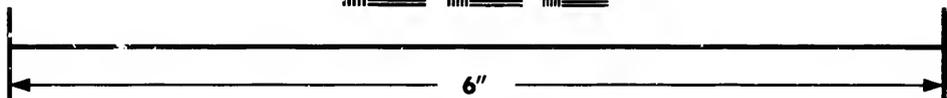
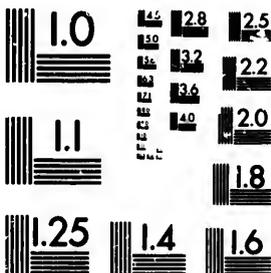


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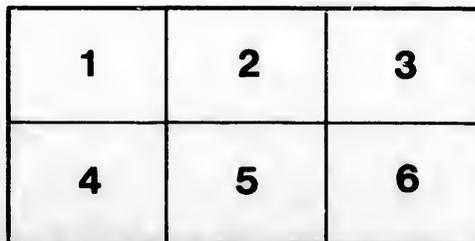
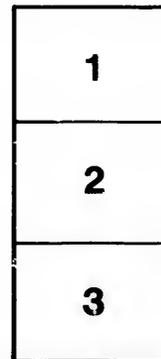
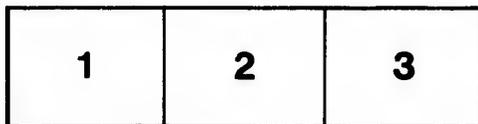
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EXPOSITION UNIVERSELLE DE 1867

CATALOGUE

OF THE

NOVA SCOTIAN DEPARTMENT

WITH

INTRODUCTION AND APPENDICES

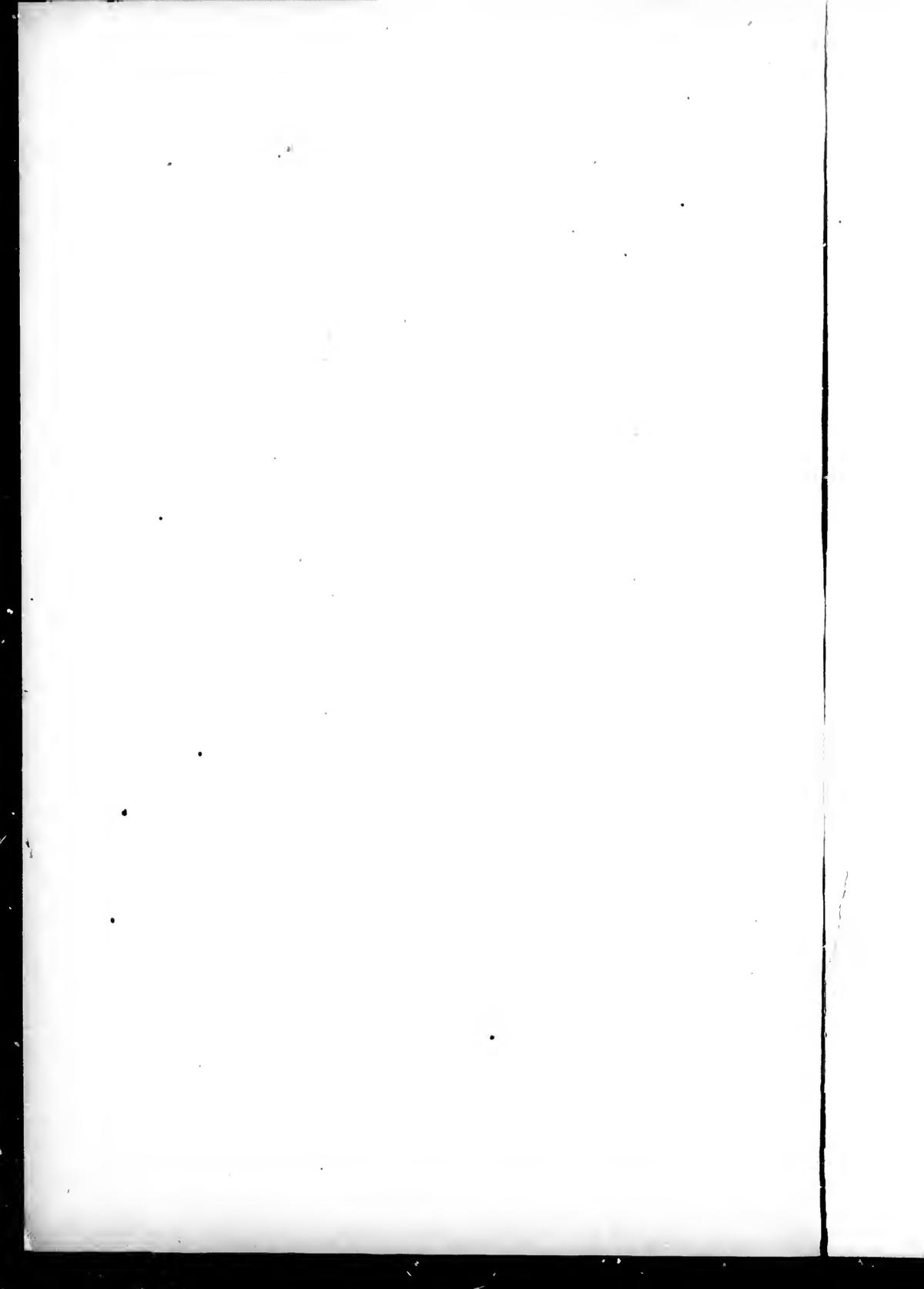


PARIS

GUSTAVE BOSSANGE

25, QUAI VOLTAIRE, 25

1867



EXPOSITION UNIVERSELLE DE 1867

CATALOGUE

OF THE

NOVA SCOTIAN DEPARTMENT

WITH

INTRODUCTION AND APPENDICES

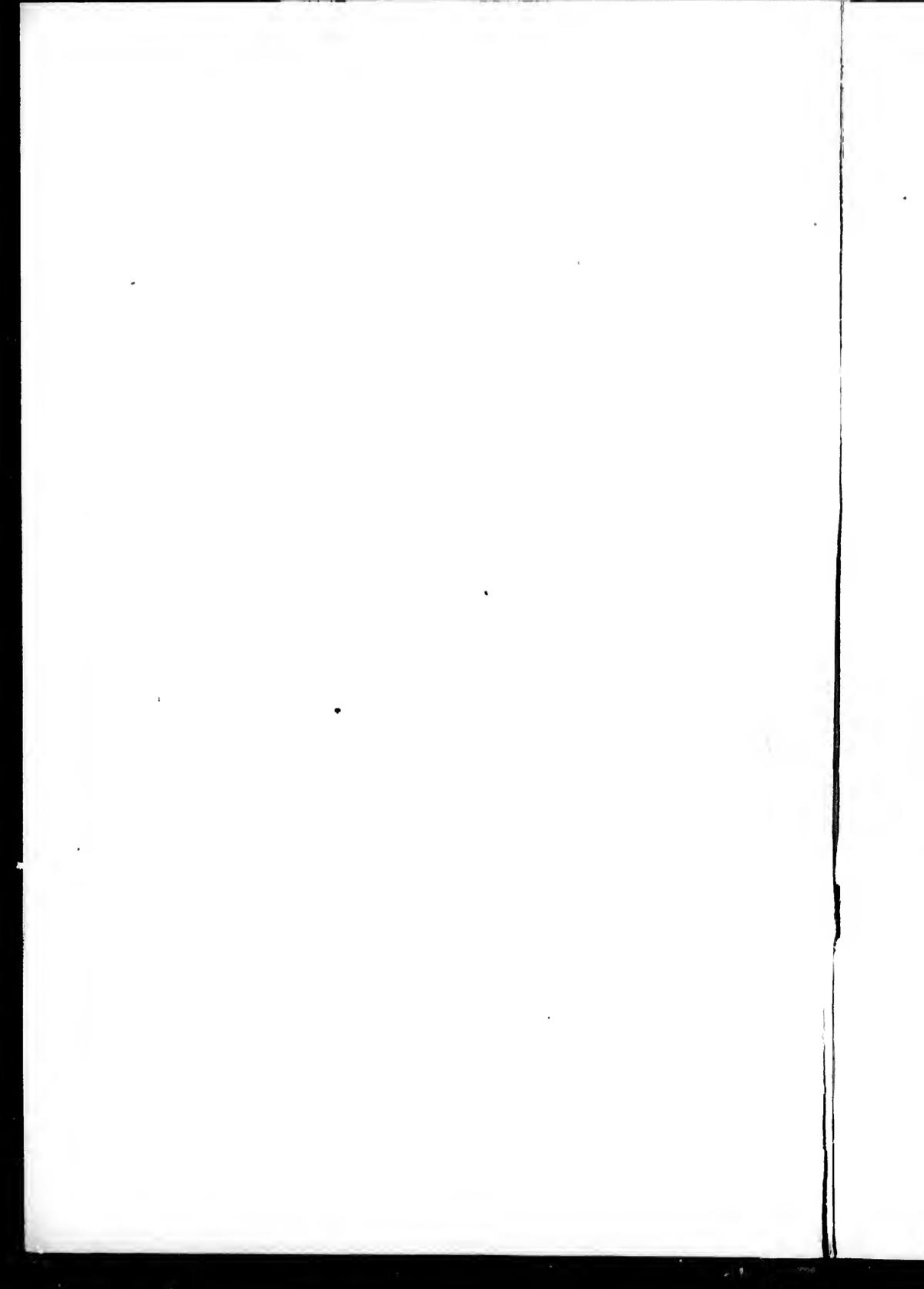
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PARIS

GUSTAVE BOSSANGE

25, QUAI VOLTAIRE, 25

1867



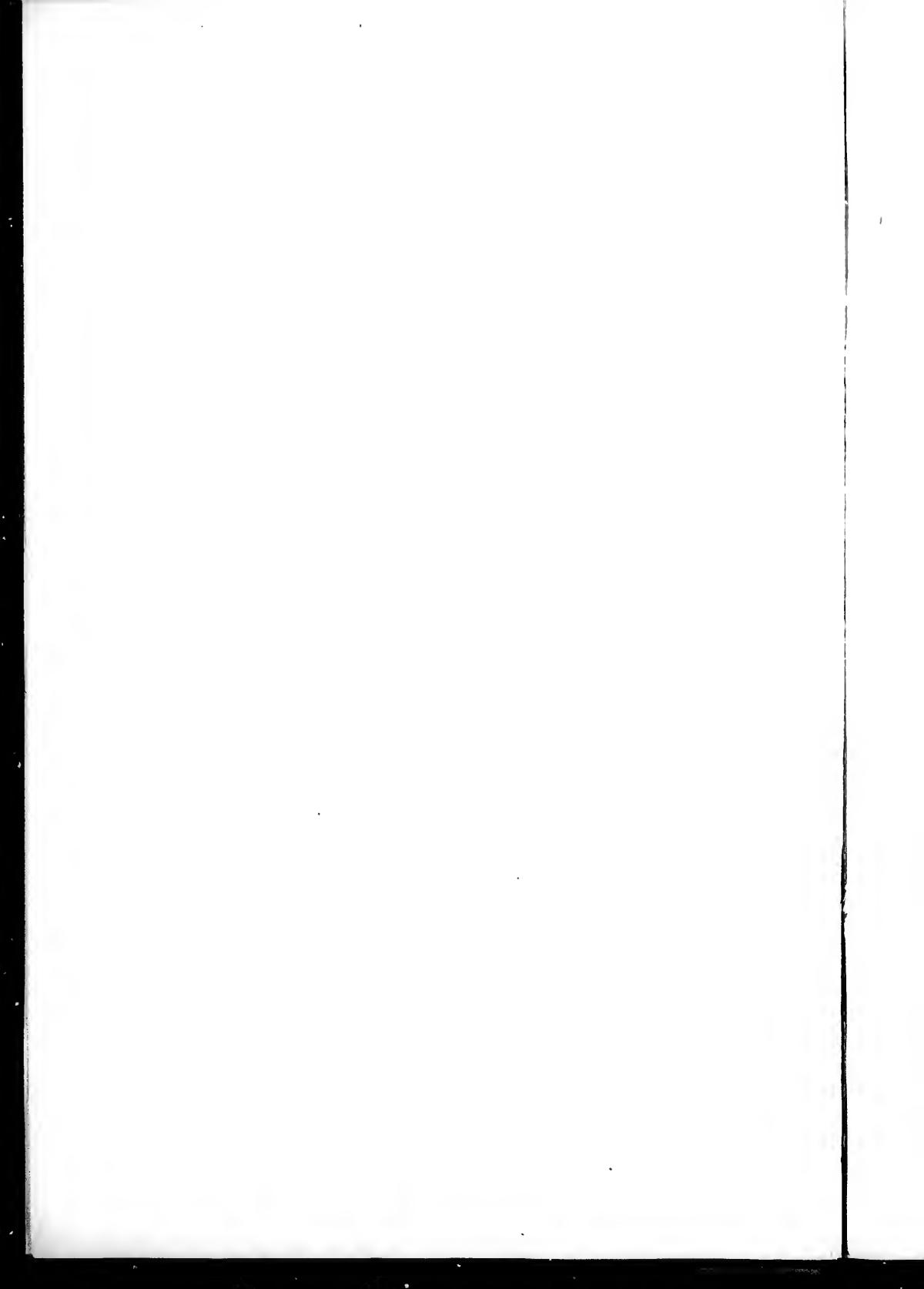
PREFACE.

The amount of space allotted to Nova Scotia in the Paris Exhibition being only 600 square feet of what is called Exhibition space, we were not at liberty to make so large a representation of the industrial resources of the province as we might otherwise have done. The display made in our departments is, however, a characteristic one. Every group is to some extent occupied by Nova Scotia, and thereby an illustration is furnished of our natural resources as well of our present state of advancement in science, art and manufactures.

As the Exhibition of raw material is considered to be the most important feature of a colonial display, our attention has been chiefly directed to the representation of this department.

The system of classification adopted in the Catalogue is in accordance with the classification of objects decided upon by the imperial Commission.

An introduction, explanatory notes and short appendixes have been added, affording interesting and reliable information on the subjects on which they respectively treat.



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INTRODUCTION.

The province of Nova Scotia is comprised within the 43rd and 47th parallels of North latitude and the 60th and 66th degrees of longitude west from Greenwich. It is, except Newfoundland, the most eastern of the British North American colonies, and, all but surrounded by the Atlantic ocean, enjoys a climate remarkably salubrious, free alike from the extremes of heat and of cold which are experienced in other portions of the North American continent. This feature is well evidenced in the illustrations of our natural history and agricultural products now forwarded to the Paris Exhibition: contributions which furnish a fair average representation of the commercial, social and political advancement of a thriving colony. Its capital and chief commercial port, Halifax, with a population of about 40,000 is, geographically speaking the nearest practical outlet from the North American continent to European markets. Defended by fortifications of formidable strength, guarded by naval armaments and military forces, it is additionally protected by a very efficient organization of volunteer militia extending throughout the province. This harbour, with the landlocked basin leading from it, forms one vast dock where the commercial and

naval marine of Europe and America might conveniently find shelter and safe anchorage. Railroads traverse the interior and are rapidly being extended, while the Cunard steamers and the Atlantic cable furnish frequent communication with the parent country and the continent of Europe.

Among our contributions to the Paris Exhibition are evidences of creditable advancement in mechanical skill. The gold quartz crushing machine constructed by Mess^{rs} Symonds and C^o is one instance of this, and appropriately points to a very preeminent feature in the industrial resources of the province. Skates, mining tools, etc., from the factory of Mess^{rs} Starr and C^o furnish additional illustrations of which we may justly feel proud. Both these establishments are in the immediate vicinity of Halifax, and are in constant and successful operation, the entire manufacture in its various stages being completed on the respective premises of the proprietors. Water power is abundant throughout the province, and this agent as well as steam is made subservient in the successful manufacture of various articles of commerce tobacco, chocolate, gun powder, fancy bread, flour, confectionery, paper, leather, cutlery, tiles and pottery, boots and shoes, cloth, frames and sashes, buckets and sugar refineries, among others which might be instanced, show that our people are not deficient in manufacturing capabilities. Several models of vessels are forwarded to show our attainments in naval architecture, a departement in which a large amount of capital is here expended annually. Nor is the province deficient in educational, religious, charitable and reformatory institutions. Education of a systematic and practical character is by legislation placed within the reach of all. Every child may learn to read and write! Churches and colleges with other religious and educational institutions are frequent. The insane, the deaf and dumb, orphan children, the aged, and the deserving poor irrespecti-

vely of religious creeds, are provided for with charitable and discriminating liberality. Whilst war and pestilence and famine have visited other portions of the world, we have been permitted to enjoy peace and prosperity in a remarkable degree. Reminded of these blessings with the evidences of progress already noticed and others referred to in the Catalogue we apprehend that visitors to the Paris Exhibition will find in our Nova Scotia department no incorrect representation of the resources and advancement of the province and its people.

B. G. G.

WORKS

EXHIBITED

IN THE NOVA SCOTIA SECTION.

GROUP I. — Class I.

Paintings in Oil.
Peintures à l'Huile.

- 1 DAY, FORSHAW.
The Grand Pré and Louisbourg.
Le Grand Pré et Louisbourg.
- 2 LAKE, CHARLES.

Class II.

Other Paintings and Drawings.
Peintures diverses et Dessins.

- 1 HARDY, CAPTAIN, R. A.
Drawings and model of beaver house.
Dessins et modèle de cabane de castor.
- 2 LYTTLETON, CAPTAIN WESTMACOTT.
View of Halifax
Vue de Halifax.
- 3 MILLER, MISS.
Wild flowers of Nova Scotia.
Fleurs sauvages de la Nouvelle-Ecosse.

Class IV.

Architectural Designs
and Models.
*Dessins et Modèles
d'Architecture.*

- 1 STERLING, DAVID.
Architectural design.
Dessin d'architecture.

GROUP II. — Class VI.

Printing and Books.
*Produits d'Imprimerie
et de Librairie.*

- 1 LAWSON, GEORGE.
Journal of agriculture.
Journal d'agriculture.
- 2 MURDOCH, BEAMISH.
History of Nova Scotia.
Histoire de la Nouvelle-Écosse.
- 3 NOVA SCOTIA INSTITUTE OF NATURAL
SCIENCE.
Journal, 3 volumes.
Journal de l'Institut.
- 4 RAND, THEODORE H. (Appendix A.)
Journal of education.
Journal de l'éducation.

Class IX.

Photographic Proofs and
Apparatus.
*Épreuves et Appareils de
Photographie.*

- 1 CHASE, W.
Photographs.
Épreuves photographiques.
- 2 ROGERS, JOSEPH S.
Photographs (views in Halifax).
*Épreuves photographiques (vues
de la ville de Halifax).*

- 3 WOOD, J. P.
Ferreotypes.
Ferréotypes.

Class X.

Musical instruments.
instruments de Musique.

- 1 FRASER, W., and SON.
Piano.
Piano.

Class XII.

Mathematical Instruments and
Apparatus for Teaching Science.
*Instruments de Précision et Ma-
tériel de l'Enseignement des
Sciences.*

- 1 CRUSHOLM, A. M.
Mathematical and mechanical
scale.
*Instrument mathématique pour
les calculs.*

Class XIII.

Maps and Geographical and
Cosmographical Apparatus.
*Cartes et Appareils de Géographie
et de Cosmographie.*

- 1 MCKINLAY, A. and W.
Map of Nova Scotia.
Carte de la Nouvelle-Écosse.

GROUP III. — Class XIV.

Fancy Furniture.
Meubles de Luxe.

- 1 CURRIE.
School desk and chair.
Pupitre et siège d'école.

- 2 NEWCOMB, G.
Fancy chairs (India-work seats).
*Chaises de fantaisie (avec sièges
fabriqués en ouvrage indien).*

- 3 McEWAN and SON.
Cabinet made of native wood.
Petit meuble fait de bois indigène.

Class XV.

Upholstery and Decorative Work.
*Ouvrages de Tapissier
et de Décorateur.*

- 1 DAY, FORSHAW.
Nova Scotia and Provincial arms
(flag).
*Pavillon des armes de la Nou-
velle-Écosse et de la Province.*

Class XXVI.

Leather Work, Fancy Articles,
and Basket Work.
*Objets de Maroquinerie,
de Tabletterie et de Vannerie.*

- 1 McDUGGALL, MISS KATE.
Fancy articles.
Objets de fantaisie.

- 2 PAYNE, MISS E. H.
Basket, cone work.
Panier de cônes.

- 3 BEGG, MRS.
Straw work.
Ouvrages de paille.

- 4 FARRIS, JOHN.
Indian fancy articles.
Objets indiens de fantaisie.

- 5 TURNER, MISS.
Straw work.
Ouvrages de paille.

GROUP IV. — Class XXVIII.

Yarn and Fabrics of Flax.
Fils et Tissus de Lin.

- 1 McCURDY, MISS ELIZABETH.
Thread.
Fils.

Class XXX.

Carded Wool and Wool Fabrics.
Fils et Tissus de Laine Cardée.

- 1 THE LOCAL COMMITTEE.
Nova Scotia cloths.
Draps de fabrication indigène.

Class XXXIII.

Lace, Net, Embroidery,
and Small Ware Manufactures.
*Dentelles, Tulles, Broderies
et Passementeries.*

- 1 FAWSON, MISS.
Embroidery (imperial arms).
*Broderie (Armes du Royaume-
Uni).*
- 2 MORRIS, MISS.
Embroidery (Nova Scotia arms).
*Broderie (Armes de la Nouvelle-
Écosse).*
- 3 ROMANS, THE MISSES.
Crochet-work.
Broderie au crochet.
- 4 BLANCHARD, MISS.
Tatting.
Broderies.

Class XXXV.

Clothing for both Sexes.
Habillements des deux Sexes.

- 1 BOURDILLAUT, MRS.
Manufactured furs.
Fourrures confectionnées.

- 2 WITHROW, J.
Men's clothes.
Habillements d'homme.

Class XXXVIII.

Travelling Articles
and Camp Equipage.
*Objets de Voyage
et de Campement.*

- 1 STARR and SONS.
Implements for geologists.
Instruments pour géologues.

GROUP V. — Class XL.

Mining and Metallurgy.
*Produits de l'Exploitation
des Mines et de la Métallurgie.*

- 1 ACADIA CHARCOAL IRON COMPANY (B.)
Ores pig, bars, cutlery, etc.
*Minerais, fer en gueuses, en bar-
res, Coutellerie.*
- 2 ARCHBOLD, EDWARD P.
Column of coal from Little Glace
Bay Mines.
*Colonne de charbon des houillères
Little Glace Bay.*
- 3 ARCHIBALD, HON. T. D.
Column of coal from Gowrie Mines.
*Colonne de charbon des houillères
de Gowrie.*
- 4 BARNES, WILLIAM.
Collection of carboniferous fossils;
Brown hæmatite from Brookfield.
*Collection de fossiles carbonéux
Hématite brune de Brookfield.*
- 5 BELLONI, ROBERT.
Column of coal from Cow Bay
Mines.
*Colonne de charbon des houillères
de Cow Bay.*
- 6 BILL and SKERRY.
Axes.
Haches.

- 7 **BLAKLOCK.**
Building stones.
Pierres à bâtir
- 8 **CORLEY.**
Axes.
Haches.
- 9 **DUVAR, H.**
Manganesec.
Manganèse.
- 10 **GENERAL MINING ASSOCIATION (R. H. Brown, Agent).**
Column of coal from Sydney Mines.
Colonne de charbon des houillères de Sydney.
- 11 **GENERAL MINING ASSOCIATION (James Hudson, Agent).**
Column of coal from Albion Mines.
Colonne de charbon des houillères Albion.
- 12 **HAMILTON, P. S. (Gold Commissioner). (C.)**
Collection of nuggets and auriferous quartz from the various gold fields of Nova Scotia.
Collection d'or et de quartz aurifères des divers gîtes aurifères de la Nouvelle-Écosse.
- 13 **HONEYMAN, DAVID, D. C. L. (D.)**
Collection of rocks, minerals, ores and fossils, with maps and sections illustrating the geology of Nova Scotia.
Collection de roches, minéraux, minerais et fossiles, avec cartes et coupes, résumant la géologie de la Nouvelle-Écosse.
- 14 **HOW, HENRY, D.C.L. (E.)**
Collections of minerals and ores, scientific and economic, illustrating the mineralogy of Nova Scotia.
Collections de minéraux et de minerais pour les usages scientifiques et industriels, résumant la minéralogie de la Nouvelle-Écosse.
- 15 **JACKSON, JAMES W.**
Oil coal and oil from the Albion coal-fields.
Bitume et huiles des houillères Albion.
- 16 **MURRAY, ROBERT.**
Manganesec.
Manganèse.
- 17 **NASH, JOHN D.**
Manganesec.
Manganèse.
- 18 **OXLEY, J. B.**
Brown hæmatite and specular iron ore.
Hématite brune et minerai de fer spéculaire.
- 19 **PETERS, HENRY.**
Collection of building stones.
Collections de pierres de construction.
- 20 **POOLE, HENRY.**
Coal.
Houille.
- 21 **STARR, D. H., and SOXS.**
Patent skates and mining implements.
Patins brevetés, et outils pour l'exploitation des mines.
- 22 **SUTHERLAND, WILLIAM.**
Specimens of limestone from Chester Basin.
Spécimens de pierre calcaire de Chester Basin.
- 23 **WEBSTER, Mrs.**
Collection of minerals.
Collection de minéraux.
- 24 **WESLEY and SANDFORD.**
Marbles.
Marbres.
- 25 **WOOD, JAMES J.**
Polished anhydrite.
Anhydrite polie.

Class XLI

Products of the Cultivation of
Forests and of the Trades
appertaining thereto.

*Produits des Exploitations
et des Industries Forestières.*

- 1 DEXTER, J.
Specimens of wood for cabinet
work and building purposes.
*Spécimens de bois pour l'ébénis-
terie et pour les constructions.*
- 2 WIER, BENJAMIN.
Railway sleepers.
Traverses de chemin de fer.
- 3 HOW, HENRY, D.C.L.
Collection of Nova Scotia dried
plants.
*Collection de plantes sèches de la
Nouvelle-Écosse.*
- 4 CUTLER, MRS. ELIZABETH.
Collection of Nova Scotia grasses.
*Collection des graminées de la
Nouvelle-Écosse.*
- 5 McCURDY, MISS ELISABETH.
Collection of Nova Scotia grasses.
*Collection des graminées de la
Nouvelle-Écosse.*
- 6 SAMPSON, MRS.
Collection of grasses.
Collection de graminées.

Class XLII.

Products of Shooting and Fishing,
etc., and of the Earth obtained
without Cultivation.

*Produits de la Chasse,
de la Pêche et des Cueillettes.*

- 1 DOWNS, ANDREW.
Stuffed Nova Scotia birds, and
head of moose deer.
*Oiseaux de la Nouvelle-Écosse
empaillés, et tête d'élan.*

- 2 GILPIN, BERNARD, M.D.
Furs and skins.
Fourrures et pelleteries.

- 4 JONES, J. M. (F.)
Fish in jars.
Poissons conservés.

- 5 HAMILTON, CHARLES, M. D.
Wax.
Cire.

- 6 DOWNS, MISSES.
Collection of moths and butterflies.
Collection de vers et de papillons.

Class XLI. I.

Agricultural Products (not used
as Food) easily preserved.

*Produits Agricoles (non alimen-
taires) de facile conservation.*

- 1 MOYLE, H. M.
Flax.
Lin.

- 2 COMMISSION, N. S.
Tobacco.
Tabac.

Class XLVI.

Leather and Skins.
Cuir et Peaux.

- 1 COWIE, A., and Sons.
Leather.
Cuir.
- 2 COMMISSIONERS OF THE COLONY.
Robes (bear skin).
Robes faites de peaux d'ours.

GROUP VI. — Class LIV.

Machine Tools.
Machines-Outils.

- 1 SYMONDS, W. S., and Co.
Gold quartz crushing machine.
*Machine à broyer le quartz auri-
fère.*

Class LXI.

Carriages and Wheelwright's
Work.
Carrosserie et Charronnage.

- 1 DE WOLFE, J. M.
Pony phaeton.
Phaeton, voiture à Pony.
- 2 O'BRIEN.
Sleigh.
Traineau.

Class LXII.

Harness and Saddlery.
Bourrelerie et Sellerie.

- 1 CHISHOLM, DANIEL.
Set of harness.
Harnais complet.

Class LXVI.

Navigation and Life Boats.
*Matériel de Navigation
et de Sauvetage.*

- 1 MOSELEY, E.
Ship models.
Modèles de bâtiments.
- 2 ROBINSON, ALEXANDER.
Top sail clews with patent thim-
bles, jib hanks.
*Cargue-points de hunier, avec
cosses brevetées, anneaux de foc.*
- 3 JOHNSON, DUNGAN.
Ship models.
Modèles de bâtiments.
- 4 BATLEY.
Steering apparatus.
Appareil de gouvernail.
- 5 CHAMBERS and Co.
Patent bushing for ships' blocks.
*Garnitures brevetées pour poulies
de navires.*

GROUP VII. — Class LXVII.

Cereals and other eatable Fari-
naceous Products, and the Pro-
ducts derived from them.

*Céréales et autres Produits Fari-
neux Comestibles, avec leurs
Dérivés.*

- 1 NOVA SCOTIA COMMISSION.
Wheat, oats, barley, rye, maize.
Blé, avoine, orge, seigle, maïs.
- 2 HOTTON.
Seeds.
Graines.

Class LXVIII.

Bread and Pastry.
*Produits de la Boulangerie
et de la Pâtisserie.*

- 1 MOIR, W. C.
Fancy bread (machine made).
*Pain de fantaisie fabriqué à la
mécanique.*
- 2 SCRIVEN.
Biscuits.
Biscuits.

Class LXIX.

Fatty Substances used as Food.
Corps Gras Alimentaires.

- 1 COMMISSIONERS OF NOVA SCOTIA.
Annapolis cheese.
Fromage d'Annapolis.

Class LXX.

Meat and Fish.
Viandes et Poissons.

- 1 CHRISTIAN, N. P.
Preserved fish and lobsters.
Poissons et homards conservés.

2 HAMBLEN and BAKER.

Preserved fish and lobsters.
Poissons et homards conservés.

3 TOWNSEND, WILLIAM S.

Salt fish.
Poissons salés.

4 BARBER.

Fish in tins.
Poissons conservés.

5 DICKSON, DAVID.

Salmon.
Saumon.

6 HARDY. (G.)

Digby herrings.
Harzugs de Digby.

Class LXXI.

Vegetables and Fruit.
Légumes et Fruits.

1 HAMILTON, CHARLES, M. D.

Apples.
Pommes.

Class LXXIII.

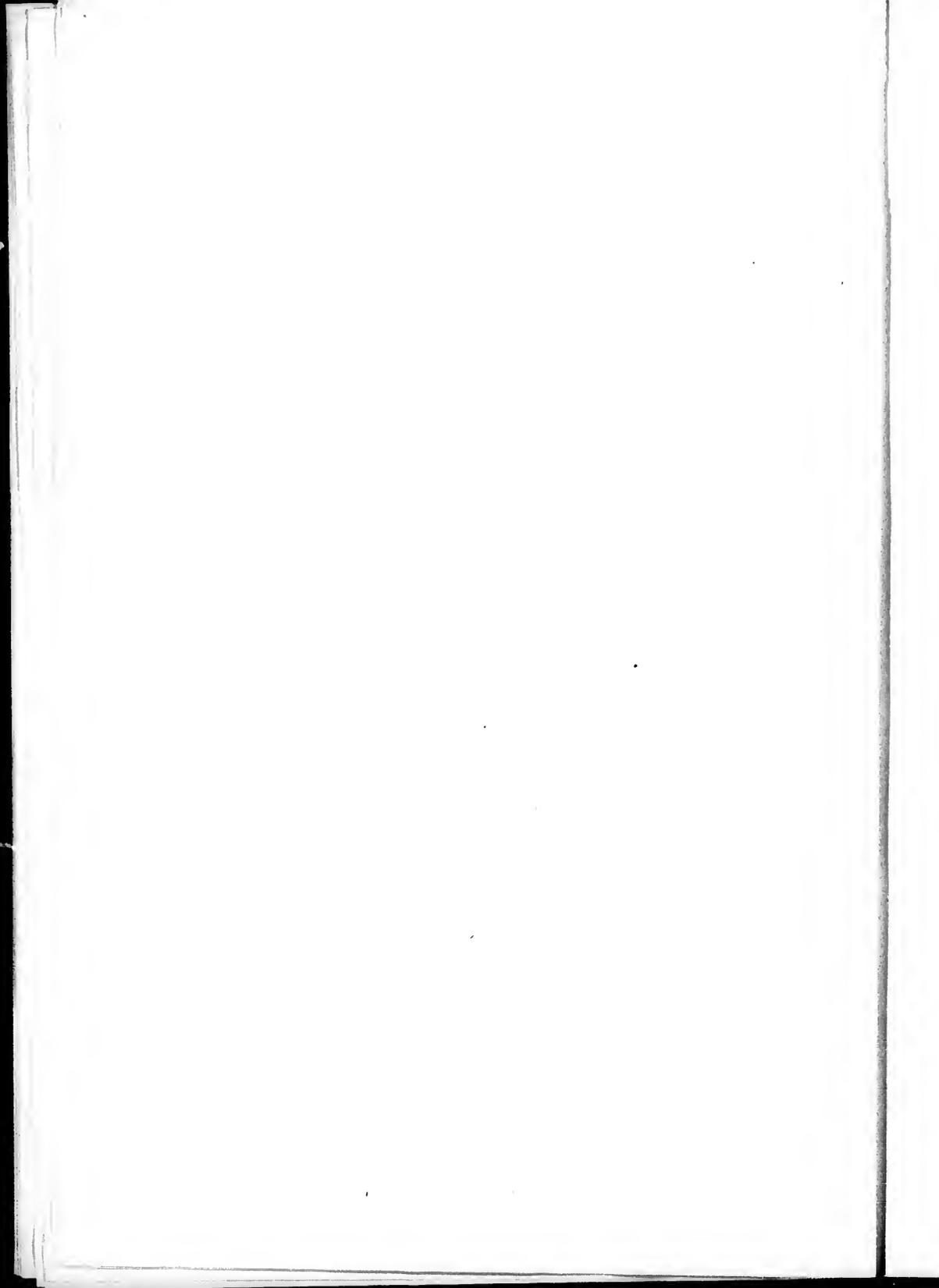
Fermented Drinks.
Boissons Fermentées.

1 CROSSKILL, JAMES and SON.

Cordials.
Liqueurs.

2 COSTIN, P.

Cyder.
Cidre.



EDUCATION

By T. H. RAND

Superintendent of Education.

In 1864, a system of free public schools was introduced into the province of Nova Scotia, by the Hon. Charles Tupper, leader of the government. The system was improved by subsequent legislation, in 1865 and in 1866.

For public schools purposes, the province is divided into about 1500 sections, 34 districts and 18 counties. Each section is presided over by a trustee-corporation of three persons chosen by the rate payers. A board of commissioners appointed by government, presides over each district; and the schools of each county are subject to the semi-annual visitation of a government inspector, there being eighteen of the officers. Thirty-four boards of examiners, — one board for each district examine and licence teachers, — of whom there are four grades. The supervision of the public school system is committed to a provincial superintendent of education; and the executive council is constituted a council of public instruction, in order that all matters pertaining to public education may be brought under the immediate and constant supervision of Parliament. The superintendent of education is secretary to the council of public instruction.

The mode of supporting the system is three-fold, governmental, county and sectional. Towards the salaries of teachers the government contributes to men holding licenses of

the first grade 600 francs; women holding licenses of the first grade and men holding licenses of the second grade 450 francs; women holding licenses of the second grade and men holding licenses of the third grade 300 francs; and women holding licenses of the third grade 225 francs, per annum, or proportionally according to the time employed. One third more than the above rates is contributed to teachers employed in poor and scattered sections.

A second fund is provided towards the salaries of teachers by the imposition, upon the property of each county, of a tax sufficient to yield for distribution a sum equal to 1 fr. 50 c. for each inhabitant. This fund is disbursed to the schools according to the length of time they have been in session and the average number of pupils in attendance. Schools in poor and scattered sections receive one third more per pupil than schools in other sections.

A third fund is secured towards the salaries of teachers, by imposing upon the property of the residents of each section a tax sufficient to yield, when added to the amounts contributed by the government and the county, whatever salary may be required. This tax is imposed by a majority of the rate-payers of each section convened at the time fixed by law for the annual school meeting. A majority of the rate-payers of each section has power, also, to tax the property of its residents for all money required for other school purposes, the purchase of lands, buildings, furniture, text-books, maps, apparatus, etc.

In addition to the foregoing, the government aids by grants of money the following educational institutions :

Superior schools. — The sum of 36,000 francs is annually granted for premiums to the best public schools which reach the standard prescribed by the council of public instruction. This grant is apportioned in sums of 2,000 francs to each

county, to be awarded to not more than four schools in each inspectorate.

County academies. — The sum of 23,000 francs is annually appropriated towards the maintenance of special academies, of which there are five, located in counties in which there are no county academies. These institutions were established prior to the introduction of the system of free schools, and pupils are admitted to them on the payment of fees.

Colleges. — A yearly grant of 30,000 francs is provided in aid of six colleges. Most of these institutions have been either wholly or partially endowed by individuals and churches, and the Faculty of each is empowered to confer literary degrees.

Provincial normal college and model school. — The sum of 19,075 francs is granted annually towards the maintenance of a normal college and a graded model school. These institutions are devoted to the imparting of knowledge in the theory and practice of teaching. Numbers of young men and young women annually graduate from the normal college with license to teach in the public schools.

Institution for the deaf and dumb. — The sum of 10,000 francs is appropriated yearly towards the maintenance of an institution for the education of deaf mutes. Additional support is received from the voluntary contributions of the benevolent. The institution is partially endowed.

The provincial government also contributes annually the sum of 60,000 francs towards the purchase of text-books and apparatus for the public schools, and the gratuitous circulation of a *Journal of education* among trustees, corporations and teachers. About 60,000 francs are also annually provided to meet the expenditure in connection with the educational department.

Expenditure for education. — The amount expended for education during the past year, in connexion with public schools, Academies and colleges was 1,932,845 francs of this amount 600,390 francs were contributed by the government from the public treasury. The number of pupils that received instruction in these institutions was, during the first or winter term, 45,821 ; and during the summer term, 56,697. The population of the province, according to the census of 1861, was 330,857. It is now estimated at 360,000.

All the public schools, including the common schools, superior schools, county academies and the provincial normal college and model school, are open to pupils free of charge. The law does not prescribe any religious or other test, nor does it sanction the imparting of sectarian instruction. The following extracts from the law defines the duty of teachers with respect to the nature of the instruction to be given :

“ To teach diligently and faithfully all the branches required to be taught in the school, and to maintain proper order and discipline therein, according to the engagements entered into with the trustees and the provisions of this act.

“ To inculcate by precept and example a respect for religion and the principles of christian morality :—justice, and a sacred regard to truth, love of country, loyalty, humanity, and universal benevolence, sobriety, industry, and frugality, chastity, and temperance, and all other virtues which are the ornaments of human society.”

The grading of schools forms an essential feature of the system of schools in operation in the province. The following is extracted from the provisions of the law and sets forth the nature and extent of the school accommodation demanded :

“ For any section having fifty pupils or under, a house with comfortable sittings for the same, with one teacher.

“ For any section having from fifty to eighty pupils, a

house with comfortable sittings for the same, and a good class room with one teacher and an assistant.

“ For any section having from eighty to one hundred pupils, a house with comfortable sittings for the same, and two good class rooms, with one teacher and two assistants. Or, a house having two apartments, an elementary and a preparatory, with two teachers. Or, if one commodious building cannot be secured, two houses may be provided in different parts of the section, with a teacher in each; one being devoted to the younger children, or elementary department, and the other to the more advanced or preparatory department.

“ For any section having from one hundred to one hundred and fifty pupils, a house with two adequate apartments, an elementary and a preparatory, and a good class room, accessible to both, with two teachers, and, if necessary, an assistant. Or, if the section be long and narrow, three houses may be provided, two elementary and one preparatory, the former being located towards the extremes of the section, and the latter at or near the centre.

“ For any section having from one hundred and fifty to two hundred pupils, a house with three apartments, an elementary, a preparatory, and a high school, and at least one good class room, common to the two latter, with three teachers, and, if necessary, an assistant. Or, if necessary, separate houses may be provided for the different departments in different parts of the section.

“ And, generally, for any section having two hundred pupils and upwards, a house, or houses, with sufficient accommodations for different grades of elementary and preparatory schools, so that in sections having six hundred pupils and upwards, the ratios of pupils in the elementary, preparatory, and high school departments, shall be respectively about eight, three, and one.

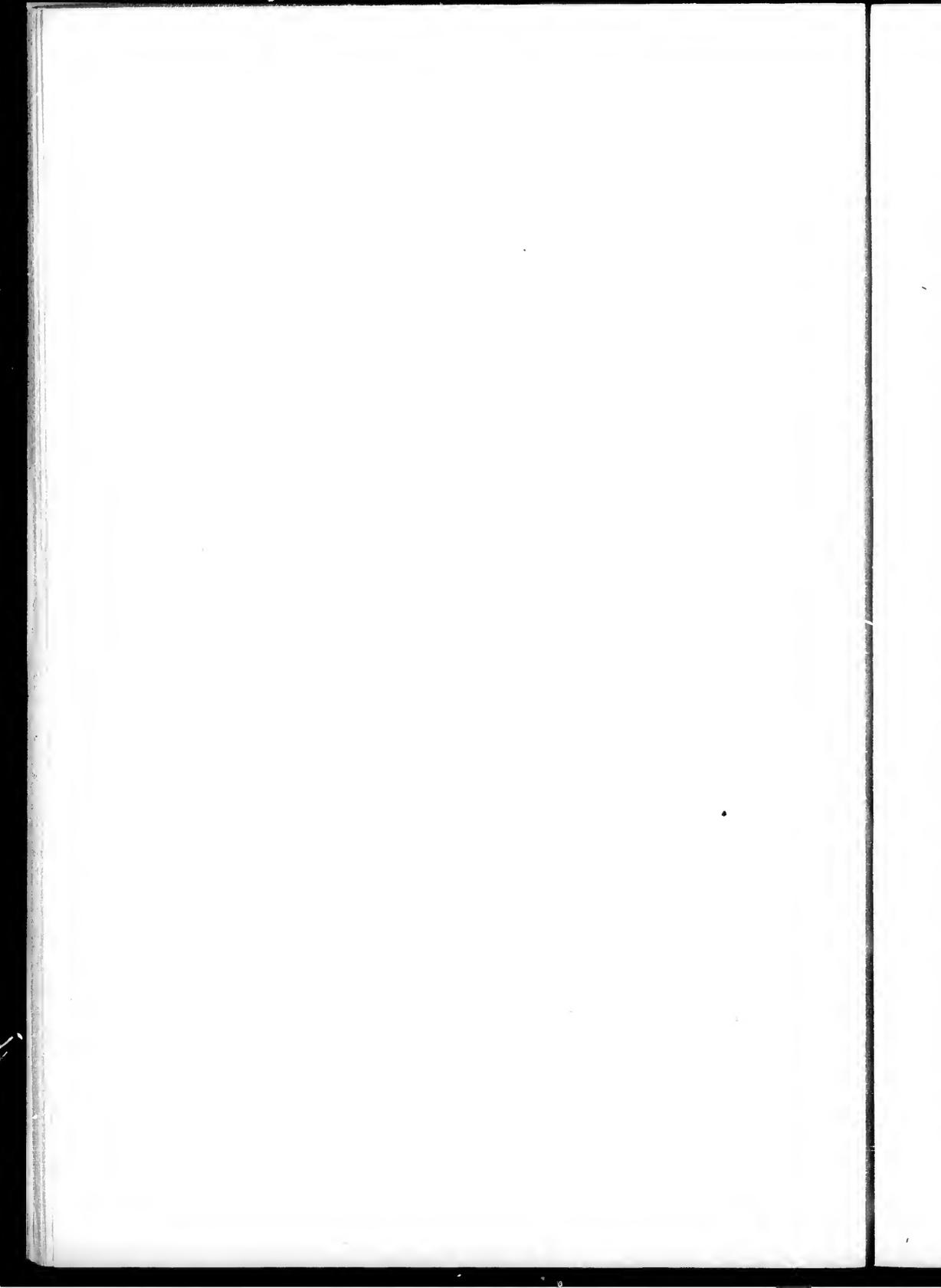
“ In any section having more than one department under one roof, or under separate roofs, the trustees, by the aid of the teachers or otherwise, shall regulate from time to time the attendance of pupils in the several departments according to their attainments. ”

ACADIA IRON WORKS.

The representation of the Acadia Iron Mines is small but instructive. Mr Jones, the active manager of the works, has furnished us with this illustration which shews the quality of the ore and of the iron and steel produced from it. The ore, brown hematite, exhibits a great variety of beautiful and singular forms, which are interesting both to the mineralogist and metallurgist. The quality of the metal is shewn by a specimen of pig iron. For the quality see Dr Percy's analysis in his metallurgy, and in Dr How's appendix. The malleable iron is represented by the part of a bar. In this state it is found to be as well adapted for the shoeing of sleighs and sledges as the great proportion of the steel imported into Nova Scotia. Specimens of cast and puddled steel are also exhibited which manifest superior density and tenacity. These are a part of the first attempt at the manufacture of steel at the works. The axe and chisel also made at the works from the iron and steel represented, complete the illustration.

In the Exhibition of 1851 a gold medal was awarded to the Acadia Iron Company. In 1862, Mr Levesey was a member of the jury of this class. In the Dublin Exhibition of 1865 it was awarded a prize medal.

The iron is principally exported to Sheffield.



GOLD.

P. S. Hamilton Commr of Mines.

Nova Scotia affords fair promise of becoming eminent as a gold-producing country. This province comprises a peninsula known as *Nova Scotia Proper* and the island of *Cape Breton*, lying eastward of the peninsula and separated from it by the strait of Canseau. The gold-producing portion of the province comprises two geological districts, differing as to their age, their local position, and general physical characteristics. The first of these, which is geologically known as a silurian formation, occupies all the Atlantic coast of the peninsula of Nova Scotia proper. At its most western termination, it is about fifty miles in width. Proceeding eastward it gradually narrows until it acuminates at Cape Canseau. The second auriferous geological district is believed to be of more recent formation and to belong, in English nomenclature to the Devonian period. This consists for the most part of isolated heights and ridges in the interior of the country, and comprises the most elevated lands in Nova Scotia. It occupies a larger proportion of the island of Cape Breton than of the peninsula of Nova Scotia proper. So far as is yet known, the first of the above named, of the silurian formation, is richer in auriferous deposits than the other.

Gold was not known to exist in the rocks of Nova Scotia in quantity of economic importance until the spring of 1860, when it was discovered in the midst of the forest, about

twelve miles from the Atlantic seaboard, at a spot now known as " Old Tangier. " A year expired thereafter before the public could believe that the discovery was of importance. Explorations were then commenced and carried on with vigour in various parts of the province. The result of such explorations may be briefly summarised thus. Gold is found throughout the two geological districts above named. It is consequently found distributed through Nova Scotia from its most eastern to its most western extremity. The total area of the province of Nova Scotia is about eighteen thousand six hundred (18,600) square miles. Of this total area, the portion whereof the underlying rocks consist of geologically auriferous formations, comprise about ten thousand (10,000) square miles. It may be mentioned *en passant*, that this area embraces valuable deposits of iron, copper and lead and affords very promising indications of the existence of several other valuable minerals. It is as yet but very imperfectly explored.

The principal localities where gold mines are now worked in Nova Scotia are commencing with the most western and proceeding eastward. The Ovens and Gold river in Sunenburgh county; Uniacke and Renfrew in Hants county; Gay's river in Colchester County; Wawerly, Oldham, Montagu, Lawrencetown, and Tangier in Halifax county; Sherbrooke, Wine Harbour, and Stormont in Guysborough County; and Wagamatkook in Victoria county. All the mines in these several localities are within easy distance of navigable water, or good public highways; but rich, auriferous deposits have been discovered in many other places more distant from established public thoroughfares; and the character of the country is such that undoubtedly numerous discoveries of the kind will continue to be made. In all these localities the gold is principally found in quartz *in situ*. In some instances it is also found free, in the surface drift. No place has yet

been discovered however, in Nova Scotia where there is any large deposit of drift from the gold-bearing rocks.

The quartz veins from which gold is extracted are enclosed in bands of quartzite which, with the quartz veins enclosed by them, have an easterly and westerly strike. The number of these bands of quartzite, which alternate with slates, has not yet been determined. The proportion which the total bulk of the quartz bears to that of the rock enclosing it, is very large. Measurements in one place showed a thickness of fifteen feet of quartz to one hundred and sixty feet of enclosing rock. Other localities exhibit a much larger proportion of quartz. Their dimensions vary from those of the least perceptible thinness up to a thickness of even thirty feet. So far as tested, all of these quartz veins are found to be, in a great or less degree, auriferous. No means have been provided for showing, with perfect accuracy, the average yield of gold per ton of quartz for all the quartz yet crushed in the province. If, however, for the past four years we take the average yield per ton of each of the above named districts, and then take the mean of these, we find it to be eighteen pennyweights, less a very small fraction, to the ton of quartz. The maximum yield yet attained was one hundred and three ounces and fourteen pennyweights to the ton. The profitable nature of these gold mines can be better ascertained by observing what their product is to each man engaged in mining. In 1863, the average annual yield to every man employed in and about mining, crushing, amalgamating, smelting, and immediately auxiliary occupations, valuing the gold at only 92 fr. 50 cent. per ounce, the rate on which royalty is paid amounted to 1,480 fr. In 1864 it was 2,029 fr. 40 cent., in 1865 it was 3,324 fr. and in 1866, 3,347 fr. 5 cent. During this last year one of the most productive districts yielded at the rate of 6,914 fr. 30 cent. to every man

employed about the mines. Gold mining is still carried on in Nova Scotia upon a small scale. Its profitable results increase rapidly as operations are extended. Gold extracted from mines of Nova Scotia is subjected to a royalty of 3 per cent payable to the Crown.

COAL.

P. S. Hamilton Commr of Mines.

Of the 18,600 square miles which comprise the total area of Nova Scotia, about 10,000 square miles belong to a geological formation which, throughout almost its whole extent, abound in auriferous rocks and are also, in places rich in iron, and other minerals of commercial value. *Nearly* all the remainder of the country belongs, geologically speaking, to the carboniferous formation. The proportion, of this which belongs to the productive coal measures has not yet been ascertained. There are, as yet, no sufficient *data* upon which to calculate the quantity of coal procurable from the Nova Scotian coal fields. The extent of country underlaid by workable seams of good coal, has been estimated at four hundred square miles, for some extensive coal field, which have as yet been very imperfectly explored and the productiveness of which has not been proved, are not in the calculation.

In 1866, there were thirty Collieries, in operation in Nova Scotia. Of this number only three were in operation eight years previously and most of the others are only just barely opened. Of these thirty Collieries, six are in Cumberland county; seven in Pictou County; thirteen in Cape Breton county; two in Richmond; and one each in Inverness and Victoria counties. In addition to these mines being actually worked, there are large tracts of country, in each of the above named counties and also in Antigonish, Colchester and Hants counties, under exploration licenses. The explo-

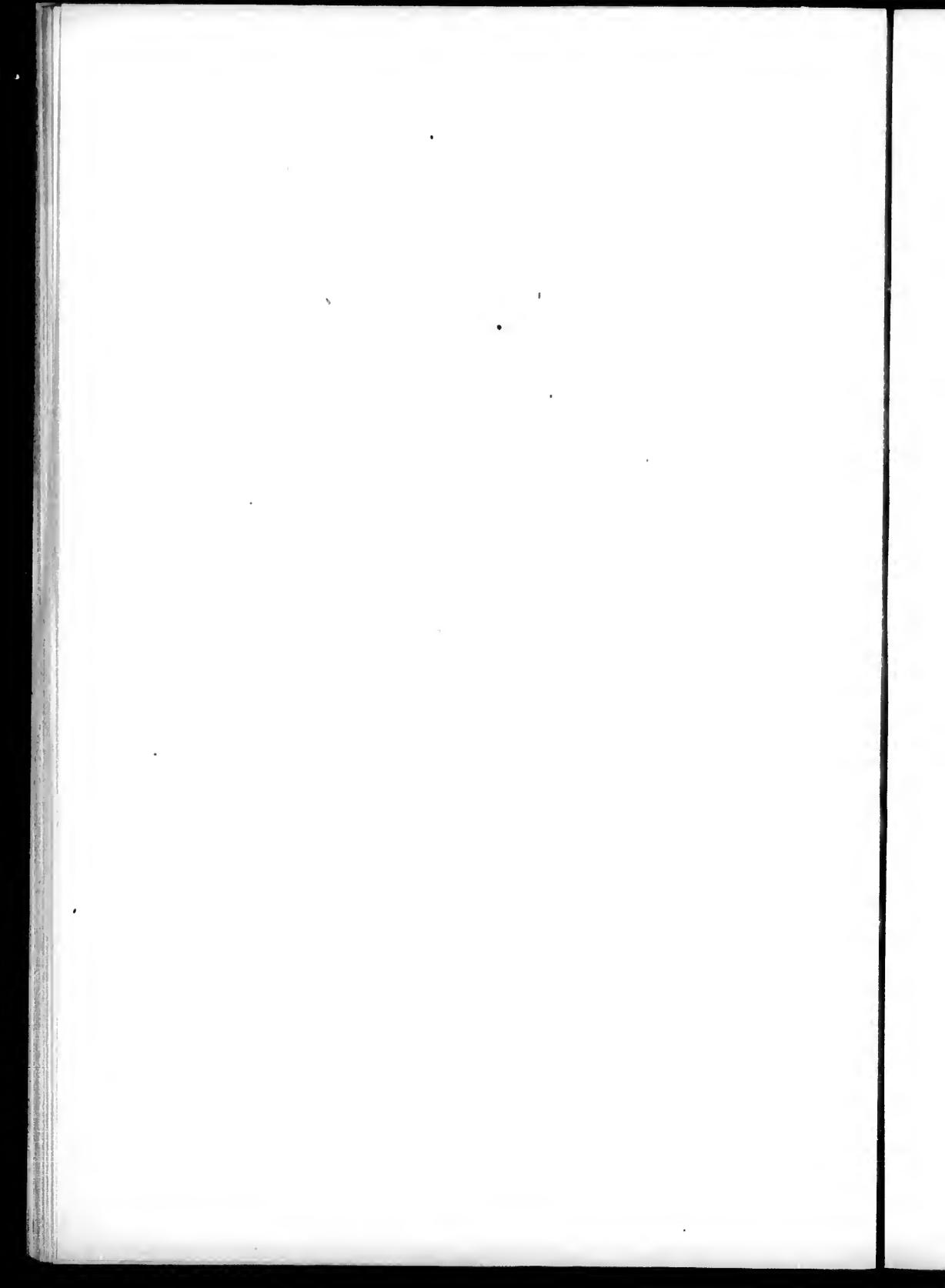
ration being carried on under these licences indicate the future opening of many additional Collieries.

No anthracite has yet been discovered in workable seams in Nova Scotia, all the coal there mined being bituminous. The coal columns sent to the Exhibition are fair average specimens, of the quality of that product extracted from the Nova Scotia mines. There are six of these specimens, one of which is from Pictou and the remaining five from Cape Breton. The height of these columns shows the vertical thickness of the beds from which they have been respectively taken. Thus there is a column from the Albion mine Pictou thirty seven feet and ten inches in height; one from the "main seam" of the Sidney mines of six feet; one from the "Hub vein," Little Glace Bay nine feet six inches; one from the "Wayland Seam," Caledonia mine, Glace Bay, eight feet; one from the Block House mine, Cow Bay, eight feet; and one from the "Macauley seam," Gowrie Mine, Cow Bay, eight feet in height.

The following statement of coal mined and sold in Nova Scotia for twelve years past, shows the progress of the coal trade during that period.

Year.	Quantity of coal in tons.	
1855.	216,338	
1856.	239,934	
1857.	267,808	
1858.	289,648	
1859.	267,496	
1860.	304,129	
1861.	334,545	
1862.	393,631	
1863.	429,351	
1864.	406,699	} for nine months ending Sept. 30 th .
1865.	605,595	
1866.	560,684	} for year ending Sept. 30 th . d ^o d ^o

The notable decrease in the product of the last year is owing to the fact of an increased duty having been imposed on the importations of coal in the United States, thus partially closing the markets of that country against Nova Scotia. Coal mined in Nova Scotia is subject to a royalty of ten cents (50 centimes) per ton payable to the Crown.



NOTES

ON

THE GEOLOGY OF NOVA SCOTIA

REV. D. HONEYMAN D. C. L. F. G. S., ETC.

I have illustrated our Geology : 1° by a collection of specimens from the Nova Scotia gold field including 3 varieties of granite besides quartzites, argillites, quartz with gold mispickel. The specimens are characteristic of our gold fields generally. The formation is lower silurian, probably of the Quebec period. The age is not precisely determined on account of the absence of fossils and irregularity in succession. As far as we have yet ascertained the only formation that is in immediate contact with the rocks in question is the lower carboniferous. The quartzites and argillites have been elevated by the intrusive granites and are highly metamorphic. The collection also includes specimens from a gold field of a peculiar character. The specimens are argillite and auriferous conglomerate. The gold field whence these are derived is situated on the north western border of the gold bearing region. The conglomerate containing the gold reposes on the edges of the tilted argillite. This conglomerate is about 30 feet thick. Its composition shows whence it has been derived. It is composed of quartzite, argillite, quartz and mica with oxide of iron

cement. The gold is chiefly in plates and particles and in the lower part of the conglomerate or where it rests upon the argillite, having acquired this position by agitation. The age of the conglomerate is determined by the incumbent limestone Brachiopodous; this also shows along with the position of the gold, the conditions of its formation, in other words it is evident that the auriferous conglomerate of Gag's river gold field was formed of the debris of the granite, quartzite, argillite and auriferous quartz veins of the adjacent and underlying silurian rocks by the action of a sea of the Nova Scotia lower carboniferous period cemented by the decomposed sulphurets and arsenurets of iron with which the rocks abound.

2° By specimens of unaltered argillites of Hudson river and Clinton Age. These are the *pencil stone* of Dr How. For analysis see his appendix. The age of strata is inferred from relative position and fossils, especially graptolites. I have arranged in connection with the Niagara limestone equivalent rocks the hematite of East river rictou as this seems to me to be the geological position of this hematite. In connection with these and altered rocks of this age, I have associated specimens of syenite, porphyrs and diorite.

3° By specimens of altered silurian and devonian argillites and quartzites of the Cobequid Mountains with intrusive granite, syenite and diorite. Among the devonian are specimens of ankerite and hematite from the iron beds of the Acadia Mines. There is also in this division a specimen of altered devonian limestone with fluor spar from the rocks of this age in Antigonish county.

4° The carboniferous formation furnishes specimens of lower carboniferous conglomerate with its associated limestones and gypsums.

I have already described the conglomerate of Gay's

river. This is the only position as far I know where conglomerate is found in immediate contact with metamorphic lower silurian strata. When we meet with conglomerate of lower carboniferous age it generally rests on upturned strata of the upper silurian or devonian formations having been formed mainly of coarse material derived from these rocks. In the county of Antigonish the origin and the relations of the conglomerate appear sufficiently obvious. The associated limestones are fossiliferous and oolitic; the gypsums are selenitic, white, rose coloured, variegated and anhydrous. In some localities the limestones contain ochres and manganese of economic importance and occasionally small quantities of malachite (sulphuret of copper), and galena. Sandstone strata of about the same age have interstratified deposits of the grey sulphuret of copper which are possibly of economic importance. Specimens of these ores are found in my collection. Those particularly instructive are the manganese in the limestone matrix and the nodules of grey sulphuret of copper in the sandstone. The intrusive rocks of the formation are exemplified by a specimen of amygdaloid from the trap dyke of Arisaig.

5° The coal measures are represented by oil coal from the great Pictou coal field and a specimen of coal with cone in cone structure. The iron ore of the measures is represented by a metallized fossil which in a striking manner exhibits the original vegetable structure.

6° The next formation, the triassic, is illustrated by the eruptive trap of the period with two of its minerals, agate and amethyst.

7° The next and last of the old formations is that of the drift period. From this there is a specimen of an argillaceous stratum with vegetable remains containing a beautiful blue pigment phosphate of iron.

The department of our geology which I have illustrated

most fully is the paleontology, especially of our silurian system. I have already observed that the lower silurian containing our auriferous deposits has not yet furnished fossils. The lowest geological position affording fossils as indicated by the fossils themselves appears to be the equivalent of the Hudson river group. A great bed of Graptolites and Lingulæ of Hudson river facies furnishes numerous specimens. Succeeding there are specimens from the strata characterized by the Graptolithus clintonensis Hall, including Cephalopoda, Gasteropoda, Lamelli branchiata Brachiopoda, Crinoidea, Crustacea, Graptolitidea. The next group which appears to be the equivalents of the Niagara limestone is represented by fossils of the same families and genera, but of different species. Among these are numerous striking and peculiar forms. The greater part of the preceding fossils are new and undescribed. The next member of our silurian series is the equivalent of the lower Helderberg. This is well represented by fossils of the same families and genera, as in the groups preceding; many of these however have been figured and described by Prof. Hall. Organisms highly characteristic of this group in Nova Scotia are Dalmania Logani, Homatonotus Daro, Soni, Avicula Honeymani. The greater part of the silurian fossils exhibited were collected at Arisaig on the shore of the gulf of St Lawrence. Here we have the silurian series complete and the fossils in a tolerably good state of preservation. The interesting collection of lingulæ and a considerable proportion of fossils of the Clinton group are derived from the district of Mengomish. Here the geological series is nearly as complete as at Arisaig, and the fossils in a better state of preservation. The Niagara limestone geological equivalent has not yet been distinguished in this locality. A few are derived from the silurian series at Springville. Here we seem to have the Clinton group absent. Several

specimens belong to the silurian series of Lochaber lake. Here the series is not so complete as in the other localities. As Arisaig appears to be thoroughly typical of our silurian system subsequent to the lower silurian metamorphic, I generally refer to it in illustrating the silurian system of Nova Scotia and in referring, I characterize the lowest group or what I conceive to be the Hudson river A and A', the second in ascending order or the apparent Clinton B, the Niagara limestone C, and the lower Helderberg D.

Devonian fossils are not represented in my collection as I have not found organisms in strata of this age.

The specimens next to the silurian are from the lower carboniferous limestones. In these I have found and exhibited *Cochliodus* teeth *Orthoceras*, *Conularia*, *Bellerophon*, *Gastropoda*, *Brachiopoda*, *Philipsia*, *Favosites* and *Fenestella*. Succeeding there are teeth of *Holoptychius*, *Rhizodus* and *Diplodus* from the coal measures. The last specimen in the collection is a tooth of the *Mastodon ohioiticus* from Cape Breton. I have farther illustrated the geology of Nova Scotia by a geological map of Antigonish county communicated to the Institute of natural science of Nova Scotia, a map and sections of Arisaig communicated to the geological society of London, and a great section from the Atlantic to the gulf of St Lawrence running across the province, the distance being about 56 miles. This section exhibits two great folds which are at the same time geological centres. The one forms the mountains of St Mary's and the other the Blue mountains. The mountains of St Mary's have a granite centre. This is the intrusive rock of the metamorphic Lower Silurian argillites and quartzites which include the Sherbrooke gold field. The quartzites, anticlinal to Sherbrooke quartzites and argillites are overlaid unconformably by the carboniferous formation of Glenelg. The Blue mountains in the north western division of the section have a

syenite centre which intrudes into the fossiliferous rocks of our silurian system. On the north west of the mountains, we have in the district through which the line of section passes A of Arisaig equivalent succeeded by the great lingula bed of A', these in turn being succeeded by the carboniferous which extends to the Northumberlandstrait on the gulf of St Lawrence. The syenite of these mountains on the S. E. is overlaid by slates, which appear to be an extension of the silurian and devonian series of Lochaber to which I have already referred. These again are overlaid unconformably by the carboniferous formation of Glenelg. It will be observed that this glen is a locality of peculiar interest as it is the place starting of the auriferous lower silurian (and as far as yet shown) the non auriferous silurian and devonian. It is interesting to note that an extension of the line of section into the gulf of St Lawrence and 20 miles onward will pass through the triassic of Prince Edward island and include all the geological formations which are represented in Nova Scotia. The line of section and district maps are defined on M^c Kinlay's map of Nova Scotia.

SKETCH

OF

THE MINERALOGY OF NOVA SCOTIA

BY PROF. HOW, D. C. L.

UNIVERSITY OF KING'S COLLEGE, WINDSOR, N. S.

The collections of minerals made on the present occasion are sufficient evidence that the mineralogy of Nova Scotia is very interesting, the variety of minerals and of their associations represented being considerable, and the beauty of many of the specimens unquestionable. That it is not only of scientific interest but of economic importance is at once obvious from the representation made of gold as it occurs at several localities, that of the bulk of metal obtained up to the present time, as shown in a pyramid of considerable dimensions, viz : six feet three inches high and one foot and a half square at the base, and that of coal in several columns, varying from about five feet to over thirty seven feet in height, shewing the actual thickness of some of the seams at present worked. The statistical detail respecting these minerals, given in another part of this *Appendix* by P. S. Hamilton, esq., chief commissioner of mines, shew that from Jan. 1st, 1862 to Sept. 30th 1866, 84,706 ounces 14 dwts. 10 grs. of gold of the value of dollars 1,632,315.86, have been obtained, while in the year ending Sept., 30th, 1865, there were raised 605,595 tons of round coal, and 47,259 tons of slack coal.

The nature of the other mineral resources of the province, is shewn by the rest of the collections, to which reference is made in the following brief descriptions of some of the minerals represented, and statements as to their economic value at the present early period of the mining history of Nova Scotia.

IRON ORES. — Of these there are shewn titaniferous iron sand from several localities, magnetic iron which is believed to exist in considerable quantity, specular iron found in several places in unknown amount, and brown hematite which is known to exist in at least five large deposits. One of these, that situated at Londonderry, Colchester county, has been worked for several years, and both mining and smelting operations are carried on to a considerable extent. Fine specimens of the ores found here are shewn in the cabinets and among the large masses. The company not only illustrate the quality of their ore, but also of the iron and steel produced at their works at Londonderry, and of the cutlery made from it in England. The chemical composition of the iron has been given by Dr. Percy as follows : —

	Pig iron No 1.	Pig iron No 2.
Carbon.	3.50	3.27
Silica.	0.84	0.67
Sulphur.	0.02	0.04
Phosphorus.	0.49	0.28
Manganese.	0.44	0.57
Iron.	94.83	95.70
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	99.82	100.50
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This analysis accounts for the fact that the bar iron ranks with the best qualities of the Swedish metal for making steel. The quantity of iron made at these works since their commen-

cement in 1850, is probably about 12,000 tons; it has been rapidly increasing of late years, during which the larger proportion of metal made has been bar iron, worth about 16 pounds sterling per ton.

The iron ore from Springville, East river of Pictou, also illustrated by a fine set of specimens, occurs in large quantities; from an analysis I made in connection with the provincial geological survey, it contains

Peroxide of iron, with traces of phosphoric acid.	84.51
Alumina and phosphoric acid.	0.49
Sesquioxide of manganese.	0.76
Magnesia.	0.43
Water.	14.41
Siliceous gangue.	2.22
Carbonic acid and loss.	0.45
	<hr/>
	100.00

The iron ore from Brookfield, Colchester Co., of which various specimens are shewn, is found in large quantities of boulders, some of which are of huge dimensions, believed to indicate great deposits. One specimen, examined for the owners, I found to contain : —

Peroxide of iron, with a little alumina.	87.10
Magnesia.	trace
Phosphoric acid.	trace
Silica and gangue.	4.54
Water.	11.36
	<hr/>
	100.00

These last two ores are evidently very good indeed, and will doubtless be found to give iron and steel of such quality as to maintain the high reputation of the province in this respect.

ORES OF MANGANESE.—Of these are shewn specimens of wad, manganite, and pyrolusite, all of which are found in large quantities. Of wad, shipments to the extent of some hundreds of tons were made during the past year to the United States, where a use has also been found for manganite. The pyrolusite is exhibited in a variety of forms. I have found the quality of this ore from different localities very good indeed, from 85 to 97 per cent of peroxide of manganese, with a very small amount of iron having been obtained on analysis. A cargo of about 8 tons from Teny Cape, examined in England gave an average of 91.5 per cent of peroxide of manganese, and less than one $\frac{1}{2}$ per cent of iron. A second cargo of one hundred and twenty tons gave in England 89 per cent peroxide of manganese. The quantity of ore raised at Teny Cape up to the present time is estimated at about 1000 tons, of an average value of from 8 to 9 pounds sterling per ton. A few tons have been raised at other localities, among which Onslow has furnished a portion of excellent quality.

MINERAL PAINTS.—Very extensive deposits of hydrated oxide of iron often mixed with hydrated oxide of manganese, are found in different localities. Some of these have been rather extensively employed as mineral paints and found to answer admirably both for buildings and vessels. Several colours and qualities are shewn, and very instructive sets of specimens from Onslow and Chester, illustrate the production of these substances from rocks containing carbonates of lime and protoxide of iron and manganese, and occasionally pyrites : by the weathering of these rocks, very fine umbers of various colours are found to result.

NATIVE COPPER.—This is represented by specimens from three localities of the bay of Fundy, where it occurs in trap rock, sometimes in a zeolitic matrix, in masses which are occasionally of several pounds' weight; it is reported that

at one place it occurs in a thick bed with ore of copper. Systematic operations carried on for a short time at one place produced about three hundred weight of the metal, and what is considered to be the same deposit is being worked at about a mile inland, from the original scene of operations on the shore of the bay of Fundy. I have found a small amount of silver in some of the copper from this region.

ORES OF COPPER.—Of these a variety is exhibited, some of them being very rich. The ore from Tatamagouche, which is rich vitreous ore in sandstone has paid expenses on small operations. The ore from five islands is cupriferous oxid of iron, samples of which I have found to yield about six per cent of copper; the deposit is thought to be considerable. The ore from Lochaber is copper pyrites, mixed with iron pyrites, containing in some samples nine per cent of copper, in picked samples considerably more; it has hitherto been found in boulders, but lately it has been reported as discovered in a vein. The ore at Cheticamp, Cape Breton, is Chrysocola, which is found in a vein about 5 inches in thickness: operations have been carried on to some extent, but are, I believe suspended. On the whole little encouragement has so far been found in copper mining, for although very rich ores exist, some of which are in very curious association with "lignite," (in a sample of one of these I found 40 per cent of copper,) no large quantity of them has yet been met with: indications, however, are considered promising in several localities.

ORES OF SILVER AND LEAD.—Galena is represented from several localities, in some of them it is not believed to be in quantity. At Gay's river however, in Colchester county, where it is disseminated in limestone, an engineer has reported his belief in the existence of an immense deposit, which could be easily washed from its matrix so as to yield a high percentage of lead containing sometimes as much as

11.5 oz. of silver to the ton of lead. At Baddeck, in Cape Breton, galena occurs in quartz, and, as I have found, is sometimes associated with rich silver ore. Essays made in Boston gave very considerable returns both of silver and gold.

MISPICKEL.—This is exhibited from three or four localities, where it is sometimes found in very large amount, and often associated with and containing gold, and occasionally cobalt.

NICKEL AND COBALT.—These metals I have found in two minerals which are exhibited, viz. : pickeringite and pirrhotine, and in another; but only in very small amount.

BARYTES.—This mineral is represented from a good many localities in different parts of the province, in some of which it occurs of sufficient purity and in such quantity as to render it a profitable article of exportation. In two or three places it has been worked to some extent. The very fine mass from five islands, weighing some two or three hundred pounds, is from a mine which was in active operation last summer. Thirty tons had been taken out in three weeks before my visit, and in all, with the result of operations in former years, 500 tons had been quarried and exported.

Gypsum.—This mineral exists in inexhaustible profusion; and in many parts of the province it is very favourably situated for quarrying and shipping. The various qualities are well represented. It is used locally in making plaster for walls and ceilings and is largely exported to the United States, where it is employed as a manure. The selenite which is abundant in some quarries is valued for making the finest white cornices, and for stuffing fire-proof safes. The compact varieties, forming alabaster, are suitable for interior carved decorations, as illustrated by a small carving. The quantity of gypsum exported, having been depressed by the American war, is now again becoming large. In 1860 the quantity quarried was 126,700 tons, of the value of dollars 85,196.

BORATES IN THE GYPSUM.—A few years ago a most interesting discovery was made in the gypsum of Windsor of a mineral which I proved to be natroborocalcite, containing, along with soda and lime, $\frac{1}{4}$ per cent of boracic acid. A second mineral was afterwards found containing, according to my analysis, 50 per cent of boracic acid, this I called cryptomorphite. The former was found embedded in the gypsum, the latter in crystals of Glauber-salt. Neither was found in large quantity. Both are exhibited.

ANHYDRITE.—Along with gypsum large beds of anhydrite are often found. This is used as a building stone under the name of hard plaster. When polished it affords an excellent and much admired substitute for marble, for interior decorations; it has never been as yet long exposed under these circumstances, but the pedestal, table top, and partially polished blocks, all I believe made from what may be called weathered specimens, shew that as regards present appearance the material is admirable.

MABBLES.—These are known to exist in large deposits in various parts of the province; only surface specimens, however, have as yet been obtained, so that the value of the material cannot be decided upon. Very handsome varieties are exhibited, one of which, of concretionary structure and singular beauty, is sure to be much admired; it would make excellent in-laid work.

LIMESTONES.—Inexhaustible in amount the limestones present great variety of structure and quality. Some are exhibited which furnish most excellent lime for building purposes; others, being somewhat phosphatic, afford good manure-lime; others are reported to be hydraulic; while some certainly make good cements. In a country abounding in freestone and granite little use has been made of limestone as a building stone, but there are beds of rock

suitable for this purpose of which use is made in railway constructions.

MOULDING SANDS.—Specimens of these are shown illustrating the nature of deposits from which material has been employed in the province and in the United States, chiefly in brass-casting. One of these sands was exported last year to the latter country to the extent of 250 tons to be used in moulding brass tubes. Another of these sands has been employed in the manufacture of scouring-bricks.

CLAYS.—Immense deposits of very fine qualities of clays are found, a few specimens only are shewn. These clays are largely employed in making pottery, firebricks, and both common and pressed bricks, which latter have been highly esteemed abroad.

OVEN STONE.—Dressed specimens shew the nature of a sandstone, existing in vast quantity, which is applied after simple hewing with an axe, in the construction of ovens which are found to withstand the action of fire many years.

FIRESTONE.—A specimen dressed to shape, exhibits the appearance of a coarse grained rock employed in building fireplaces which are found to be very durable.

GRANITES.—Of these, a small number are shewn dressed in various ways on different sides to exhibit their fitness for particular styles of work. The quantity of these rocks is inexhaustible and large use is made of them in building houses, wharves and fortifications.

FREESTONES.—Various qualities of these are exhibited. Some are very superior and suited for the finest kinds of work. These stones are very much used in the province, and have been largely exported to the United States.

GRINDSTONES.—Sandstones particularly adapted for the making of grindstones, are very abundant in some districts which have become famous for this manufacture. The

number of grindstones made in the province in 1860 was 46,496.

PENCIL STONE. — A specimen is exhibited which is found in a bed extending through a considerable tract of country; most excellent pencils for writing on slates are made from this mineral which I found, on analysis made in connection with the provincial geological survey, to contain : —

Silica retaining a little alumina.	60.53
Alumina.	23.01
Protoxide of iron.	5.30
Potash, and traces of soda.	4.39
Magnesia.	1.42
Water.	5.35
	<hr/>
	100.00
	<hr/>

COALS. — These are, as before mentioned, treated in another part of this appendix, but, in addition to the large masses, some small specimens of various kinds shewn in the cabinet, are well worth the attention of mineralogists; of these are semi-bituminous coal in remarkable association with a sort of ankerite, and lignite with copper and lead ores. Oil shales and oil coals are exhibited, and the oil produced from one of these is also shewn in the crude and refined state. One of the oil-coals shewn, yielded from picked samples, in Boston, 199 gallons of oil to the ton.

BITUMEN. — A very interesting specimen shews bitumen not only disseminated in limestone, but occurring in perfectly globular masses in crystals of calcite. This was discovered by W. Barnes, esq.

QUARTZ AND ALLIED MINERALS. — Many beautiful varieties of these minerals are shewn. Amethysts, Smoky Quartz, Jasper, Agate and Chalcedony are met with in considerable quantities, chiefly in the Trap of the Bay of Fundy; the moss

agates in the Webster collection are fair representatives of such as are quite abundant in certain localities. Carnelian is shewn in its red form. Immense quantities of Jasper are said to exist in some places. Wood opal is not uncommon, and Siliceous Sinter of which fine specimens are shewn, is very abundant in the locality from which these were taken. The Amethysts are not of large size, nor are they deep in colour. Smoky Quartz is found in very large transparent crystals; one specimen is shewn curiously corroded as it were by Chlorite.

ZEOLITES AND ALLIED MINERALS. — The trap region of the Bay of Fundy and Basin of Mines furnishes a most abundant supply of these minerals which are well represented. The attention of mineralogists may be drawn to the fine specimens shewn by Mrs. Webster which include all the best known species, of which may be especially noted fine series of specimens shewing varieties of Stilbite, of Apophyllite, and of Heulandite. In the general cabinet are, among others, most beautiful groups of Analcime and Natrolite, Chabazite in fine crystals and interesting associations, and in its Nova Scotian variety of deep red crystals called Acadiolite, of which a remarkably fine specimen is shewn. Here also are some species of rare occurrence, as Facelitte and Gyrolite; some not as yet certainly found out of this region, as Centrallassite and its associates, also Mordenite; and Wichtyne, a mineral hitherto found only in Finland, all of which I have made known within a few years as occurring in this province.

OTHER MINERALS. — Among these may be mentioned very fine crystals of Barytes by the side of its matrix; curious forms of Calcite, for example, the nail-head crystals heaped upon Pyrolusite; and Pickeringite or Magnesia-alum in which, as before said, are small quantities of Nickel and Cobalt, which metals I found constantly present, the mineral

occurs in a slate rock 60 feet thick. There are also Glauber Salt in crystal containing, in one specimen, a perfect crystal of Selenite, in another, the borate Cryptomorphite before described as occurring in Gypsum, Ankerite which is in part the vein stone of the Londonderry Iron Ore, and a beautiful variety of soft slate, showing various concentrically arranged bands of different colours, which is easily fashioned with a knife, and is said to exist in abundance; and several other specimens, named in the catalogue, which will be found interesting on examination, and instructive as to the Mineralogy of Nova Scotia.

COLLECTION

OF

FISH IN GLASS JARS

ARRANGED BY

J. MATTHEW JONES, F. L. S.

The present collection of fishes is but a very meagre display of the fish-fauna of the Nova Scotian waters, but as naturalists are perfectly aware of the impossibility of obtaining many different forms in a short period, no further apology is needed than to state that this series of specimens was the result of four months preparations. If on a future occasion the Government should deem it desirable to illustrate in a manner commensurate with the importance of the subject, that branch of industry, which contributes more than any other to the revenues of the province, it would be advisable to commence collecting at least twelve months previous to the date on which the exhibition takes place, and to allow the collector to visit the different outports and fishing stations, where he could not only procure the best specimens, but gain a thorough knowledge of their habits, mode of capture, and many other particulars which, if printed in the catalogue, would render the collection more interesting to visitors and valuable as a contribution to science.

1. SCULPIN. *Cottus grænlandicus*, Cuv. et Val.; — *C. variabilis*, Ayres.

Very abundant on all our coasts. It is a voracious feeder, frequenting particularly the shore waters at fishing stations to eat the refuse offal thrown into the sea.

2. NORWAY HADDOCK. *Sebastes norwegicus*, Cuv. et Val.;

Holocentrus norwegicus, Lacep.

This species may be considered common on some parts of our Atlantic coasts, especially on the fishing banks some miles from shores, where they are frequently taken by the fishermen when fishing for cod and haddock. Very young examples have been taken from the stomachs of other fishes. It is considered a delicacy at table and sells in the market for about four sous.

3. MACKEREL. *Scomber scomber*, Gunth.; — 4. *S. vernalis*, Cuv. et Val. 5.

This species which is common to the shores of Europe and Northern America, occurs during some seasons in vast abundance, while at other times it may be said to desert our shores, and the fishermen in consequence suffer in no ordinary degree, depending much upon the "take" of mackerel in autumn for the means to purchase necessaries for the succeeding winter. The fish dealers class the different sizes as n° 1, n° 2, and n° 3; the former (of which a fine example accompanies this collection) including all the largest specimens and commanding in the market at home and abroad a very high price, while nos 2 and 3 are considered much inferior and sell for a much lower sum. N° 1 mackerel fresh in the market sells for about eight sous each.

6. SHORT-FINNED HARVEST FISH. *Stromateus triacanthus*, Peck.

Le Rhombe à fossettes, Cuv. et Val.

This fish presents a most brilliant silvery appearance when fresh from its native element, and has been locally named on that account the "dollar fish." It may be considered common on our eastern coasts and is frequently exposed for sale in the Halifax market where it sells for about a sou.

7. WOLF FISH. *Anarrhicas lupus*, Liu. *L'Anarrhique loup*, Cuv. et Val.

Sometimes called "sea cat" by our fishermen. This repulsive looking fish is not uncommon on our shores and is taken occasionally by the fishermen when fishing for cod. It is not considered of value as food.

8. CONNER, or SEA PERCH. *Ctenolabrus burgall*, Gauth.

Le Ctenolabre chosset, Cuv. et Val.

Abundant in our harbours, and considered of excellent flavour, but being extremely common, they are not appreciated as food by the majority. They are frequently given to swine to fatten them.

9. SALMON. *Salmo salar*, Liu.

This fish enters our southern rivers about the beginning of April, but does not enter those on our northern coast for a month or six weeks later. Very large specimens are rarely exposed for sale, and a salmon of twenty pounds weight is considered a good sized fish. When plentiful in the market the price is about half a franc per lb.

10 SALMON TROUT. *Salmo canadensis*, Grif., Cuv.

Common. When salted and preserved in barrels they are considered a valuable article of food, and command a ready sale abroad.

11. NAMAYCUSH SALMON. *Salmo namaycush*, Rich.

S. amethystus, Mitch.

This species, which is now for the first time added to our list of Nova Scotian fishes, was shot while basking on the surface of a lake in the interior of the province and fortunately obtained for this collection through the efforts of professor How of King's college, Windsor. According to Richardson, Forester, and others, this fish which attains the enormous weight of 70 lbs and more, is found in all the large northern lakes throughout the fur countries, and even the arctic regions.

12. BROOK TROUT. *Salmo fontinalis*, Mitch.

Very abundant in all our lakes and streams. The specimen now exhibited is a fine example weighing 3 lbs. It was taken through a hole in the ice on Porter's Lake, near Halifax, Jan. 11. 1867.

13, 14, 15. SMELT. *Osmerus viridescens*, De Kay.

In vast abundance during the winter months being brought by country people to market in bunches strung upon sticks and sold for three or four sous per doz. Two specimens now exhibited show the fish before and after spawning, as also when very young.

16. HERRING. *Clupea harenga*, Mitch.

Very plentiful in some seasons, while at other times, like the mackerel it is scarce. The small variety taken in the bay of Fundy and known as "Digby Herring" is supposed by some authors to be a distinct species. No specimen of this smaller herring could be procured to exhibit in this collection, but in a cured state it may be seen in our dried fish-department.

17. SHAD. *Alosa prestabilis*, De Kay.

This fish only occurs abundantly in the bay of Fundy, basin of Minas, etc., where thousands are taken at one tide in a single fish weir, a kind of lengthened basket work structure built about midway between high and low watermark in which to catch the fish, on the retreat of the tides, which in this bay rise and fall no less than 60, and in some places 75 feet each turn.

18. AUTUMNAL HERRING. *Alosa mallowacca*, De Kay.

This species is now added for the first time to our known list of Nova Scotia fishes.

19. GASPÉREUX, or ALEWIFE. *Alosa tyrannus*, De Kay.

Abundant on our coast, proceeding far up the rivers and streams into different lakes several miles from the sea for the purpose of spawning.

20. COD. *Gadus morrhua* Lin.

The specimen exhibited is small but owing to the diffi-

culty of obtaining jars of larger size, one of the finest examples could not be preserved. It is no uncommon occurrence to see several of these fishes in the Halifax market at one time between four and five feet in length and of proportionate girth. It was intended to illustrate in this collection the food of the cod by a series of specimens of fresh and partially digested forms taken from the stomachs of different members, but owing to want of time this could not be accomplished thoroughly, and the contents of the jars 21, 22, 23, 24, 25 and 26, are only a small contribution towards such object. A cod fish of the specimen shown sells for about 2 francs in the Halifax market.

27. ROCK COD. Merely a variety of the common Cod. (*G. Morrhua*.)

28. TOM COD, *Gadus tomcodus*, Storer.

Commonly known in Nova Scotia as the "Frost fish." During the winter months this little gadoid is taken in vast quantities in brackish and fresh waters, and is brought to market with the smelt, in bunches strung upon sticks, and sells for about three sous per doz.

29. HADDOCK. *Gadus aeglefinus*, Lin.

The present specimen may be considered a large sized one, although some of greater size are occasionally seen. The haddock is very common on the fishing banks, and is to be seen in the market nearly every month in the year. A fish of the size shown sells at about 1/4 franc.

30. POLLACK. *Gadus virens*, Lin.; — *G. pollachius*, Gron.

Abundant. The young about a foot in length are sold in the

market in autumn. The pollack is not considered a table fish, although it is cured for exportation.

31. Cusk. *Brosmius, brosme*, Gunth.

Le Brosme jaune, Les.

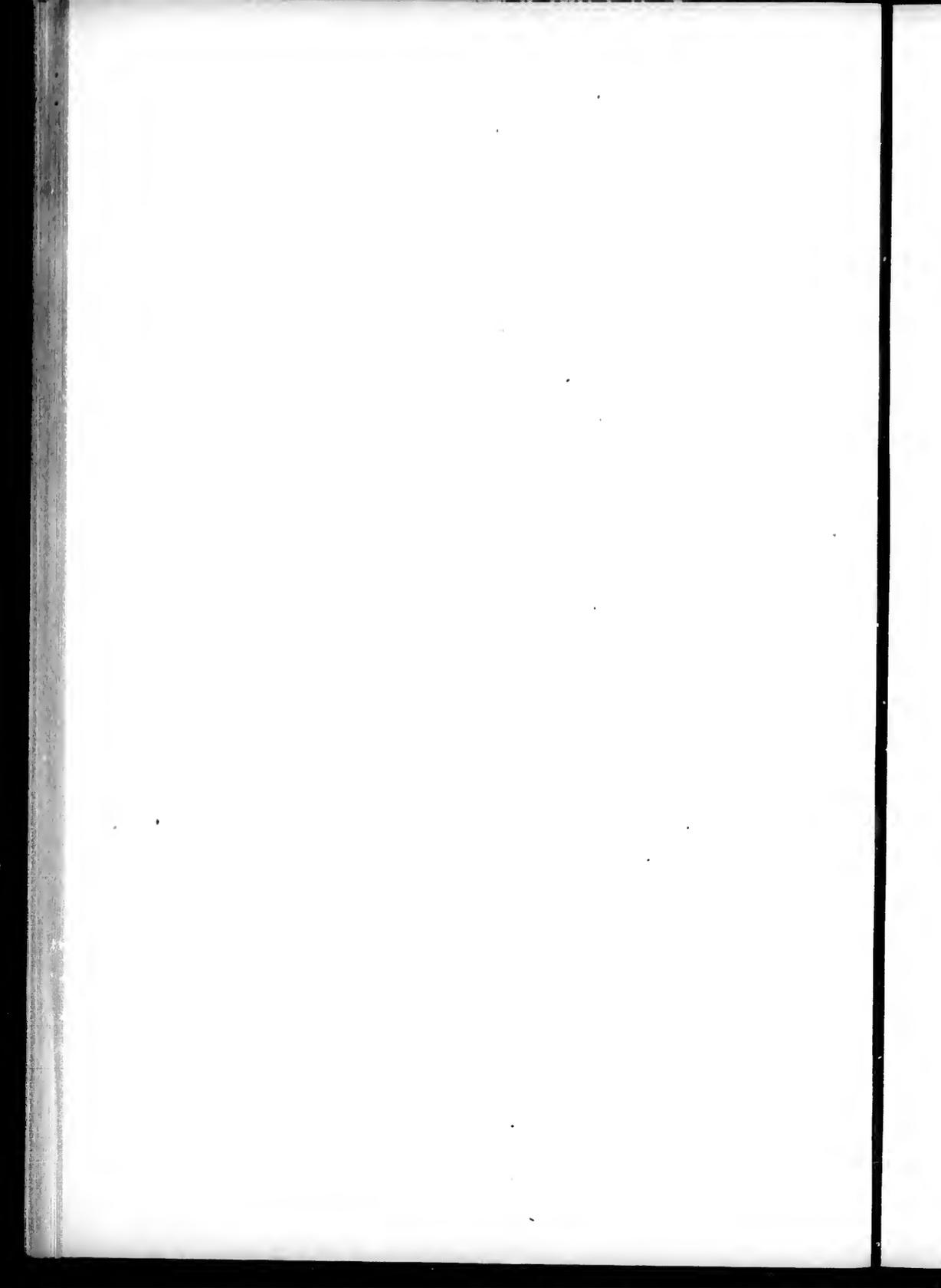
This cannot be considered a common fish in our waters, and it is not often exposed for sale in the market. A fish from 8 to 10 lbs weight sells for about a franc. They are however not much esteemed as food.

32. HAKE OR AMERICAN CODLING. *Phycis americanus*, Stor.

A very common fish on our shores frequenting muddy bottoms. It is frequently called "ling" by merchants and others when cured for exportation.

33. PIPE FISH. *Syngnathus fuscus*?

Rare.



FISHERIES

The representation of the fisheries of the province is in some degree commensurate with their extent and economic importance. Mr Jones has exhibited our merchantable fishes in his collection preserved in diluted alcohol (see his appendix), by which a correct idea can be formed of their character and natural appearance. Mr Townsend, by a duplicate series, shews the manner in which they are prepared for the home and foreign market. Fish of the finest quality are preserved in the barrels properly salted and pickled. They are of the following kinds :

Gaspereau, Shad, Striped bass, Herring, sea Trout, Cod, Cod tongues and sounds, Salmon. Two barrels of Mackerels were also prepared, but were unfortunately lost overboard on the voyage.

In cases are exhibited fish salted and dried of the following kinds :

Cod, Haddock, Hake, Pollack. Mr Harding exhibits the well known Digby, red Herrings, and Messrs Hamblin and Baker, Barber and Christian exhibit Salmon, Mackerel and Lobsters in a fresh state in hermetically sealed tins. Mr Townsend has surmounted the representation with the appropriate motto of the city of Halifax. "*E. Mari, Merces*".

Mr Knight, in his excellent treatise on the deep sea and shore fisheries of Nova Scotia, gives the following statistics derived from official sources :

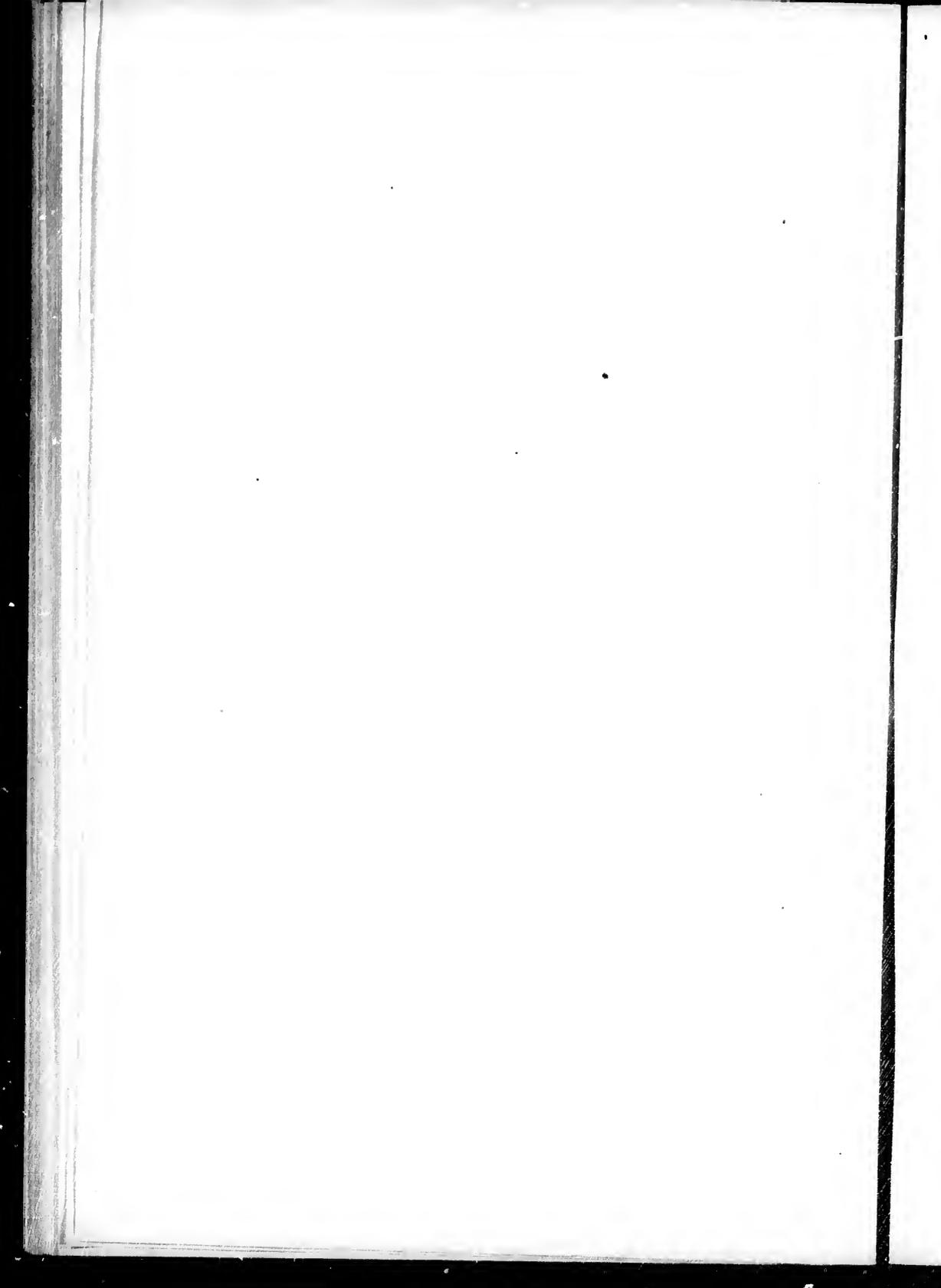
The value of the exports of fish from Nova Scotia reached in 1856 the large sum of 16,880,470 francs.

Total exportation from 1860 to 1866, 100,553,265 francs.

COLLECTIONS
OF FURS AND SKINS

Dr BERNARD GILPIN

1. BEAR SKIN (*Ursus americanus*).
 4. SILVER FOX SKINS. (*Vulpes fulvus*, var., *argenteus*).
 2. CROSS — — (*Vulpes fulvus*, var., *decussatus*).
 9. RED — — (*Vulpes fulvus*).
 6. MARTIN — (*M. americana*).
 5. MINK . . . — (*Putorius Vison*).
 3. BEAVER . . . — (*Castor canadensis*).
 2. WOLF. . . — (*Canis occidentalis*).
 1. LYNX . . . — (*Lynx canadensis*).
 1. WILD CAT . — (*Lynx rufus*).
 1. FISHER. . . — (*Mustela Penantii*).
 1. RACCOON. . — (*Procyon lotar*, *Raccoon*).
 3. SKUNKS. . . — (*Mephitis*, *Mephitica*).
 4. MUSQUASH . — (*Fiber zibethicus*).
 8. WEAZEL . . — (.).
 5. ERMINE . . . — (*Putorius Cicognanii*).
 - (*P. Richardsonii*).
-



JURY AWARDS

Gold medal

COMMISSION. Fisheries.

Silver medals

A. DOWNS. 13. Cases stuffed birds.

GENERAL MINING ASSOCIATION. 2. Columns of coal.

P. S. HAMILTON. Illustration of Gold Fields.

Bronze medals.

COMMISSION. Cereals.

BILL and SHERRY. Axes.

HONEYMAN D.-D. G. L. Geological Collection.

M^c KINLAY A. Maps, etc.

Honorable mentions.

DE WOLFE, J. M. Carriage.

O'BRIEN J. Sleigh.

STARR, H. D. and SONS. Skates and mining implements.

STARR, H. D. and SONS Axles.

How, H. - D. C. L	Collection of minerals.
MOIR, W. G.	Collection of biscuits.
SCRIVEN	— — biscuits.
COMMISSION	Chéese.
BARNES, W.	Collection of fossils.
Mc GURDY, MISS.	Linen thread.
DEXTER, J.	Woods.
SYMONDS, W. S. and Co.	Gold quartz-crushing machine.

1
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1865 OF NOVA SCOTIA.

PRODUCTION OF

MINERAL PRODUCTION OF THE PROVINCIAL GOVERNMENT.

QUARTZ.

MINERAL

DISTRICT.	CRUSHED.		STEAM.	WIND.
	PER MAN DAILY.	TOTAL.			DAILY.
	LB.	100 LBS.	LB.	No.
TANGIER ..	36.3	14,140	4,532	1
	35.	13,110	4,202	3
	82.5	13,957	4,474	3
	110.4	12,785	4,098	2
	208.2	15,837	5,076	2
WINE HARB	137.5	17,600	5,641	2
	188.4	72,890	23,362	3
	359.9	82,729	26,516	3
	462.1	76,658	24,570	3
	427.0	37,635	12,062	3
OVENS.....	17.8	1,000	320	2
	43.6	2,012	655	1
	.....	339	109	.....

LAWRENCE	40.	500	160	.....
	131.9	2,470	792	1

OLDHAM...	38.7	1,680	539	1
	79.2	20,516	6,575	5
	114.7	44,773	14,350	4
	249.0	44,723	14,334	4
	175.2	19,324	6,193	5
RENFREW..	31.3	3,420	1,096	2
	52.2	11,497	3,685	2
	183.3	24,581	7,879	3

COUNTRY HA				
SHERBROOK				
HAVERLEY.				
BAC'S HAR				
MONTAGUE..				

PART OF THE GOLD MINES OF NOVA SCOTIA.

FILED FROM OFFICIAL RECORDS FOR THE CORRESPONDENCE OF

NEW YORK TIMES.

BY THE PATRONAGE OF THE PROVINCIAL GOVERNMENT.

1862-66.

PER 100,000	MINERS.				QUARTZ.				MILLS.			MINES.	DISTRICT.
	TOTAL	AVERAGE.			RAISED.		CRUSHED.		STEAM.	WATER.	TOTAL.		
		PER 1,000,000	DAILY.	PER MINE.	TOTAL	PER MAN DAILY.	TOTAL	DAILY.						AT THE END OF THE YEAR.
No.	No.	No.	No.	No.	100 LBS.	LB.	100 LBS.	LB.	No.	No.	No.	No.	
13,193	39,000	250,000	125	.....	14,140	36.3	14,140	4,582	1	2	3	.....	1862.
16,281	37,440	126,830	120	.....	13,110	35.	13,110	4,202	3	3	6	.....	1863.
10,499	16,980	61,815	62	7.	13,565	82.5	13,565	4,474	3	3	6	5	1864.
12,335	13,156	61,775	42	7.3	14,520	110.4	12,785	4,098	2	3	5	4	1865.
11,088	9,074	42,843	29	4.8	18,897	208.2	15,837	5,076	2	2	4	10	1866.
16,978	12,792	82,000	41	.....	17,600	137.5	17,600	5,641	2	1	3	.....	1862.
11,259	141,391	141,391	124	.....	72,890	188.4	72,890	23,362	3	1	4	.....	1863.
18,982	22,984	90,945	73	8.2	82,741	359.9	82,729	26,516	3	1	4	10	1864.
16,811	16,588	77,830	53	3.6	76,658	462.1	76,658	24,570	3	1	4	6	1865.
10,353	8,814	41,615	28	3.6	37,635	427.0	37,635	12,062	3	1	4	9	1866.
15,182	5,616	36,000	18	.....	1,000	17.8	1,000	320	2	.....	2	.....	1862.
12,437	4,680	17,103	15	.....	2,042	43.6	2,042	655	1	.....	1	.....	1863.
13,778	130	513	3	.....	.....	.....	339	109	.....	.....	.....	.....	1864.
7,033	1,248	8,000	4	.....	500	40.	500	160	.....	2	2	.....	1865.
18,969	1,872	6,812	6	.....	2,470	131.9	2,470	792	1	.....	1	.....	1866.
22,738	4,368	28,000	11	.....	1,680	38.7	1,680	539	1	2	3	.....	1862.
24,001	25,896	91,640	83	.....	20,516	79.2	20,516	6,575	5	3	8	.....	1863.
12,838	37,934	150,101	121	4.1	43,496	114.7	41,777	14,350	4	2	6	30	1864.
8,443	18,278	85,826	58	3.5	45,519	249.0	44,723	14,334	1	2	6	7	1865.
10,157	11,362	53,646	36	4.3	19,913	175.2	19,324	6,193	5	2	7	5	1866.
14,927	10,920	70,000	35	.....	3,420	31.3	3,420	1,096	2	1	3	.....	1862.
13,668	21,216	77,537	68	.....	11,497	52.2	11,497	3,685	2	2	4	.....	1863.
10,651	12,220	48,353	39	4.4	22,900	183.3	24,581	7,879	3	2	5	3	1864.
18,769	14,430	67,757	46	5.9	27,400	193.8	18,541	5,943	5	2	7	12	1865.
10,337	38,142	189,088	122	8.9	102,966	286.5	120,064	38,182	5	2	7	10	1866.
13,224	936	6,000	3	.....	480	51.3	480	154	.....	1	1	.....	1862.
15,376	22,464	144,000	72	.....	17,220	76.6	17,220	5,519	3	1	4	.....	1863.
0,791	21,200	114,026	100	.....	6,482	221.4	69,082	22,142	4	1	5	.....	1864.
2,732	32,613	123,125	104	8.2	53,460	163.8	53,460	17,135	4	1	5	12	1861.
11,386	23,010	108,046	74	8.8	50,234	218.3	50,234	16,101	4	.....	4	8	1865.
16,775	22,490	106,187	72	7.3	57,074	253.8	57,072	18,293	4	.....	4	12	1866.
12,709	46,800	300,000	150	.....	74,820	159.9	74,820	23,981	6	1	7	.....	1862.
11,191	58,344	213,227	187	.....	135,099	231.5	135,099	43,301	5	.....	5	.....	1863.
18,931	88,244	349,176	283	16.6	184,769	259.4	184,769	59,221	5	1	6	10	1864.
10,968	87,308	409,962	280	18.5	230,367	286.8	230,367	80,246	4	1	5	17	1865.
12,992	98,800	466,487	317	27.4	335,030	339.1	335,000	101,737	5	1	6	17	1866.
11,856	76,000	76,000	38	.....	3,940	33.2	3,940	1,263	1	1	2	.....	1862.
12,539	15,600	57,012	50	.....	10,531	67.5	10,531	3,375	1	.....	1	.....	1863.
19,586	25,844	102,262	83	8.3	16,944	65.9	12,735	4,082	2	1	3	11	1864.
15,162	25,350	119,033	81	8.9	20,353	80.3	20,811	6,670	2	1	3	5	1865.
16,503	11,206	52,909	36	8.8	40,977	365.7	45,062	14,443	2	1	3	2	1866.
8,864	38,688	141,392	124	.....	2,798	7.2	2,798	897	.....	.....	.....	.....	1862.
11,492	14,786	45,472	37	6.9	10,905	94.9	10,905	3,495	1	.....	1	4	1863.
12,828	12,376	58,118	40	6.1	12,309	99.5	12,309	3,945	1	.....	1	8	1865.
18,404	6,032	28,480	14	13.2	7,730	128.1	7,650	2,452	1	.....	1	1	1866.
12,281	1,326	6,262	17	10.2	2,179	163.7	.....	570	183	1	.....	2	1862.
7,217	4,862	19,238	12	13.7	430	11.3	430	138	2	.....	2	4	1863.
24,303	2,470	11,598	8	.....	2,165	87.6	2,038	653	.....	.....	.....	.....	1864.
12,004	4,550	21,483	14	14.7	6,725	147.8	5,910	1,606	1	1	2	2	1865.
2,222	156,000	140,908	500	.....	134,800	86.4	134,800	43,205	18	12	30	.....	1862.
12,136	271,624	247,152	877	.....	340,035	124.3	340,035	108,986	25	10	35	.....	1863.
10,655	262,720	228,271	810	8.0	428,700	169.6	428,677	137,397	27	11	38	89	1864.
17,618	212,966	192,363	683	9.1	500,025	234.8	488,166	156,570	25	10	35	67	1865.
16,369	117,796	191,306	679	9.7	635,387	300.0	643,224	206,162	29	19	39	60	1866.
100,000	117,106	1,000,000	710	8.6	2038,947	784.2	2,035,202	130,462	The Department Records for 1862 and 1863 are incomplete.			1862-6.	

VICTORIA BUILDINGS, HOLLIS STREET, HALIFAX, N. S.

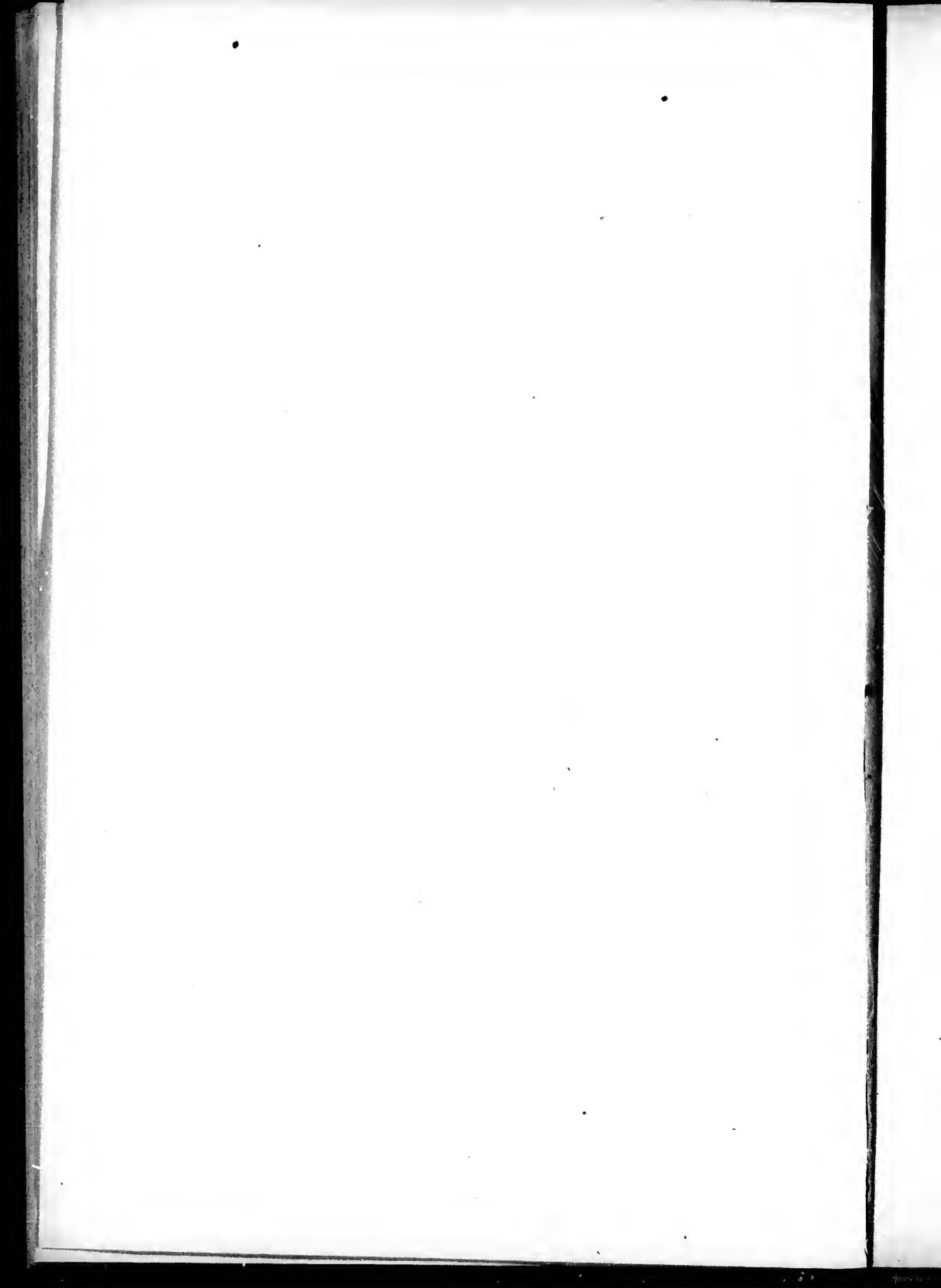
TOTAL FOR THE PROVINCE.

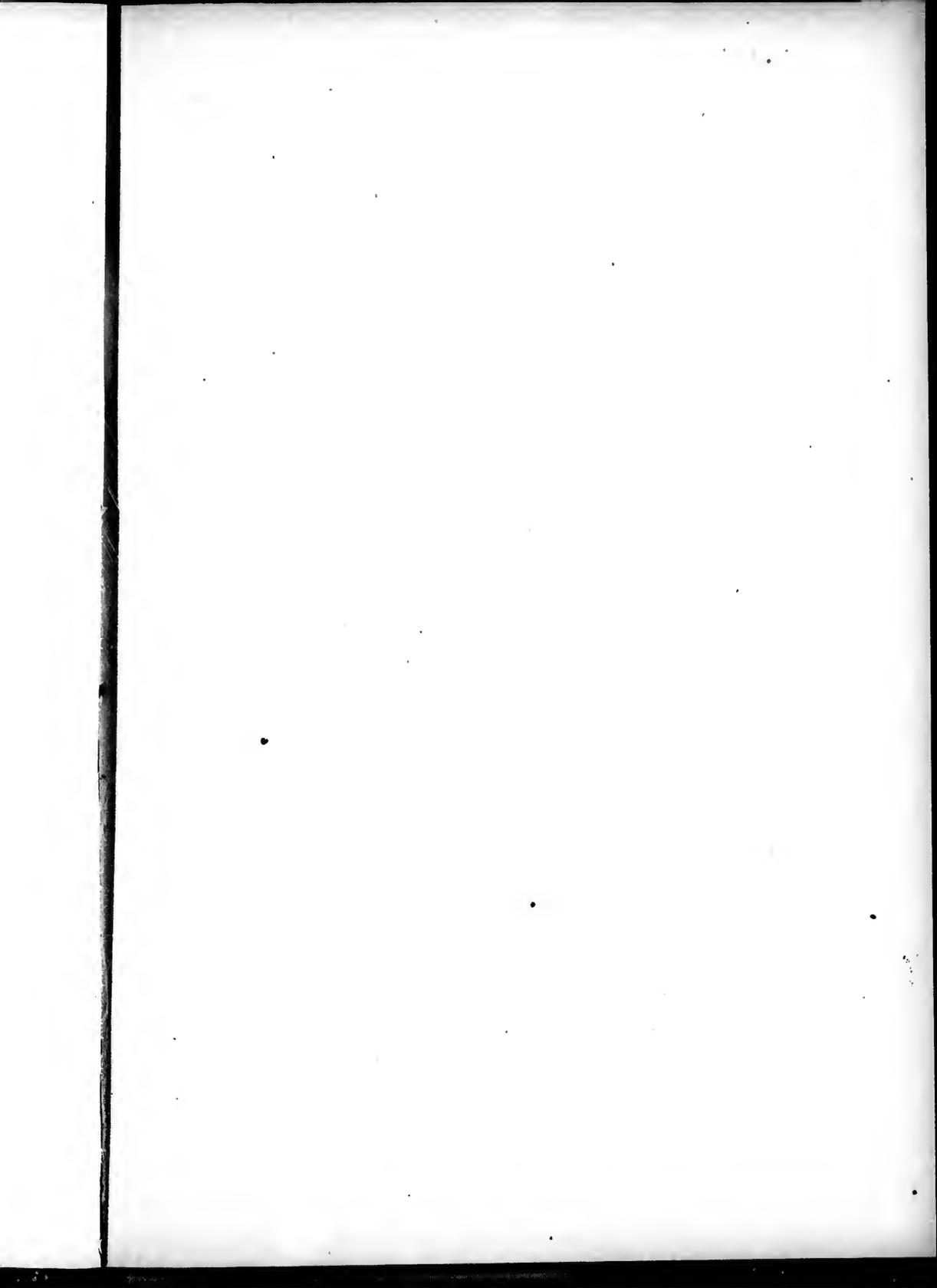
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