles. The lands acquired by you all lie within the designated area, with the exception of one lot, (the 24th of the 6th Concession, N. Burgess,) upon which, however, phosphate of lime has also been found in promising quantity. The mineral is almost invariably associated with pyroxenic rock, and with more or less black mica, which, as it usually extends to the surface of the soil, forms a useful practical guide to the discovery of the more valuable mineral. The apatite veins are in most instances partially concealed, or pinched up at the surface by a capping of barren rock, which on being removed, or the deposit worked into, generally shows a rapid improvement, both in thickness and quality.

Although regular mining operations for the production of the material for market have hitherto only been carried on to a very limited extent, sufficient exploratory work has been done, within the area above specified, to establish the fact that the mineral phosphate of lime exists here in vast abundance; probably more so than in any other region in the world hitherto examined for mining purposes. On two lots belonging to the Rideau Mining Company, I learn that during last season, with a force of about 30 men, including those employed in clearing and stripping the land, making roads, wharves, buildings, &c., upwards of 400 tons of *pure* phosphate were obtained, although their works may be regarded as chiefly of a preliminary or exploratory character. Your lots, as I have before remarked, are comparatively unexplored; in fact, on most of them no blasting or picking has been done; and some are covered with a dense growth of forest and underbrush, rendering examination of the rocks almost impossible. Nevertheless, the surface indications and developments made so far, lead to the belief that some, if not all of them, will prove as rich and productive as any of those tested.

No. 1.—This lot is divided into two parts by Otty Lake; containing about 30 acres on the North side, and about twenty on the South side of the lake. It is entirely in a wild state, and so overgrown with timber and brush as to render even a superficial examination extremely difficult. However, I inspected the Southern portion somewhat minutely, and observed out-crops of phosphate at four different places, and under highly promising conditions. No data were afforded, how-



ever, by which to determine the precise nature or extent of the deposits. At one point, where a rocky cliff abuts upon the shore of the lake, there is a bed of flesh-colored crystalline limestone, richly charged with crystals of apatite; one crystal was observed here, measuring upwards of three inches thick; and the whole mass of rock would probably yield phosphate in the proportion of one to three. The separation of the phosphate from the carbonate of lime would probably be readily effected by simply calcining. From the existence of the more valuable mineral in such abundance here in the crystallized form, it may be reasonably inferred from experience on other similar places that it will also be found abundantly in the compact form. On the North side of the lot, the mineral is also found in a vein running from the lake shore inland for some considerable distance; but here also the lot is too rugged to admit of minute examination without the expenditure of some labor. I was credibly informed that a great bed of good steatite or soap-stone had also been observed to exist on this part of the lot, and which may prove most valuable. This lot is in the immediate vicinity of one of Oliver's (25 in the 8th) on which much work has been done, and which is regarded as one of the choicest and most valuable phosphate lots in the country.

No. 2.—This lot is unexplored, except by merely walking over. Small crystals of apatite are found abundantly diffused, indicating the probable existence of the mineral in quantity in the rocks below. On a lot immediately adjoining, several openings have been made, which show the mineral in such abundance as to establish the value of this lot also.

No. 3.—This is one of the lots on which phosphate was first observed by Dr. J. Wilson, of Perth, and subsequently examined and described by Dr. T. Sterry Hunt in his Report to Sir William Logan in 1847. I also learn that the fine specimens of phosphate of lime sent to the London Exhibition of 1851 were obtained from this lot. Dr. Hunt reports having found large crystals of apatite in abundance on the lot. I had not an opportunity of inspecting it, being given to understand that nothing now could be learned by a personal examination.

No. 4.—This block of land is also but little explored, being covered with impenetrable brush and thickets. Fine specimens of apatite, in the crystalline form, have been obtained at many points, chiefly on the shore of Otty Lake; and there can be no doubt that, for an undeveloped property, it presents equally favorable promise with any of



the others. It is found in abundance here, as there is reason to believe, the facilities for shipment are very favorable.

No. 5.—This large block of land, which has been mostly cleared in front, has been explored to a considerable extent, by blasting, digging and picking, and holds out the most encouraging prospects for successful mining. I examined twelve or fourteen openings (in four of which the rock had been blasted) and found more or less phosphate in all; and in some, obviously important deposits, although too little had been done to enable me to specify dimensions, &c. The veins, of which there are at least four, traceable over the whole width of the block, or nearly two-thirds of a mile, seem here to run with the stratification, which is somewhat less disturbed than at most of the other locations examined, the general direction being North, 40° East. The apatite occurs here both in the crystallized and massive form, and everywhere marked by the presence of the black mica and pyroxenic rocks. At one opening, a vein which showed only about two inches at surface widened out to fourteen inches of solid apatite of the best quality, on putting in a few blasts. The openings referred to are all in the front or cleared part of the property, but other discoveries of phosphate have been made towards the rear, though undeveloped; and there is reason to believe that when the land is cleared and explored discoveries of greater importance than heretofore will be made.

These lots lie about the centre of the mineral range, the boundaries of which I have indicated; and directly in the run of some of the best discoveries yet made; and I regard them as likely to turn out equally important with any of the others in the district. The land abuts upon Long Lake, which is navigable for barges, and which, with very trifling expense, could be connected with one of the reaches of Rideau Lake, by means of half a mile of cutting through low land, and one rude lock, thus establishing water communication close to the mines.

No. 6.—This lot, which appears to be about one-fourth cleared, also holds out excellent promise, phosphate having been found in considerable abundance wherever openings have been made, which has been done by the spade and pick only, in five or six places, and in the same small field or clearing. The deposits here also obviously run with the rocks (N. 40° E.), but too little work has been done to enable me to enter into further details. From one of these small



openings I obtained a very perfect crystal, about 4 inches thick, which I have handed to you. This lot I consider as most valuable for the purpose in question, and being penetrated by a bay of Long Lake, the method of outlet already specified would be available.

No. 7.—This lot being at a considerable distance from the rest, and the time at my disposal not admitting of it, was not visited by me on this occasion. I was informed, however, on the most reliable authority, that very fine specimens of apatite had been obtained from it, and that the deposits promise an abundant yield.

No. 8.—This lot lies immediately adjoining, to the East, one of the most important of the Rideau Mining Co's locations, from which lot the large crystal of 60 lbs. was sent to you, being that on which most work has been done by them last season; and the developments made by them have amply proved the value of the lot in question. Being entirely in a wild state, no positive discovery had previously been made, so far as I am aware. In traversing the lot, however, I found a good show of phosphate in two places upon it; and I entertain not the least doubt that it will prove as important as No. 4 on the same range, on which true veins undoubtedly exist. The front of the lot abuts upon Rideau Lake, the water being of great depth close to the shore, and the rear upon Adams' Lake, which is also navigable for scows, and connected with Rideau Lake by a navigable channel; so that this lot possesses unequalled advantages for shipping the produce of the mines. From facts within my knowledge, I think it highly probable that a workable vein or veins of copper ore will be found towards the rear of this lot.

Nos. 9 and 10.—No exploratory work done on these lots, which are very rough, rocky and tangled. With the exception of a single instance occurring on the rear of lot 15 in the 5th, I am not aware of any positive discovery of apatite upon any of these lots, but it has been found in promising conditions on properties immediately adjoining; from which circumstance and from their position in the heart of the phosphate range or belt of rocks, their value may be safely inferred.

As regards the quantity of phosphate which may be obtained on these properties, it is obviously impossible to form any exact estimate. Considering, however, the extensive diffusion of the mineral, and the results which have been attained on adjacent and apparently not more favorably situated properties, I should judge it quite safe to calculate upon obtaining, with a moderate force, at least 12,000 or 15,000



tons annually, after the lots are cleared and the cap rock removed at several points. Supposing the deposits to prove moderately extensive, the cost of extraction, including stripping, &c., should not exceed \$2 per ton—that is, for open quarrying,—but as a mining operation, that is in case shafts and underground work should be required, the cost may be two or three times this amount. The average cost of teaming by winter roads to the Rideau Lake may be estimated at 50 cents per ton.

The apatite found in this locality is extremely pure, yielding, both in the compact and crystalline form, over 90 per cent of phosphate of lime. When mixed with the carbonate of lime, the separation would appear to be simply and readily accomplished.

This mineral has been found by experience to be perfectly adapted as a substitute for animal bones in the manufacture of super-phosphate manures, &c., for which purpose there is a very large and increasing demand, both in England and on the European continent.

The value of the mineral in Canada, both for home consumption and for exportation, would be very greatly enhanced, if it could be ground and manufactured at or near the points where it is produced; for which purpose the abundant water-power on the Rideau Canal, the extensive beds of iron pyrites existing at no great distance, admirably adapted for the manufacture of sulphuric acid, and the abundant supply of firewood everywhere, might in combination be rendered profitably available, and add a most important new branch to the industrial resources and commercial prosperity of the Province.

I have the honor to be,

Dear Sir,

Yours most respectfully,

CHARLES ROBB,

*Mining Engineer.*



was immediately after the top is cleared, and the cap top removed at several points. Supposing the top is to prove moderately extensive the cost of extraction including stripping etc. should not exceed 25 per ton—about the open market price for a similar operation, that is in case of a small and unimportant deposit should be expected. The cost may be two or three times this amount, if the deposit is of considerable size, by which means the deposit is to be estimated at 50 cents per ton.

The quartz found in the locality is a variety of fine grained quartz in the amount and crystalline form, very few of the size of a pea or larger. When mixed with the carbonaceous matter the separation would appear to be easy, and would be accomplished.

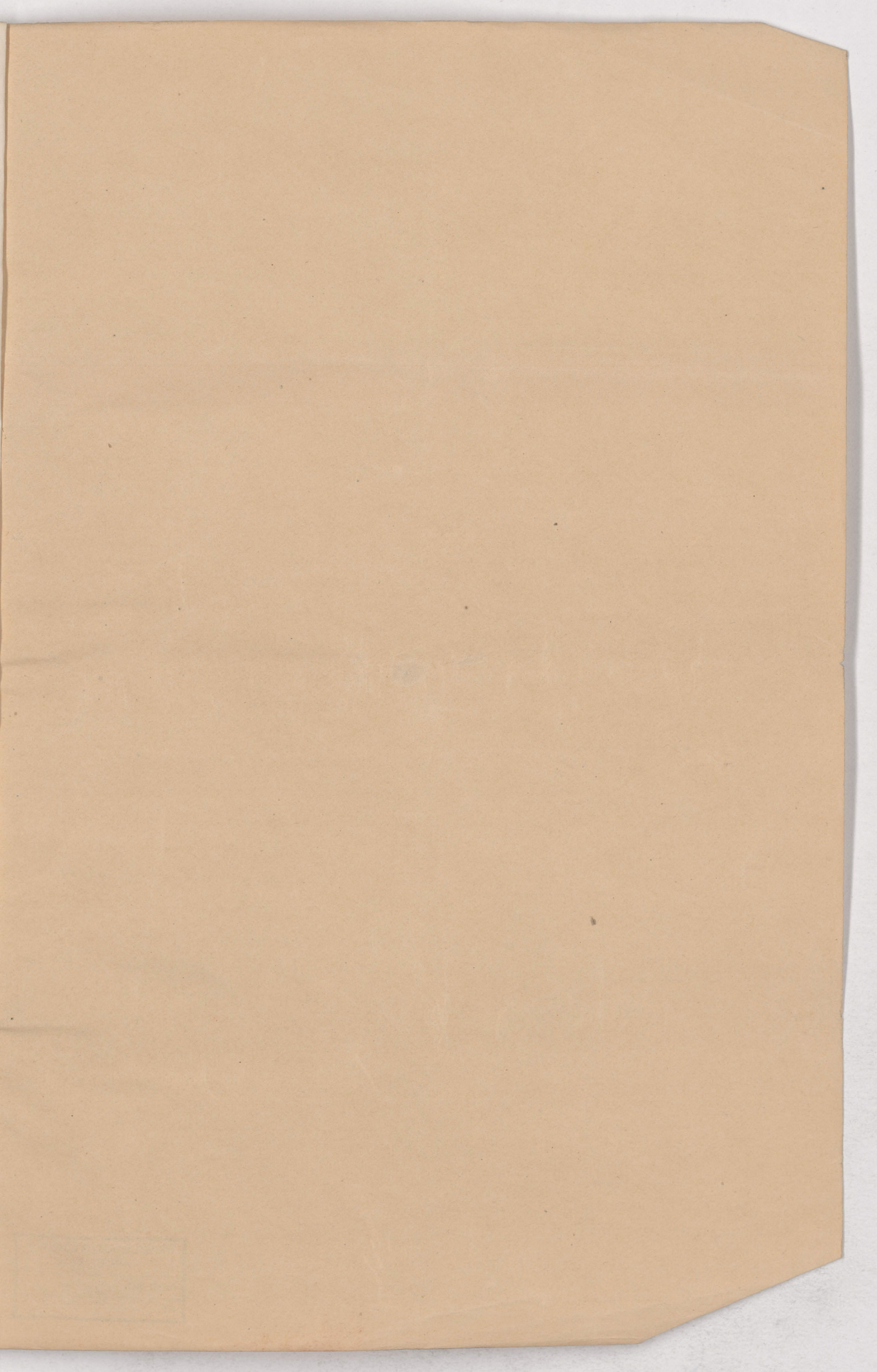
This mineral has been found to be associated with a variety of other minerals, the most important of which are the following:—A very fine and increasing demand for quartz is made in the manufacture of glass, and the value of the mineral is high. It is also used in the manufacture of porcelain, and the extraction would be very difficult, if it could be secured and marketed at a price of 25 cents per ton. It is also used in the manufacture of iron, and the extraction would be very difficult, if it could be secured and marketed at a price of 25 cents per ton. It is also used in the manufacture of steel, and the extraction would be very difficult, if it could be secured and marketed at a price of 25 cents per ton.

I have the honor to be,  
Dear Sir,  
Yours most respectfully,  
CHARLES ROBB

CHARLES ROBB

M. & W. T. B. & C.







McGILL UNIVERSITY  
ARCHIVES  
ACC. NO. 2211/64  
REF. 13