

TECHNOLOGICAL INSTITUTE,

HALIFAX, NOVA SCOTIA.

(Established 1877.)

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FIRST ANNUAL ANNOUNCEMENT.

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HALIFAX:

NOVA SCOTIA PRINTING COMPANY

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NOVA SCOTIA PRINTING COMPANY,  
1878.

N. B.—The Course of Lectures at the Technological Institute for the year 1878-9, will commence upon Wednesday, 16th October, 1878.

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N. B.—All communications to be directed to the President, Professor Lawson, or to the Secretary, Dr. Eayne, per address,

DALHOUSIE COLLEGE,  
Halifax, N. S.

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All accounts to be sent to the Treasurer, Dr. Honeyman,

PROVINCIAL MUSEUM,  
Halifax, N. S.

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# TECHNOLOGICAL INSTITUTE.

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Patrons:

HON. SIR WILLIAM YOUNG, KNIGHT, CHIEF JUSTICE OF  
NOVA SCOTIA.

Dr.

WILLIAM J. STAIRS, ESQ., VICE-CHANCELLOR OF THE  
UNIVERSITY OF HALIFAX.

# TECHNOLOGICAL INSTITUTE.

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## Office-bearers :

*President*, - - - - - PROFESSOR LAWSON, PH. D., LL. D., F. I. C.  
*Vice-President*, - - - JOHN SOMERS, M. D.  
*Treasurer*, - - - - - REV. DAVID HONEYMAN, D. C. L.  
*Secretary*, - - - - - HERBERT A. BAYNE, M. A., PH. D.

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## Faculty of Instructors :

PROFESSOR LAWSON, PH. D., LL. D., F. I. C., *Lecturer in Agricultural Chemistry and Botany.*  
PROFESSOR DEMILL, M. A., *Lecturer in English.*  
PROFESSOR LIECHTI, *Lecturer in German, French and Spanish.*  
JOHN J. MACKENZIE, M. A., PH. D., *Lecturer in Physics.*  
REV. DAVID HONEYMAN, D. C. L., *Lecturer in Geology, Palæontology and Mineralogy.*  
JOHN SOMERS, M. D., *Lecturer in Zoology.*  
HENRY S. POOLE, F. G. S., Inspector of Mines, } *Lecturers in Mining.*  
JOHN RUTHERFORD, M. E., }  
EDWIN GILPIN, M. E., F. G. S., *Demonstrator in Assaying.*  
HERBERT A. BAYNE, M. A., PH. D., *Lecturer in Industrial Chemistry.*  
R. G. FRASER, Government Analyst, *Demonstrator in Industrial Chemistry.*  
JOHN JACK, Principal Morris St. School, *Lecturer in Mathematics.*  
EMIL VOSSNACK, C. E., *Lecturer in Mechanical Engineering, Naval Architecture and Mechanical Drawing.*  
FORSHAW DAY, *Instructor in Free-hand Drawing.*  
E. H. KEATING, Assoc. Inst., C. E., City Engineer, *Instructor in Civil Engineering.*  
ANDREW DEWAR, Architect, *Lecturer in Architecture.*

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# TECHNOLOGICAL INSTITUTE.

## § I.—PREAMBLE.

The Technological Institute has been established for the purpose of providing instruction in those branches of science, art, and literature, which are specially useful to persons desirous of qualifying themselves for engaging, either as workmen, foremen, managers, or proprietors, in the various mechanical, agricultural, mining, and chemical industries.

## § II.—SUBJECTS OF INSTRUCTION.

Instruction will be provided in—(a) Agriculture; (b) Industrial Chemistry; (c) Engineering—Civil, Mining and Mechanical; (d) Drawing and Design; (e) Architecture; (f) Natural History; (g) Mathematics; (h) Languages—English, French, German, Spanish.

The instruction imparted will, as far as is consistent with thoroughness, be of a practical nature, and the technical bearings of the subjects taught will receive especial attention. The Courses will be illustrated by experiments, diagrams, specimens, mechanical and other models. Use of instruments and laboratory apparatus will also be granted to Students.

For the present it is not intended to arrange definite Courses of Study leading to any degree in Applied Science, but Certificates of Proficiency will be granted in individual subjects to any students desirous of obtaining them, who may have attended with regularity any complete Course of Lectures, and passed a satisfactory examination upon the subject of the same.

It is hoped that the University of Halifax may shortly make arrangements for conferring degrees in Industrial Science.

### § III.—QUALIFICATIONS FOR ADMISSION.

Pupils shall not be admitted to attendance upon the Courses of Lectures, nor to any of the privileges of the Institute, under the age of 14 years.

Pupils seeking admission will be required (1) to possess a satisfactory acquaintance with the elementary rules of arithmetic; (2) to write a plain hand; (3) to know the rudiments of English Grammar and Composition.

Ladies will be admitted to the privileges of the Institute, in cases where the Lecturer finds it convenient to arrange for separate Classes.

### § IV.—FEES, TICKETS, &c.

The Fee, per Term, for each Course of Lectures, shall be \$3, except for the Courses in Mechanical Engineering and Naval Architecture, for each of which the Fee shall be \$4 per term. The annual Registration Fee shall be \$1.

Registration and Class Fees are to be paid to the Treasurer, Dr. Honeyman, at the Provincial Museum, from whom tickets entitling to attendance upon the several Courses of Lectures will be obtained.

Students are allowed the use of the larger pieces of Laboratory and other apparatus, as well as of models and diagrams; but they are expected to provide themselves with the outfit of less expensive material, which is necessary to pursue with advantage their special studies.

### § V.—TERMS.

The Institute Year commences in October and is divided into the following Terms:—

- (a). First Term—2nd Wednesday in October to 3rd Friday in December.
- (b). Second Term—2nd Wednesday in January to last Friday in March.
- (c). Third Term—3rd Wednesday in April to last Friday in June.

For the ensuing year the Terms will extend from—

Wednesday, 16th Oct. to Friday, 20th Decr.

Wednesday, 8th Jan. to Friday, 28th Mar.

Wednesday, 23rd Apr. to Friday, 27th June.

#### § VI.—HOURS AND PLACES OF LECTURES.

For the convenience of the classes for whom the instruction provided by the Technological Institute is specially intended, the Lectures will be delivered mainly in the evening, from 7 to 10 o'clock. In some subjects Lectures will be held between 4 and 6 p. m.

The Lectures will be held, in part, at the Institute Rooms, Stairs' Building, 74 Bedford Row; in part at Dalhousie College, and at the Halifax Medical College. The Provincial Museum and the Horticultural Gardens are also at the disposal of the Institute for the purposes of instruction.

# Courses of Lectures for ensuing Year,

1878-79.

## I.—MATHEMATICS.

JOHN JACK, *Principal, Morris Street School, Halifax.*

(a) ARITHMETIC.

Fractions, Decimals, Proportion, Square and Cube Roots.

(b) ALGEBRA.

Elementary Rules, Fractions, and Equations.

(c) GEOMETRY.

Euclid—Books 1st, 2nd 3rd and 4th, with exercises.

(d) TRIGONOMETRY.

Solution of Plane Triangles and application to problems in heights and distances, Land Surveying, &c.

Lectures during the first and second terms of the Institute year.

*Text Books:* Arithmetic, Hamblin Smith's; Algebra, Hamblin Smith's; Geometry, Chambers' Euclid; Trigonometry, &c., Chambers' Practical Mathematics.

## 2.—PHYSICS.

JOHN J. MACKENZIE, M.A., PH. D.

Properties of Matter; Statics; Dynamics; Heat; Light; Magnetism; Electricity; Meteorology.

Lectures during the first and third terms.

*Text Books:* to be recommended at opening of the course.

## 3.—MECHANICAL ENGINEERING, NAVAL ARCHITECTURE, AND INSTRUMENTAL DRAWING.

EMIL VOSSNACK, C. E., *Member of American Association of Civil Engineers.*

### I.—MECHANICAL ENGINEERING.

(a) Resistance of Materials; (b) Construction of Machine Parts and Simple Machines; (c) Arrangement of Steam-boilers, Engines, Furnaces and Heating Apparatus, Calculations of their power, &c.; (d) Dams and Water Conduits, Hydraulic Motors (water-wheels, turbines and hydraulic machinery); (e) Gas, Hot-air and Electric Engines.

## II.—NAVAL ARCHITECTURE.

- (a) Elementary Principles, Statical Stability, Dynamical Stability, Calculations of Loci of Centre of Buoyancy, Metacentre and Centre of Flotation; (b) Designing of Wooden and Iron Ships; (c) Mastng and Rigging.

## III.—INSTRUMENTAL DRAWING.

- (a) Descriptive Geometry; (b) Designing of Machine Parts, Roofs and Bridges; (c) Drawing of Machines from sketches made on excursions, and from Models; (d) Graphostatic.

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## 4.—DRAWING.

FORSHAW DAY.

### (a) PRACTICAL PERSPECTIVE.

Comprising elementary principles of Projection; Projection of pyramids, circles, cylinders, &c.; Projection of buildings, and of shadows.

### (b) DRAWING.

Free-hand; Linear Drawing by means of instruments; Light and Shade in chalk and sepia; Object Drawing; Principles of Design; Designing from historic data; Landscape Drawing.

### (c) COLOUR.

Principles of Colouring, showing all the ocular modifications.

In summer months drawing from nature.

Instruction during the first, second and third terms of the Institute year.

*Text Books* : to be announced at the opening of class.

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## 5.—MODERN LANGUAGES.

PROFESSOR LIECHTI.

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|--------------|---|
| (a) FRENCH.  | } Translation and conversational exercises. |
| (b) GERMAN.  |   |
| (c) SPANISH. |   |

Instruction during the three terms of the Institute year.

*Text Books* :

FRENCH; French Principia, Parts I, II, III.; Selections from Scribe and Molière; Selections from English authors for translation into French.

GERMAN; Otto's German Conversation Grammar; Adler's Reader; Selections from works of Schiller, Goethe, Lessing; Selections from English authors for translation into German.

SPANISH; to be announced at opening of class.

## 6.—ENGLISH.

PROFESSOR DEMILL, M.A.

Details of instruction in this Department will be announced at commencement of course.

## 7.—AGRICULTURAL CHEMISTRY.

PROFESSOR LAWSON, PH. D., LL. D.

THEORETICAL AND PRACTICAL AGRICULTURE, embracing

(a) Varieties of Soils, Cultivation of Soils; (b) Manures, (c) Farm Crops; (d) Feeding; (e) Breeds of cattle, sheep, pigs, &c.; (f) Dairy Manufactures.

The course will be accompanied by laboratory instruction in the chemical examination of soils, artificial manures, dairy products, &c.

Lectures during the second term.

*Text Book:* Tanner's Agriculture.

*N. B.*—This course of lectures will be prefaced by an outline of the principles of Inorganic Chemistry.

## 8. INDUSTRIAL CHEMISTRY.

HERBERT A. BAYNE, M.A., PH. D.

R. G. FRASER, *Government Analyst.*

Metals and their extraction from the ores.

Raw Materials and products of chemical industry; Soda, Potash, Salt-petre, Powder, Ammonia, Soap, Alum, Ultramarine, &c.

Glass, Clay, Lime, Mortar, Gypsum.

Vegetable and Animal Materials, and their technical applications; Chemistry of Tanning.

Colouring Matters, Paints, Dyeing and Bleaching processes.

Photography, Gilding and Silvering by galvanic process.

Lighting and Heating Materials.

Laboratory work in analysis of commercial products and of foods, drinks, &c.

Instruction during first, second and third terms.

*Text Book:* to be recommended at opening of course.

*N. B.*—This course will be preceded by a few introductory lectures on Inorganic Chemistry.

## 9.—ZOOLOGY.

JOHN SOMERS, M. D.

(a) Comparative Anatomy and Physiology; (b) Classification.

Lectures during the first and second terms of the year.

*Text Books:* Nicholson's Zoology; Agassiz & Gould's Zoology.

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## 10.—BOTANY.

PROFESSOR LAWSON, PH. D., LL. D.

*(a)* Vegetable Anatomy and Physiology; *(b)* Classification.

Practical instruction at Horticultural Gardens.

A very extensive private Herbarium and good microscopes will be granted to students for their use.

Lectures during third term.

*Text Book*: Gray's How Plants Grow.

## 11.—GEOLOGY, PALÆONTOLOGY, AND MINERALOGY.

REV. DAVID HONEYMAN, D.C.L.

GEOLOGY—*(a)* LITHOLOGICAL.

Rocks, Stratification, Structure, &amp;c.

*(b)* HISTORICAL.

Formation of Rocks, their succession and characteristic distinctions.

*(c)* PHYSIOGRAPHIC.

Contour lines, Heights, &amp;c.

PALÆONTOLOGY.

Systematic, Typical, Analogical.

MINERALOGY.

Formational, Economic, Systematic.

Course fully illustrated by museum collections.

Geological excursions during summer months.

Lectures during second and third terms.

*Text Books*: Dana's Text Book of Geology; Dana's Manual of Mineralogy.

## 12.—MINING AND MINING ENGINEERING.

HENRY S. POOLE, F. G. S., *Inspector of Mines, Associate of the Royal School of Mines.*

JOHN RUTHERFORD, M. E.

Knowledge of the deposits of useful Minerals in seams, stream-works, lodes, irregular masses, etc.

Dislocations and rules for searching for lost portions of deposits.

Boring with rods, rope, diamond drills.

Tools used in hard and soft ground in collieries and metallic mines.

Blasting;—Lighting mines with open and safety lamps.

Employment of labour.

Sinking shafts and driving levels. Securing excavations by timbering, masonry, and tubbing and constructing dams.

Exploitation, the working away of veins and strata.  
 Carriage of Minerals underground.  
 Raising Minerals in shafts and machinery required.  
 Pumping and draining.  
 Ventilation, its principle and practice.  
 Dressing ores.

Lectures during First and Second Terms.

*Text Books :*

Principles of Mining Iron, }  
 " " Coal, } Collins' Science Series.  
 " Metal Mining, }

*Book of Reference :*

Haswell's Colliery Management.

This Course will be one which would prove of much value, not merely to those engaged in mining operations, but also to junior members of mining firms and to law students.

### 13.—ASSAYING.

EDWIN GILPIN, M. E., F. G. S.

Laboratory instruction in Practical Assaying, both in the wet and dry way.  
 Processes of Calcination, Roasting, Reduction, Fusion, Solution, Cupellation, &c.  
 Fluxes—metallic and non-metallic, and use of magnets in oxidising, reducing, sulphurising and desulphurising.  
 Use of the Blowpipe.  
 Volumetric Analysis.  
 Assay of Coal and Metallic Ores;—Iron, Copper, Lead, Manganese, Antimony, Silver, Gold, &c.

Instruction during first and second terms.

*Text Books :*

Rammelsberg's on Thorpe's Quantitative Analysis.  
 Elderhorst's Blowpipe Analysis.

*Book of Reference :*

Mitchell's Manual of Practical Assaying.

### 14.—CIVIL ENGINEERING AND SURVEYING.

E. H. KEATING, Assoc. Inst., C.E., *City Engineer.*

Surveying and levelling.  
 Setting out works of construction, including use of Field Engineering Instruments.  
 Plotting. Plan drawing.

N. B.—Pupils desirous of entering this class will be required to serve for a term of at least one year in the City Engineer's office, after having passed through the necessary preliminary classes in the Institute. Two or three pupils only can be taken.

(a) *Architectural Styles*

Lectures  
 One evening  
 the above  
 features and  
 lectures for

(b) *Architectural*  
 Upon a  
 —plan-drawings  
 mouldings  
 wooden  
 mechanics

Courses

1st Term

Oct., Nov.

Mathematics  
 Physics.  
 Mechanical  
 Drawing.  
 Modern Languages.  
 English.

Industrial Chemistry

Zoology.

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 Mining.  
 Assaying.  
 Architecture

A Schedule  
 lished at the

15.—ARCHITECTURE.

ANDREW DEWAR, *Architect.*

(a) *Architecture :*

Styles of Architecture—

Egyptian, Grecian, Roman,  
Lombardic, Moorish, Venetian,  
Italian Gothic, French Gothic,  
Saxon, Norman, Early English,  
Tudor, Renaissance.

Lectures during first and second term.

One evening each week will be devoted to a Lecture on one of the above styles of Architecture, giving illustrations of its prominent features and characteristics. (This is intended as a series of popular lectures for the general public.)

(b) *Architectural Drawing :*

Upon a second evening of the week there will be instruction in : —plan-drawing to scale, designing, perspective, the five orders, style mouldings and ornaments, drawing from casts, drafting frames for wooden buildings—and generally, practical drawing useful for mechanics in the building trades.

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Courses in each Term of ensuing Year, 1878-79.

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1ST TERM.	2ND TERM.	3RD TERM.
<i>Oct., Nov., Decr.</i>	<i>Jan., Feb., Mar.</i>	<i>April, May, June.</i>
Mathematics.	Mathematics.	.....
Physics.	.....	Physics.
Mechanical Engineer'g	Mech. Engineering.	Mech. Engineering.
Drawing.	Drawing.	Drawing.
Modern Languages.	Modern Languages.	Modern Languages.
English.	.....	English.
.....	Agricultural Chemist'y	.....
Industrial Chemisty.	Industrial Chemistry, (Laboratory work.)	Industrial Chemistry.
Zoology.	Zoology.	.....
.....	.....	Botany.
.....	Geology.	Geology.
Mining.	Mining.	.....
Assaying.	Assaying.	.....
Architecture.	Architecture.	.....

A Schedule indicating hours and places of Lectures will be published at the beginning of the October Term.

Students in attendance upon the Preliminary Courses,

During March, April and May, 1878.

CLASS OF EMIL VOSSNACK, M.E.,

*in Mechanical Engineering and Mechanical Drawing.*

Carter, Henry.	Moir, Alexander.
Chetwynd, Robert.	Morrison, Angus.
Dobie, John	Moseley, Robert.
Edgar, John.	Murray, Dennis.
Edgar, William.	Naylor, Lemuel.
Ewing, John.	Plant, William.
Fernie, Peter.	Power, J. W.
Forbes, Noel.	Reynolds, Alexander.
Gibson, Frederick.	Ritchie, George.
Hunter, Edward.	Smallwood, A.
Hurxtable, William.	Symonds, Howard.
Johnston, J. B.	Stevens, Douglas.
Johnson, George.	Wells, William.
Luke, Walter.	Warner, Charles.
Longard, Clarence.	Warner, Archibald.
Longard, George E.	Wetmore, William B.
Malcom, Henry.	Wier, Robert.
Millard, John	

CLASS OF FORSHAW DAY,

*in Free-hand Drawing.*

Buist, James.	Sandford, F.
Cornelius, Hermann.	Schäfer, Julius.
Henderson, James J.	Shea, Richard.
Huggins, William.	Silver, Harold.
Macguire, James.	Spike, Arthur.
Moseley, Robert.	Twining, Harry E.
Nichols, J. B.	Thorburn, Thomas.
Reardon, Thomas.	Wetmore, Stewart.

CLASS OF REV. DR. HONEYMAN,

*in Geology, Palæontology, and Mineralogy.*

Byers, James.	Gould, A. H. W.
Gisborne, Hartley.	McLeod, John

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CLASS OF E. GILPIN, M.E.,

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Sutherland, —

CLASSES OF PROFESSOR LIECHTI,

*in French and German.*

FRENCH.

Faulkner, G. E.  
Murray, Hugh.  
Moseley, C. A.  
Paulez, Francis H.  
Scott, Seymour.

GERMAN.

Fraser, William H.  
Laurilliard, R. N.  
Shore, Rev. Wm.  
McKenzie, H. K.

Besides the above, there was an average attendance of from thirty to forty upon the public Agricultural Lectures of Professor Lawson.

CLASSIFICATION OF STUDENTS.

Full number of Students enrolled.....	64
Number studying Mechanical Engineering and Drawing..	35
"    "    Free-hand Drawing .....	16
"    "    Geology, Palaeontology.....	4
"    "    Assaying .....	2
"    "    Modern Languages.....	9

Of the 35 attending the Class in Mechanical Engineering, 5 were Chief Engineers of steamers running into Halifax harbor, 4 were 2nd Assistant Engineers, 5 were 3rd Assistant Engineers, 2 Foremen of Machine Shops, 1 Manager of Industrial Works, 1 Assistant Manager of Works, 1 Clerk Board of Works, 2 Civil Engineers, 7 Machinists, 2 Boiler Makers, 1 Clerk, 4 without trade.

From this analysis it may be seen what classes of individuals have availed themselves most readily of the instruction which the Institute is designed to afford.

## Statement of Treasurer.

Technological Institute in account with Rev. D. Honeyman, D. C. L.,  
Treasurer.

By Donation from Sir Wm. Young, Kt., Chief Justice, &c. . . . .	\$100 00	
Class fees. . . . .	144 00	
Registration fees. . . . .	53 00	
		\$297 00
To Paid to Lecturers . . . . .	\$144 00	
Accounts. . . . .	44 03	
Balance. . . . .	108 97	
		\$297 00

## Donations to the Institute.

- Cheque for \$100—SIR WILLIAM YOUNG, Kt., Chief Justice, &c.
- Class-room accommodation—gas-fittings, gas and light, W. J. STAIRS, Esq.
- Drawing-tables for Institute room—S. BROOKFIELD, Builder.
- Models of shafting, hangers, couplings, &c.—MESSRS. POOLE & HUNT, Baltimore, Maryland.
- Model of a turbine-wheel—MESSRS. T. H. RISDON & Co., Mount Holly, N. J.
- Electro-plating of same—STARR MANUFACTURING Co., Dartmouth.
- Specimen collection of paints—MESSRS. REARDON & WALKER, Halifax.

Class-room accommodation with gas and light has also been given by the Governors of Dalhousie College, and other facilities and aid offered by the Medical College, the Commissioner of Mines, the City Council, and the Commissioners of the Public Gardens. Drawing tables were furnished at cost price to the students of Mechanical Drawing by the firm of Gordon & Keith. The Institute is also under obligations to the Management of the *Morning Chronicle*, *Morning Herald*, *Acadian Recorder*, and *Evening Reporter* for numerous free insertions of announcements, advertisements, &c.

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## ANNUAL MEETING.

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The first Public Meeting of the Technological Institute was held in the Library Hall of Dalhousie College, on Wednesday, 12th June, at 4 p. m., when the results of the first, or preliminary courses of instruction, were announced. There was a large attendance of ladies and gentlemen. The Honorable Sir William Young, Knight, Chief Justice of Nova Scotia, occupied the chair, and called upon Professor Lawson, President of the Institute, to deliver the opening address:—

At the outset, Professor Lawson remarked that the object of the meeting was not to witness the working of a complete, established, institution, nor the achievement of results already accomplished, but simply to receive an account of the efforts that had been made to supply an important educational want. After referring to the obvious necessity that existed for the establishment of such an institution, he recounted the attempts made to secure the desired boon, the difficulties that stood in the way, the removal of those difficulties one by one, the encouragement and aid afforded by W. J. Stairs and Sir William Young—the former having given class rooms free, put in the necessary lighting and heating apparatus, and paid the gas and coal bills; while the latter had made a contribution of \$100 to the funds. Valuable facilities and aid had also been afforded by the Governors of Dalhousie College, the Commissioner of Mines, the Management of the Medical College, and the City Council and Commissioners of the Public Gardens. Mr. Brookfield fitted up, at his own expense, the necessary drawing tables in the Institute rooms. Messrs. Gordon & Keith furnished drawing boards, T squares and angles to the students at cost price. Mr. Reardon presented a series of the various kinds of paint; and the city papers had also dealt very liberally with the Institute. Several valuable mechanical models had been presented through Mr. Vossnack, by Messrs. Poole & Hunt, Baltimore, Md., and Messrs. T. H. Risdon & Co., Mount Holly, N. J.

The work hitherto done has been preliminary. The subjects taught were: Mechanical Drawing, by Mr. E. Vossnack; Free-hand Drawing, by Mr. Forshaw Day; Agriculture, by

D. C. L.,

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Professor Lawson ; French and German, by Professor Leichti. The object of the Institute is to give instruction in those branches of knowledge that are necessary to qualify our youth for entering upon their respective avocations, which, as the practical business of life, must be acquired in the workshop or on the farm from those who are already engaged in them.

Dr. Honeyman then read a brief financial statement.

Dr. Bayne, Secretary, read a detailed statement of the work of the Institute, including the programme for the term which commences on the 16th October next.

Mr. E. Vossnack stated that in the department taught by him, the course of instruction had been, (1), lectures on mechanical engineering, and (2), instruction in drawing. In the first the principles involved were :—the objects of mechanical industry ; the nature of machinery ; the motive power and laws governing machinery ; machines for transmitting and distributing power ; machines for transportation purposes ; machine combinations ; the arrangements of engineering establishments ; practical applications and calculations. Geometrical and Mechanical Drawing was also taught in its various branches.

Free-hand and Mechanical Drawing are necessary modes of expressing many of our ideas in carrying on the pursuits of every-day life, and the latter is a necessity not only to the professional draughtsman but to the moulder, the blacksmith, the pattern maker, and the fitter and finisher. To execute designs they must be able at least to read drawings ; so, too, the carpenter, mason, boiler maker, tinsmith, copper-smith and worker in sheet iron cannot be a master of his craft without an acquaintance with the art of mechanical drawing. Two false impressions deter many,—the first, that a costly outfit of instruments is required at the outset ; secondly that a knowledge of mathematical principles is necessary. In reality, the appliances are few and simple, and, whilst an acquaintance with Geometry is desirable, any intelligent apprentice can, with perseverance, so school his eyes and hands as to produce creditable drawings.

Mr. Forshaw Day gave a brief account of the routine of his department, which was confined to Elementary Drawing for the first term. Those who had attended classes for the first term were determined to continue the studies upon which they had entered. He expressed confidence in the success of the Institute.

Rev. Dr. Hill made an eloquent address on the object and aims of the Institute, and referred to its importance in

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connection with the fisheries, shipbuilding, mining and agriculture. He expected great benefits to flow from the establishment of the institution and the vigorous prosecution of its work. Dr. Hill's address was an eminently practical one.

Short and appropriate speeches were made by Mayor Richey, Rev. Dr. Burns, Dr. Allison, Mr. W. J. Stairs, all of whom expressed their warm interest in the Institute, and bespoke for it the hearty encouragement and support of the citizens. They anticipated valuable results to flow from the prosecution of its work.

Sir Willtam Young, in closing the meeting, referred to the important place occupied by Technological Institutes in Great Britain, Germany and France, in connection with the development of the natural resources and mechanical industries of those nations, and expressed the belief that the Halifax Technological Institute would in time occupy a similar important position with relation to our industries.

(From the *Halifax Morning Chronicle* of 18th June, 1878.)

#### TECHNOLOGICAL INSTITUTE.

The very interesting meeting, held on Wednesday last, at the close of the first term of the Technological Institute, has been reported in our columns, and those of our readers who perused the report cannot fail to have been struck with the measure of success which has attended the inauguration in our midst of a new and much-wanted completion to our system of education. Those who were present at the meeting, and had the good fortune to see for themselves a few of the many results of the working of the Institute during the past three months are, of course, in a still better position to appreciate the advantage to the city and province of counting this new school among the factors of our progress. To the gentlemen who first originated the idea of teaching practical science, and to those who joined them and voluntarily gave their services to teach the students, the manner in which the classes were filled up as soon as announced, must have been peculiarly gratifying. It was an immediate and convincing proof that they were right in their belief that technology was required in Halifax, and that the time had come when practical science would be appreciated by those who have to look to its application for their daily bread. Modest and unpretending as was the *debut* of the Institute, its success will cheer its friends and all who desire that the talk about the development of our "unlimited natural resources" should be replaced by decided action. It is in this way that the Institute promises to prove one of the most useful of our numerous educational institutions. To have our artisans thoroughly taught is taking a long step in the direction of general development. "It is quite possible," as Professor Lawson said in his address, "to have a system of education capable of preparing men for every position and duty in life, except the sordid one of working for a living, and yet such a system will be imperfect, inasmuch as the capacity of the mass of the people to perform that humble duty of working for a living lies at the foundation of all our civilization and intellectual development." This is a truth

which compels acknowledgment, and even on this continent, where, after all, the difficulty of making a bare living is not so great as in the crowded countries of the old world, the absolute necessity of knowing one's business thoroughly well, if one is to succeed even moderately, is beginning to be generally recognized. The time is passing away when a man could be a jack of all trades and get on; trades and professions follow the natural law, and tend to specialties; the artisan must now be master of his trade, or he runs the risk of being displaced. As competition increases, so does the necessity for obtaining skilled labour increase; it is cheaper to do things well than to botch them, and the technological school, which teaches the artisan, the designer, to do his work in the best manner, becomes an important part of the system of popular education. Professor Lawson put this very clearly before his hearers on Wednesday. "We have ever moving before us," he said, "in the commerce and industry of the world, illustrations of the well-established fact that in these days of rapid and cheap conveyance by sea and land, and marvellous mechanical and chemical contrivances in our fields and factories, it is not the possession of raw material, the most valuable mines, the richest soils, or teeming waters, that enables a country to rise in wealth and importance, and to support a large population in comfort and luxury. It is not the possession of these, but the capacity of the people themselves to convert raw material (whatever its source) into useful or marketable products; and this capacity can only be increased by increasing their skilfulness in labor, and qualifying them to deal intelligently with the subservient forces of nature which they have to direct and control." This task, and an important one it is, of increasing the skilfulness of those who have to labor in any way with their hands, is precisely that of a technological school, and it is at once apparent that it cannot be fulfilled by any other institution. A college makes scholars, teaches theory, but cannot give the requisite practice unless it connects itself with a technological school. The work of the latter is, indeed, essentially different and separate from that of the arts college. We quote Professor Lawson's words again as giving the best and clearest definition of the sphere of work of a technological school. "We have work essentially our own. We shall not interfere with anybody. We shall not teach abstract science apart from its applications to the arts of life, as that is the work of the colleges; we shall not teach any trades or professions, as such teachings belong to the workshop, the office and the farm; what we propose to do is to give instruction in those branches of knowledge that are necessary to qualify our youth for acquiring dexterity and skill in the various mechanical, agricultural, and other avocations in which they may engage."

To wish success, a continuance of success, rather, to the Institute, is simply to wish prosperity to ourselves as a community, for it is the city and the Province which will reap the fruit of the labors of those gentlemen who have given their services and the benefit of their knowledge and experience to the scheme. That they have done so without hope of pecuniary reward shows that they are in earnest; that their object is above all to afford to the many who are anxious to learn the chance of learning. And the ready response they have met with, the way in which the classes have filled up as soon as opened, is a token that the want of technical education had been deeply felt in this city. Very heartily do we wish the institute success and prosperity; it has already a host of friends, and the number of its adherents and supporters will increase day by day as it goes on giving evidence of its usefulness.