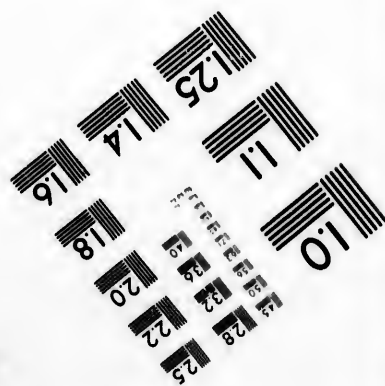
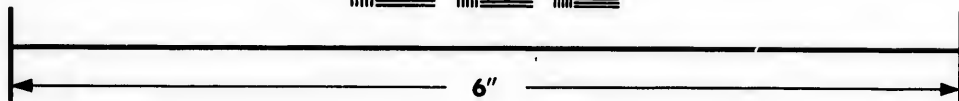
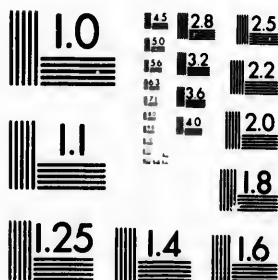


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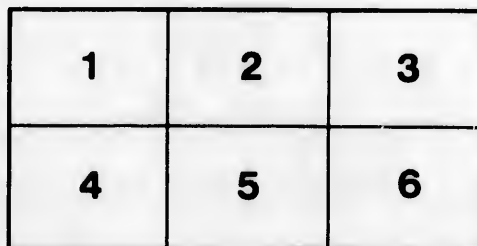
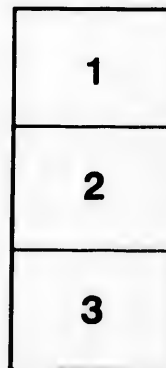
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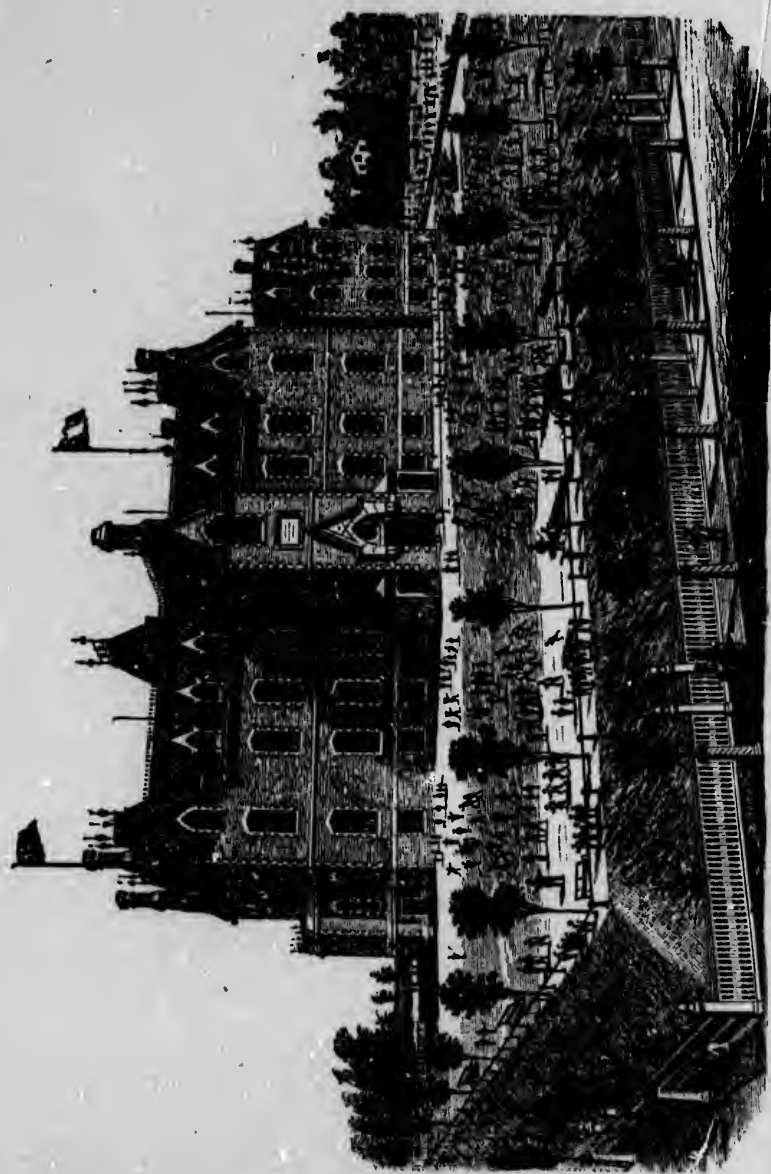
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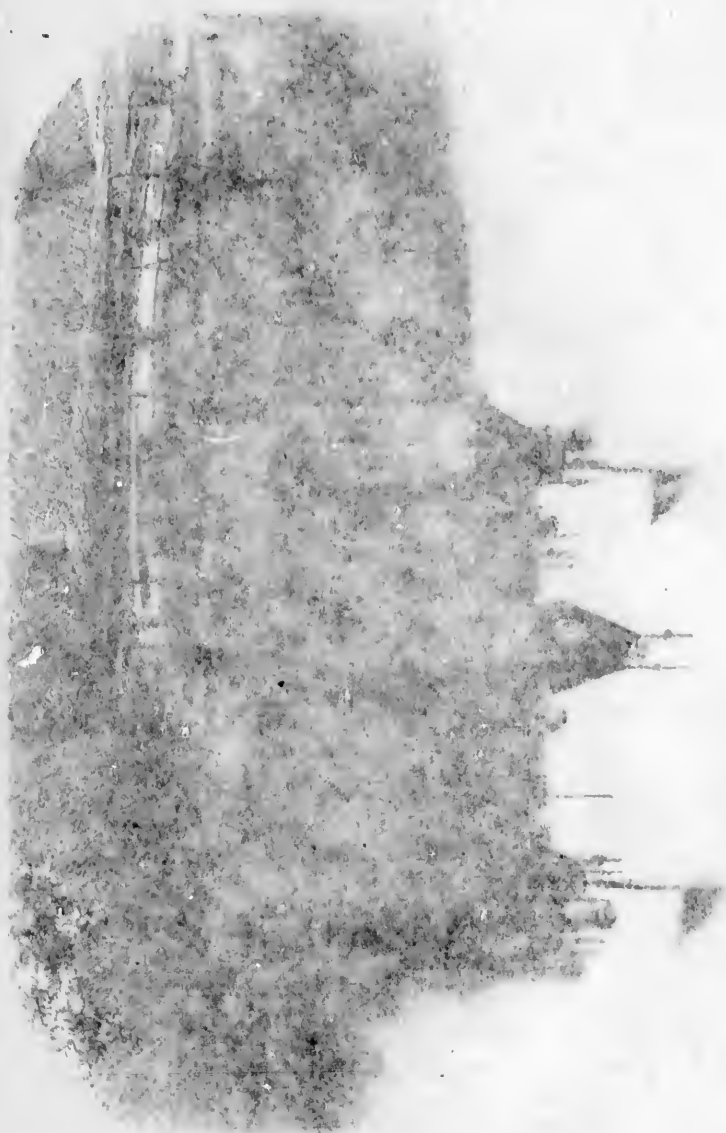
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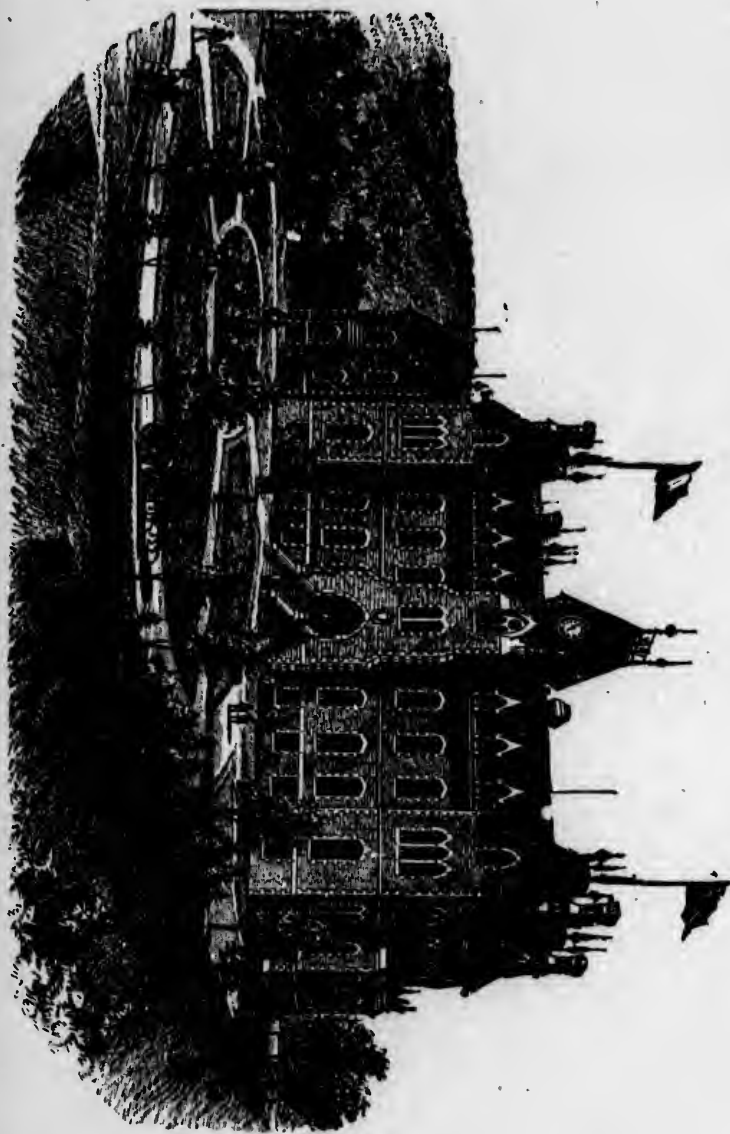


CATHOLIC COMMERCIAL ACADEMY OF MONTREAL, FROM ST. CATHERINE STREET.



CATHOLIC COMMERCIAL ACADEMY OF MONTREAL, FROM (ONTARIO STREET).

CATHOLIC COMMERCIAL ACADEMY OF MONTREAL, FROM ST. CATHERINE STREET.



PROSPECTUS
OF THE
Catholic Commercial Academy
OF MONTREAL
AND OF THE
SCIENTIFIC AND INDUSTRIAL
SCHOOL.



MONTREAL
"NATIONAL" PRINTING HOUSE, 73 ST. JAMES STREET

1874

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CATHOLIC COMMERCIAL ACADEMY
OF MONTREAL,
ESTABLISHED BY THE
Roman Catholic School Commissioners
OF THE CITY OF MONTREAL,
UNDER THEIR DIRECTION AND THAT OF
M. U. E. ARCHAMBAULT, PRINCIPAL.
Plateau Avenue.

This magnificent edifice,—the austere but imposing architecture and commanding site of which excite the admiration of all beholders,—is a lasting monument erected to Commerce and Industry.

The School Commissioners have deemed it their duty, in response to an urgent want and to the legitimate expectations of the influential Catholic population of this prosperous city, to spare no necessary expense to place this institution on a footing second to none in this country; and, to render the sojourn of the numerous pupils frequenting it both agreeable and beneficial, in the twofold respect of comfort and health, spacious study-halls and class-rooms, school furniture of the latest and most improved patterns, convenient heating apparatus, the most perfected system of ventilation, &c., &c., have been abundantly provided and introduced.

The most scrupulous attention has been brought to bear upon the selection of the associate professors,—who will always be in number sufficient for the requirements of the school.

The object of the Commercial Academy is to prepare and qualify pupils who have diligently followed the course of instruction, to embrace with success, any commercial or industrial pursuit.

The unusually large proportion of French-Canadian and English speaking scholars who have hitherto attended the school, greatly tends to make it a most desirable Institution for acquiring a prompt and practical knowledge of the French and English languages, which are taught respectively by professors of acknowledged ability.

Without in any way binding itself to provide with situations all pupils indiscriminately who have attended its classes,—this Institution nevertheless considers it a pleasing duty to extend its patronage and to favor, to the utmost extent in its power, such pupils as prove themselves specially deserving. Its relations with the principal commercial houses of Montreal, and the cordial interest manifested by the numerous friends of the Institution, usually render this an easy and agreeable task.

COURSE OF STUDIES.

Four distinct Courses are established,—a Primary, an Intermediate, a Commercial, and a Scientific and Industrial Course.

PRIMARY COURSE.

The classes of this Course are transferred this year to a separate building, next the Academy, which the Commissioners have bought for this purpose.

This Course being entirely separated from the other Courses, will be henceforth under the direction of Mr. H. C. O'Donoghue, Principal.

First Year (3rd Degree.)

The Course of instruction embraces :

FRENCH LANGUAGE.

READING.—Alphabet, spelling and reading, with the meaning and translation of words from the text-book, and others.—*Premier Livre.*

PUNCTUATION.—Naming the punctuation signs in spelling in the book.

ENGLISH LANGUAGE.

READING. — Alphabet, spelling and reading with the meaning and translation of words from the text-book and others—First-Reader.

PUNCTUATION.—Naming the punctuation signs in spelling in the book.

WRITING.

Writing on the slate and paper.

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ADDITION
EASY CA

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RELIGIO
PRAYERS
GOOD M
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READING
translation
PUNCTU
GRAMMA

READING
translation
PUNCTU
GRAMMA

The first

NUMERA
(100,000.)
ROMAN
WRITTEN
MULTIPLE
MENTA

ARITHMETIC.

THE READING of numbers as far as Thousand (1,000.)
 ADDITION AND SUBTRACTION, on the Ball-Frame and Slate.
 ADDITION, Subtraction and Multiplication Tables.
 EASY CALCULATIONS in Mental Arithmetic.

ORAL LESSONS.

The principal geometrical figures.
 COLORS.—The principal colors with the aid of Maps.
 ANIMALS.—Utility of domestic animals.—The principal parts of the human body.
 RELIGION.—Principal facts and events, with the aid of Maps.
 PRAYERS.—CATECHISM, orally.
 GOOD MANNERS.—Respect due parents, masters and superiors in general ; manner of obeying and anticipating their desires ; cleanliness.

Second Year (2nd Degree.)

FRENCH LANGUAGE.

READING.—Spelling and reading continued, with the meaning and translation of words from the text-book and others—*Deuxième Livre*.
 PUNCTUATION.—As in the preceding degree.
 GRAMMAR.—First rudiments, orally.

ENGLISH LANGUAGE.

READING.—Spelling and reading continued, with the meaning and translation of words from the text-book and others—*Second Reader*.
 PUNCTUATION.—As in the preceding degree.
 GRAMMAR.—First rudiments, orally.

WRITING.

The first four numbers of the *Senecal* series.

ARITHMETIC.

NUMERATION.—The reading of numbers as far as hundred thousand (100,000.)
 ROMAN FIGURES as far as hundred (C.)
 WRITTEN operations continued to simple division inclusively.
 MULTIPLICATION and division tables to 12 times 12.
 MENTAL ARITHMETIC.—Calculations on the first four simple rules.

ORAL LESSONS.

GEOGRAPHY.—First notions.

RELIGION.—Prayers continued—Catechism.

SACRED HISTORY, orally.

GOOD MANNERS.—Kindness and politeness towards our fellow-creatures—Truthfulness—Cleanliness—Examples, incidents and anecdotes.

GEOMETRICAL FIGURES continued—Shape—Comparative magnitudes—Colors—Animals.

Third Year (1st Degree.)

FRENCH LANGUAGE.

READING.—Spelling and reading continued.—*Troisième Livre*.

MEANING and TRANSLATION of words from the text-book and others.

PUNCTUATION.—As in the preceding degree.

INTONATION.—To give an account of one's reading.

GRAMMAR.—Elements, as far as regular verbs inclusively.

ORTHOGRAPHIC EXERCISES and DICTATION.

PARSING, commenced.

ENGLISH LANGUAGE.

READING.—Spelling and reading continued — *Intermediate Reader*—

MEANING and TRANSLATION of words from the text-book and others.

PUNCTUATION.—As in the preceding degree.

INTONATION.—To give an account of one's reading.

GRAMMAR.—Elements, as far as regular verbs inclusively.

PARSING, commenced.

WRITING.

As far as number 5 of the *Sentential* series.

ARITHMETIC.

NUMERATION.—The reading of numbers completed.

ROMAN FIGURES reviewed and completed.

REDUCTION.—The four compound Rules.

TABLES of weights and measures.

MENTAL ARITHMETIC.—Calculations on the four compound Rules.

ORAL LESSONS.

GEOGRAPHY.—First notions continued—Principal divisions of the Globe ; Islands, Mountains, Oceans, Rivers, Boundaries—on the Map.

GEOMETRICAL FIGURES.—Second degree reviewed and continued.

USUAL OBJECTS.—Their principal parts and their use.

COMMON PLANTS.—Their qualities.

RELIGION.—Catechism. Sacred History continued, orally.

GOOD MANNERS.—Sentiments of justice, impartiality, generosity, fortitude—illustrated by examples from history.

 REMARKS.

Unremitting attention is paid to impart to pupils the greatest amount possible of useful knowledge by means of oral lessons.

PRONUNCIATION and INTONATION, in both languages, are the object of particular attention on the part of Professors.

Pupils of this Course receive lessons of **DRAWING** and **CALISTHENICS** twice a week, and Singing lessons are given three times a week, at the same hour, to all the Classes assembled.

INTERMEDIATE COURSE.

SPECIAL CLASS.

(3rd Degree.)

This Class is opened for the advantage of English pupils not possessing a sufficient knowledge of the French language to enable them to follow the CLASS OF ELEMENTS, and *vice versa*.

The Course of instruction embraces the first rudiments of the English and French languages, together with the branches taught in the next higher Class.

First Year (2nd Degree.)

The Course of instruction embraces :

FRENCH LANGUAGE.

READING.—Comprehensive Reading.—Review of the rules studied in the preceding Course.—Pauses indicated by punctuation and sense.

SPELLING and MEANING of words continued from the preceding degree.

Study of HOMONYMES and derivative words commenced.

GRAMMAR.—Elements completed and Syntax commenced.

ORTHOGRAPHIC EXERCISES and DICTATION

PARSING continued.

ENGLISH LANGUAGE.

READING.—Comprehensive Reading.—Review of the rules of the preceding Course.—Pauses indicated by punctuation and sense.

SPELLING and DEFINING—in the text book.

GRAMMAR.—Review of the preceding degree—Elements completed and Syntax commenced.

PARSING continued—DICTATION—TRANSLATION—Exercises and versions from the text book.

WRITING.

As far as number 4 inclusively, of the series of Payson, Duntun and Scribner.

ARITHMETIC.

Review of the preceding degree.

Vulgar and decimal FRACTIONS.

MENTAL ARITHMETIC.—As written Arithmetic.

GEOGRAPHY.

America and Europe—Studied in the text-book.

HISTORY OF CANADA

French domination—Studied in the text book.

ORAL LESSONS.

Usefulness of Animals continued.—Air and Water—Steam.

RELIGION—Catechism. SACRED HISTORY reviewed.

History of Our Lord Jesus-Christ.

GOOD MANNERS.—General rules reviewed. Politeness at table. Politeness in conversation.

Second Year. (1st Degree.)

FRENCH LANGUAGE.

READING.—Expressive Reading—Pauses—Intonation

SPELLING and DEFINING continued from the preceding degree.

HOMONYMES and contrary and derivative words continued.

GRAMMAR.—Syntax completed.

ORTHOGRAPHIC EXERCISES and DICTATION.

PARSING continued.

ANALYSIS.

EPISTOLARY ART.—Oral lessons—First notions with exercises.

ENGLISH LANGUAGE.

READING.—Expressive Reading—Pauses—Intonation.

SPELLING and DEFINING, continued from the preceding degree, in the text-book.

GRAMMAR.—Syntax completed.

PARSING and DICTATION continued.

TRANSLATION.—Exercises and Versions continued from the preceding degree.

EPISTOLARY ART.—Oral lessons—First notions with exercises.

WRITING.

As far as number 8 inclusively, of the series of Payson, Dutton and Scribner.

ARITHMETIC.

Review of the preceding degree to Discount inclusively.

MENTAL ARITHMETIC.—As written Arithmetic.

GEOGRAPHY.

Asia, Africa and Oceanica.

General review.

HISTORY OF CANADA.

English Domination—Studied in the text-book

ORAL LESSONS.

Manufactural industries — Steam-engines — Telegraph — Lightning-rods—Navigation—Railroads.

RELIGION.—Catechism—Religious instruction—History of the Church—Orally.

GOOD MANNERS.—What ought to be imitated and avoided in society.

 REMARKS.

As in the Primary Course, unremitting attention is paid to impart to pupils the greatest amount possible of knowledge, by means of oral lessons, specially on Religion, the Life of Our Lord Jesus-Christ, the History of the Church, the Sciences, &c., &c., as well as to the cultivation of their memory by making them learn and declaim chosen pieces of poetry and prose.

An hour per week is devoted to the teaching of the following branches: DRAWING AND CALISTHENIC EXERCISES. SINGING takes place three times a week, half an hour being given each class, for each division.

COMMERCIAL COURSE.

First Year (3rd Degree.)

The Course of instruction embraces :

FRENCH LANGUAGE.

READING.—Expressive reading continued.

GENERAL GRAMMAR.—Review of the preceding degrees.

PARSING and ANALYSIS.

PRECEPTS OF LITERATURE.—COMPOSITION and AMPLIFICATION

ENGLISH LANGUAGE.

READING.—Expressive reading continued.

GENERAL GRAMMAR.—Review of the preceding degrees.

PARSING and ANALYSIS.

PRECEPTS OF LITERATURE.—COMPOSITION and AMPLIFICATION.

TRANSLATION.—Exercises and Versions.

CALLIGRAPHY.

Numbers 11 and 12 of the Series of Payson, Dutton and Scribner.

ARITHMETIC.

Review of the preceding degrees to Cube-Root inclusively.

MENTAL ARITHMETIC.—Miscellaneous problems.

MENSURATION.—Surfaces.

BOOK-KEEPING.

PRINCIPLES.—Commercial transactions in Single Entry and elementary notions of Double Entry.

ORAL LESSONS.

COMMERCIAL GEOGRAPHY—CARTOGRAPHY—GENERAL HISTORY.

RELIGION.—As in the preceding degree.

GOOD MANNERS.—Habits of order and economy.

Second Year (2nd Degree.)

FRENCH LANGUAGE.

READING.—EXPRESSIVE READING—DECLAMATION.

PRECEPTS OF LITERATURE.—COMPOSITION and AMPLIFICATION.

ENGLISH LANGUAGE.

READING.—EXPRESSIVE READING—DECLAMATION.

PRECEPTS OF LITERATURE.—COMPOSITION and AMPLIFICATION.

CALLIGRAPHY.

In all its parts.

ARITHMETIC.

General review.

MENTAL ARITHMETIC—Miscellaneous problems.

MENSURATION—Surfaces and Solids.

GEOGRAPHY.

Commercial and political GEOGRAPHY.—CARTOGRAPHY.

HISTORY.

GENERAL HISTORY continued from the preceding degree.

ECONOMY.

SOCIAL ECONOMY.

ORAL LESSONS.

As in the preceding degree.

RELIGION.—As in the preceding degree.

GOOD MANNERS.—As in the preceding degree.

Third Year (1st Degree.)

BUSINESS CLASS.

This Class will form Clerks for the wholesale and retail business ; commercial travelers ; Book-KEEPERS for stores, offices, manufactures, railroad and steamboat companies, Banks and Custom-House, &c ; in a word, business men for commerce in general.

The course of instruction embraces :

BOOK-KEEPING.

DOUBLE ENTRY.—The manner of opening, conducting and closing books for individuals or for societies ; all kinds of commercial transactions according to the best systems of the the great-mercantile firms, together with Banking and Custom-House business.

COMMERCIAL CORRESPONDENCE.—In French and English.

ARITHMETIC.

COMMERCIAL ARITHMETIC.—Percentage—Simple and compound interest—Partial payments—Discount—Banks—Stocks—Commission—Brokerage—Insurance—Duties or Customs—Profit and Loss.—Storage—Partnership—Equation of payments—Exchange—General average—Taxes, &c.

MENTAL ARITHMETIC.—As written Arithmetic.

COMMERCIAL LAW.—Negotiable and non-negotiable paper, contracts, &c., &c.

CALLIGRAPHY.

In all its parts.

ORAL LESSONS.

COMMERCIAL GEOGRAPHY and Business in general.

STUDY of merchantable goods.

RELIGION.—As in the preceding degree.

GOOD MANNERS.—As in the preceding degree.

REMARKS.

In this, as in the preceding Courses, unremitting attention is paid to impart to pupils the greatest amount possible of knowledge, by means of oral lessons on Commercial Geography, General History, merchantable Goods, Good-Manners, business in general, &c., &c., as well as to cultivate their memory, by making them learn and declaim chosen pieces of prose and poetry.

ARTISTIC, ORNAMENTAL and LINEAR DRAWING, VOCAL MUSIC and CALISTHENIC EXERCISES will receive even closer attention than in the preceding degrees.

PREPARATORY CLASS
TO THE
SCIENTIFIC AND INDUSTRIAL COURSE

The course of instruction embraces:
FRENCH and ENGLISH LITERATURE

ARITHMETIC.

THEORETICAL ARITHMETIC.—Decimal and vulgar fractions. Weights and measures of Canada and neighboring countries. Metrical system. Proportion. Extraction of square and cube roots. Arithmetical and Algebraic progressions.

ALGEBRA.—Properties of numbers. Addition. Subtraction. Multiplication. Division. Algebraic fractions. Simple equations as far as radicals and quadratics.

GEOMETRY.—The first four Books. General notions on the construction of figures. Properties of the right-angled triangle. Evaluation of surfaces and specific gravity of solids. (Practical problems.)

Physical and Political GEOGRAPHY, particularly of America and Europe.

Artistic, Ornamental and Linear DRAWING.

Elements of NATURAL PHILOSOPHY.

Elements of CHEMISTRY.

GENERAL HISTORY continued from the preceding degree.

PHILOSOPHY. Psychology. Logic. Moral. Theodicy.

HISTORY OF PHILOSOPHY.

RELIGIOUS INSTRUCTION.

Religious instruction, which is binding upon all the Catholic pupils, will be imparted once a week, by one of the Revd. Gentlemen of the Seminary of St. Sulpice.

OPTIONAL BRANCHES OF STUDY.

Telegraphy.

Stenography and Phonography.

The German language.

N. B.—The study of the French and English languages is binding upon all the pupils of the Commercial Course. The study of the German language will depend on the presentation of a number of scholars of the Commercial Course, sufficient to form a Class.

Young gentlemen actually engaged in commercial or industrial pursuits, or having but little leisure to devote to their education, may, at any time, study such special branches of instruction as they most require.

A library and a museum of specimens of rude and manufactured products—foreign and indigenous—are in course of formation, and are calculated to advance greatly the study of commercial subjects.

Several influential gentlemen engaged in commerce have already promised valuable specimens for the museum,—and donations of samples from merchants and mechanics will at all times, be gratefully received.

DIPLOMAS.

Diplomas attesting the degree of proficiency of the bearer, will be delivered to such pupils as shall have undergone a satisfactory examination on all the various subjects of the Commercial Course,—Telegraphy, Stenography and German (optional branches of study) excepted.

The diploma shall state that the pupil has passed his examination in a *satisfactory manner*,—*with distinction*,—*with great distinction*,—*with the greatest distinction*.

Such pupils as shall not have followed the entire Commercial Course,—as also those whose examination shall not have proved altogether satisfactory, will be entitled to a “certificate of study,” merely.

TERMS.

By a resolution of the Board, bearing date the 8th August, 1871, the the Commissioners have fixed the following new rates of fees :

Every year, all pupils of the Primary, Intermediate, and Commercial Course indiscriminately, — at whatever time they may enter the school—will be charged two dollars (\$2.00), before having their names entered on the roll. The proceeds of this amount,—which will in no case be reimbursable,—will be devoted to the maintenance of the Chapel, Library and Museum of specimens.

These two dollars are taken on account, and deducted from the tuition fees, which are as follows :

| | |
|--------------------------------------|--------------------|
| Primary Course..... | \$20.00 per annum. |
| Intermediate “ | 30.00 “ “ |
| Commercial “ | 38.00 “ “ |
| Scientific and Industrial Course.... | 44.00 “ “ |

The balance is payable quarterly, in advance, as follows :

| | |
|--------------------------------|---------|
| Primary Course..... | \$ 4.50 |
| Intermediate " | 7.00 |
| Commercial " | 9.00 |
| Scientific and Industrial..... | 11.00 |

A reduction of 10 per cent will be allowed to parents who settle their accounts within the first fifteen days of each quarter.

A further reduction of 10 per cent will also be allowed to parents placing two or more children at the school.

At the expiration of each quarter, parents will receive a Bulletin informing them of the conduct, application and progress of their children.

Nota.—All the school-requisites for the pupils of the different Courses, such as books, stationery, &c., &c., will be furnished by the Academy at current prices, and for cash only. Parents wishing their children provided with the above named articles, whenever they may require them, are requested to deposit in the hands of the Treasurer a sum sufficient to pay for said articles during at least a quarter.

HOURS OF ATTENDANCE.

For the Pupils of the Primary Course.

From 9 o'clock A. M. till 12—and from 1.30 P. M. till 4.
The doors will be opened at 8.30 A. M. and 1 o'clock P. M.

For all Pupils of the General Course.

From 8 A. M. till 12—and from 1.30 P. M. till 5.
The doors will be opened at 7.30 A. M. and 1 o'clock P. M.
Saturday is the weekly holiday.

N. B.—Parents are respectfully requested to bring their children on the opening day, and afterwards, to send them daily to school, at the appointed hours. Strict attention to this rule can alone insure success.

For further particulars, apply to the Principal, at the Academy (Plateau Avenue).

U. E. ARCHAMBAULT,

PRINCIPAL.

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Catholic Commercial Academy

OF MONTREAL.

PROGRAMME

OF THE

Scientific and Industrial

COURSE

MONTREAL

"NATIONAL" PRINTING OFFICE, 73 ST. JAMES STREET.

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SCIENTIFIC & INDUSTRIAL COURSE

OPENED AT THE
Catholic Commercial Academy

OF
MONTREAL.

The object of this course is to give young men a solid, substantial, and an eminently practical education in the arts and sciences. It will open to them the different professions or branches of professions hereafter mentioned, thus procuring to the country the practical men now so necessary for the creation and advancement of industry.

These studies will not be simply theoretical but eminently practical. The institution however does not pretend to make *savants* in the literal sense of the word, but aims at forming special men possessing a perfect knowledge of their profession. When we reflect on the actual development of mineral, manufactural and commercial industries, on colonial enterprises, such as public roads, canals, railways in process of construction or already opened to the public, and, on the other hand, when we consider the great number of young men employed or that might be employed by those powerful companies, and see that most of the former have been brought from foreign countries, we cannot but feel that in opening such a school we work for the welfare of our youth and open to them the portals of a brilliant future.

THE SCIENTIFIC AND INDUSTRIAL COURSE

Will embrace the following branches :

| 1 st | 2 nd | 3 rd | 4 th |
|-----------------------|-----------------------|--|-------------------------------------|
| Civil Engineering. | Mines and Metallurgy. | Mechanics and the working of Metals | Diverse Industries. Productions. |

First Branch.—CIVIL ENGINEERING.

Will form Geometricians, Surveyors, Architects;—Railroad, Canal, Road and Bridge Engineers; Masons, Carpenters, Joiners, &c. Contractors and Builders, Assistant-Surveyors, Draftsmen for the different offices of Architects, Engineers, Surveyors, Railroads, Public Works, &c. Employees in the administration of Railroads, Bridges and high ways, the great administrations, &c.

The special studies of this branch are: Surveying and plotting.—Levelling.—Excavating and Embanking.—Tunnels.—Laying of rails.—Stations.—Consolidation of the road-bed.—General considerations.—Inspection of materials, calculations on resistance, durability of rails, bridges, engines, rolling stock, &c.

Calculations on the proceeds of roads: Management.—*Personnel*—Study of the roads of America and Europe.

PUBLIC WORKS.—Works of art.—Construction of manufactories, mills, etc.—Suspension and tubular bridges.—Hydraulics.—Aqueducts. Submarine works.—Dikes.—Piers and abutments of bridges.—Use of the concrete.—Excavation of docks.—Submarine cables.—Wharves.

CADASTRES.—Geographical and meteorological explorations.—Military works.—Range of Artillery.—Naval constructions.—Coast Navigation.—House-building.—Cutting of wood and stone.—Frame-work.—Scaffolding.—Interior and exterior decorations. Plans, specifications and construction.—Calculation on the solidity of the materials. Stone, cast-iron and wooden pillars.—Foundations.—The working of metallic frames, roofs, &c.

Geometrical, topographical, architectural and ornamental drawing.

Second branch.—MINES AND METALLURGY.

Will form mineralogists; Geologists; mines and metallurgical engineers; Foremen in foundries and manufactures; Chemists and ore analysers.—Manufacturers.—Workers of mines and quarries; Workmen in great manufactures, blast-furnaces, the fabrication of Bessemer and Viger steel, laminated iron, rails, &c.

Chemical analysis of rocks, minerals and ores. Assaying of ores. Analysis of metallurgical produce.

Mining industries.—The working of mines and quarries. Extraction, machines to be used: Windlass, suction-pumps, ventilation, consolidation of vaults, mines, ore-mines, quarries, wells, artesian wells, and the boring of wells.

Marble, building stone, slate, lime and lime-stone, sand-stone, granite, plaster, coal.—Peat, lignite.—Charcoal.—Sea and rock salts. (Extraction and preparation of these substances.)—Extraction of iron and its ores.—Blast-furnaces.—Cast-iron.—Foundries; Moulding, fu-

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sion, casting.—Refining and puddling.—Shingling and rolling.—Natural, blistered, cast, puddled and Bessemer Steel.

Rolling-Mill.—Drawing-frame.—Magnetic iron and wires.—Rails. Tin and galvanized iron.

Extraction of copper, lead, pewter, zinc, gold, silver, mercury, aluminium.—Study of the ores of these metals.—Fabrication of brass and bronze.—Casting of bronze.—lead pipes.—Sheet zinc.—Drift zinc.

Plating in tin and zinc.—Cupellation.—Divers alloys.—When an industry offers advantages or when it does not: Proximity of coal mines and easy means of transportation.

Foreign competition.—Labor.—Establishment of blast-furnaces and foundries.

Third Branch.—MECHANICS AND THE WORKING OF METALS.

Will form Mechanics, Mechanic-engineers; Foremen for manufacturing, workshops, &c. Constructors of machines, of instruments of precision; locomotive-drivers and steamboat engineers. Draftsmen in locomotive and steam-engine works, manufactures, railway repair shops; employees in forges, gas companies, and the administration of the water-works.

Mechanical drawing, Machines: Lever, scales, inclined plane pulleys, winches, crane, capstan, toothed-gearing, eccentrics. Transmission and transformation of motion. Clocks, Powers, hydraulic powers, paddle-wheels. Turbine. Steam and suction pumps. Water and wind mills. Hot-air machines.

Steam-engines, boilers, tubular boilers.—Safety apparatus. Cylinders, pistons, slide-valves and eccentrics. High and low pressure, with or without condensation. Fly-wheels and governors. Stationary machines: fixed and oscillating cylinders. Portable machines. Locomotives, engines. Different systems. Steam-boat engines, screw, &c.

Complete study of mechanism; calculation of the different parts; horse-power; produce of machines; conditions of resistance; durability.

Preparatory industries: the working of metals; different tempers of steel, bronze, &c. Construction of machines.—Flat and round pieces.—Lathe, planing and boring machines, vices, &c. Straight, circular and ribbon saws.—Iron and brass boilers.—Hardware: Nails, files, saws, &c. Locksmith work, cutlery, swords, fire-arms, &c. Cannons, shells, rifles. Casting of cannons and bells. Boring. Farming implements.

Iron-framing.—Suspension bridges—water and gas pipes—Coinage. Musical and mathematical instruments: scientific apparatus, etc.—

Electro-plating—Art and furniture bronzes—Ornamental Zines.—Artistic cast-iron.—Saw-mills, spinning-mills, flour-mills.—Sewing-machines.—Agricultural machines.—Calculation on the cost, durability and resistance. Specifications and designs.

Fourth Branch.—DIVERSE INDUSTRIES. PRODUCTIONS.

Will form chemists and druggists; mechanics; tradesmen and merchants. Foremen for spinning, paper, soap, candle and dye manufactures. Foremen for glassworks and sugar refineries; distillers, draftsmen, engravers, lithographers, carvers, and employees in these different branches, medical students, naturalists, &c.

Botany, Mineralogy, Agriculture :—analysis of the different soils; manure, guano, &c. Organic and inorganic chemistry. Quantitative and qualitative analysis.

Preparatory industries: Manufacturing of chemical produce. Powder, acids, disinfectants.—Medical matters.—Fecula and starch factory. Soda and potash.—Oil and Soap.—Lighting apparatus: Candles, gas, gas manufactures; mineral oils; electric light. Fuel: Coal, wood, peat. Preservation of wood, hides, leather, tanning; currying; tawing; shammy; gelatine; glue; vegetable and mineral dye-stuff. India-rubber; gutta-percha; vulcanisation.—Fabrication of crockery-ware: porcelain, earthen ware.—Crystals, glass, looking-glasses, bottles; goblets. Lime, cement, mortar, &c.

Alimentation: Flour-mills: flour; bread; alimentary matters. Fabrication and refining of cane, beet and maple sugar. Confectionery.—Chocolate.—Coffee.—Tea.—Butter and Cheese. Preservation of alimentary substances: Pickling or Salting of fish and meat; Appert's process; vegetables, fruits, and meat in cans. Falsification of alimentary substances: assays with re-agents and microscopic examination.

Liquors: Wine, beer, cider, brandy, alcohol, other liquors. Distilleries.—Vinegar.

Clothing.—Spinning of silk, flax, hemp, jute, cotton and wool.—Hosiery.—Bleaching.—Dyeing.—Printing and preparing tissues. Fabrication of cloth and clothing. Hat, shoe and glove making. Fabrication of pins, needles, buttons, brushes, jewels, plated-ware, &c.

Paper and pasteboards; metallic pens, pencils. Printing, typography, Stereotyping. Engraving and lithography; Chromolithography. Binding, Colored paper.—Cabinet making.—Artistic drawing.—Photography, Carving, Telegraphy.—Production of merchantable goods.

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BRANCHES OF STUDY.

The Scientific and Industrial course will comprise three years study.
The following list contains all the branches of the course irrespective of their proper order.

MATHEMATICS.

Arithmetic (Roots, progressions, logarithms.)
Algebra.
Theoretical Geometry.
Plane and Spherical Trigonometry.
Transcendental and Analytical Geometry.—(Conic Sections.)

PRACTICAL GEOMETRY.

Geodesy.
Surveying and the drawing of plans. Chain, Square, Compass.
Graphometer. Graphic operations.
Levelling.
Topographical and hydrographical operations.
Subterraneous Surveying.
Public roads, Canals, Railroads, Tunnels.

PHYSICAL SCIENCES.

Natural Philosophy.
Mechanism of fluids and solids. (Hydrostatics.)
Acoustics.
Optics.
Caloric.
Electricity.
Gravity. Astronomy.
Meteorology.

NATURAL SCIENCES.

Natural History.
Zoology.
Comparative anatomy.
Physiology.
Palæontology.
Botany.
Physical Geography.
Descriptive, theoretical, practical and technical Geology.
Mineralogy.
Crystallography.

PRACTICAL CHEMISTRY.

Inorganic and organic chemistry.
 Quantitative and qualitative analysis.
 Chemistry of fuel and light.
 Chemistry of building materials.
 Chemistry of sugar, liquors, fecula, victuals, textile and dyeing matters.

SPECIAL INDUSTRIES.

METALLURGY
 Blast-furnaces.
 Fuel, special metallurgy.

PRACTICAL MECHANICS AND PHYSICS.

Mechanism of solids. Friction. Specific gravity.
 Hydraulics.
 Machines.

Air, steam, electric and hydraulic powers.
 Construction and the setting of machines.
 Plans and specifications.
 Special machines.

CONSTRUCTION :
 Stability, Architecture.
 Plans and specifications.

MINES :

The sinking of wells and galleries. Ventilation. Preparation of the ores. The working of mines, drainage, &c.

DRAWING.

Linear drawing and coloring. Architectural, topographical and mechanical drawing.

Projections. Scales. Plans. Sections. Shades and penumbra.
 Structures. Linear perspective.

Cutting of stone and wood.

Ornamental drawing; heads; landscape.

FACTORY WORK.

The working of metals. Forges. Vices. Foundries. Moulding.
 Manner of working wood.

LITERATURE.

French and English literature.

Philosophy.

Political economy.

History.

RELIGIOUS INSTRUCTION.

GENERAL VIEW OF THE COURSE.

As already mentioned, the course will embrace three years study. The first two years will be specially devoted to theoretical and general studies.

The pupil wishing to follow this course must previously to his admission, undergo a satisfactory examination in the branches enumerated below.

(N. B.—These branches form a part of the programme of the second year of the Commercial Course.)

Students shall be examined twice a year. The examination, if satisfactory, will entitle them to advance to the next higher course. Diplomas of capacity will also be delivered.

It is obvious that the studies of the first and second years shall be somewhat mixed together: the same general studies being equally necessary for all. At the end of the first year, the pupil may choose whatever branch he desires to study in a particular manner.

(See the synoptical table on the last page of this programme.)

ADMISSION EXAMINATION.

The following branches will form the matter of the admission examination.

French and English literature.

ARITHMETIC: Decimal and vulgar fractions.

Weights and measures of Canada and neighboring countries.

METRICAL SYSTEM. (Elementary notions.)

PROPORTION. Extraction of the square and cube roots.

ALGEBRA: Properties of numbers. Addition, subtraction, multiplication, division; Algebraic fractions. Simple equations as far as powers, roots and quadratics.

GEOMETRY: The four first Books of Euclid, Davies or Legendre. General notions of the construction of figures. Properties of the right-angled triangle. Evaluation of surfaces and solids (Practical Problems.)

PHYSICAL and POLITICAL Geography of America and Europe.

WELL-EXECUTED linear drawing.

GENERAL NOTIONS of natural history and the sciences.

HISTORY of Canada.

COURSE.

First Year. (*Scientific Class.*)

BRANCHES.

(1. Civil Engineering—2. Mines and metallurgy—3. Mechanics and the working of metals—4. Diverse industries. Productions.)

ARITHMETIC: Review of the metrical system, complex numbers, extraction of square and cube roots. Arithmetical and Geometrical Progressions. Calculation of logarithms.

ALGEBRA: Review of examination matters. Powers and roots. Quadratics. Arithmetical, Geometrical, and Harmonical Progressions. Permutations and combinations.

DESCRIPTIVE GEOMETRY: The first six Books of Legendre. Definitions. Circle and measurement of angles. Use of the table of chords. Proportion of figures. Properties of different lines: perpendicular, parallel, chord, tangent, secant, arc, construction of scales. Construction of diagrams. Properties of the right-angled triangle. Regular polygons and measurement of the circle. Evaluation of surfaces. Equivalent figures. Plane and solid angles. Polyhedrons. Elements of surveying and levelling; measurement of heights and surfaces. Projections. Graphical and numerical Problems.

GEOGRAPHY AND GEOLOGY: Physical Geography of the earth. Meteorology and Climatology. Notions of descriptive geology. Stratum of different soils.

NATURAL HISTORY: Division of beings. Comparative anatomy. Classification of animals. Character of each class, species, &c.

BOTANY: Flora and Fauna of different continents.

NATURAL PHILOSOPHY: Elementary notions. General properties. Elementary calculations. Attraction. Hydrostatics. Gas. Elements of Acoustics. Caloric. Conductibility; radiation. Light. Static electricity.

ELEMENTS OF MECHANICS: Forces, motion. Resultant power. Equilibrium. Gravity. Lever. Scales, and dynamometers. Pendulum. Inclined plane and pulleys.

CHEMISTRY: Elementary notions. Classification and formulas. Metals and metalloids. Organic Chemistry.

LINEAR and ornamental drawing. Architectural drawing. Projections of different parts of machines, by means of coloring.

PHILOSOPHY. Literary Compositions.

HISTORY.

BRANCHES.

1. (*Civil Engineering.*)

TRANSCENDENTAL and analytical Geometry. Conic sections. The last two Books of Legendre. The sphere. The three round bodies. Plane and Spherical Trigonometry. Geodesy. Survey. Graphical operations on the ground. Underground surveying. Levelling. Architecture.

NATURAL SCIENCES: Review of the studies of the first year (comparative anatomy and botany). Physiology. Paleontology. Geology: theoretical Geology. Physical history of a planet. Mineralogy.

PHYSICAL SCIENCES: Calculation. Gravitation and Astronomy. Density. Caloric; expansion of solids, liquids and gases; calorimetry; pressure of steam. Optical instruments. Dynamic electricity.

INORGANIC CHEMISTRY and its applications. Crystallography. Organic chemistry.

PRACTICAL MECHANICS: Mechanism of solids and fluids. Hydraulics. Laws of the running of fluids in pipes. Velocity of currents. Powers. Hydraulic powers. Hot-air engines. Steam-engines.

POLITICAL ECONOMY AND HISTORY.

LINEAR DRAWING: Topography. Coloring. Architectural projections from sketches. Scales. Shades. Manner of cutting stone and wood. Pen and ink drawing.

2. (*Mines and Metallurgy.*)

GEOMETRY. Civil Engineering course.

NATURAL SCIENCES. " "

GEOLOGY. " "

PHYSICAL SCIENCES. " "

CHEMISTRY. " "

Assays of minerals. Chemistry of fuel.

MECHANICS. Civil Engineering Course.

POLITICAL Economy, and History.

TOPOGRAPHICAL and mechanical drawing

FACTORY WORK. Moulding.

3. *Mechanics and the working of metals.*

GEOMETRY. Civil Engineering Course.

NATURAL SCIENCES. " "

GEOLOGY. " "

PHYSICAL SCIENCES. " "

CHEMISTRY. Civil Engineering Course.

MECHANICS. " "

Calculation of the several parts of machines. Sections.

POLITICAL ECONOMY AND HISTORY.

MECHANICAL DRAWING from sketches and organs of machines. Scales. Coloring. Artistic and ornamental drawing. Factory work.

4. *Diverse industries. Productions.*

GEOMETRY. Civil Engineering Course.

NATURAL SCIENCES " "

GEOLOGY.

PHYSICAL SCIENCES.

CHEMISTRY. Civil Engineering Course. Assays and analysis in organic chemistry. Industrial and practical chemistry.

MECHANICS. Civil Engineering Course.

POLITICAL ECONOMY AND HISTORY.

LINEAR and artistic drawing. Pen and ink drawing.

FACTORY and laboratory work.

Third Year.

BRANCHES.

1. *Civil Engineering.*

GEODESY. Practical Trigonometry. Work on the ground, followed by office work.

TOPOGRAPHICAL and hydrographical operations. Subdivision into lots. Levelling, &c.

STUDY AND LAYING out of roads, canals, railways, tunnels. Evaluations. Calculations on excavating and embanking.

MECHANICS: Hydraulics. Currents. Conditions for the establishment of hydraulic powers, turbines, pumps, &c.

CHEMISTRY OF FUEL.

ART OF BUILDING: Architecture. Stability. Resistance. Settling. Ventilation. History of celebrated edifices; master-pieces and wonders of architecture. Insight into the great enterprises and achievements of the present century: Suez; the Pacific railroad; Mount Genis; tubular bridges, &c.

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TOPOGRAPHY
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GEODESY.
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STUDY AND
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MINE MACHINE

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CHEMISTRY

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SPECIFICATIONS AND ESTIMATES : Reports and net earnings. Practical problems. Coloring and etching.

TOPOGRAPHICAL DRAWING : Levelling. Architecture. Cuppling or joining of wood, stone, &c. Perspective.

2. *Mines and Metallurgy.*

GEODESY. Civil Engineering Course. Geological and mineralogical excursions.

STUDY AND LAYING OUT OF PUBLIC ROADS, &c. Evaluations. Calculations on excavations.

MINE MACHINERIES. Crane. Exhaustion-pumps.

Ventilators. Machines for forges. Blasting-Machines.

CHEMISTRY of minerals and ores ; of fuel and light.

CHEMICAL reaction at high temperature. Laboratory work. Fusion, &c. &c.

Workmanship. The sinking of wells and galleries. Ventilation. Preparation of the ores. *Exploitation*. Drainage. Metallurgy. Blast-furnaces. Fuel. Casting and moulding. Puddling, &c. History of the different ways of working mines. Mines in actual operation. Great manufactures of America, England and France.

SPECIFICATIONS AND ESTIMATES. Practical problems on the net returns.

FACTORY WORK. Metals. Forges. Visits to foundries.

3. *Mechanics and the Working of Metals.*

CHEMISTRY of metals and alloys ; building materials, fuel, light, &c.

METALLURGY. Casting. Moulding. Electro plating. Gilding and silvering.

STUDY AND SKETCHING of machines and component parts. Study of special machines. Calculation of their different pieces. Construction and setting steam-engines, mills ; machines driven by water, wind, and electricity. Locomotives. Repairs and inspection of engines, boilers, &c.

HISTORICAL view of machines, particularly of steam-machines. Master-pieces of machinery. Recent ameliorations and discoveries.

PROBLEMS on the durability and resistance of machines and boilers. Practical problems on the results obtained. Friction. Loss of heat.

FACTORY WORK. The working of metals. Construction of machines. Laboratory work.

MECHANICAL DRAWING.

4. *(Diverse industries. Productions.)*

QUANTITATIVE AND QUALITATIVE ANALYSIS. Chemistry of fuel. Light. Building materials. Potash. Soda. Soap. Gas. Gelatine. Dye-stuffs

and chemical produce. Glass and crystals. Sugar. Alcohol. Textile matters. Medical matters.

INDUSTRIES : Productions. Manufactures. Study of special industries. Industries peculiar to such and such countries. Whence come the merchantable productions.

FACTORY AND LABORATORY WORK. Manipulation of re-agents. Fabrication. Linear and artistic drawing. Pencil and pen drawing, Water-color. Chromo. Engraving. Modelling. Carving, &c.

NOTE.—As may be seen by the foregoing Programme, practical work is closely connected with theoretical studies, together with geological excursions, geodesical works, visits to manufactures, foundries, &c. Factory and laboratory work commences during the second year of the course; in the third it takes an important place. The pupils will work wood and metals—sketching in wood machinery which they will afterwards execute in metals. They shall have at their disposition forges, crucibles, lathes, vices, &c.; and, as in the special schools of England and France, will be able to construct complete steam-engines.

They shall have also the advantage of the use of re-agents and instruments of a vast laboratory. Finally, during the summer season, a series of topographical operations shall be directed by one or several professors of the establishment.

We respectfully submit our programme to the Directors of classical and Commercial Colleges; and to young men not destined for the sacred ministry we present advantages which will open to them a career suiting the taste and aptitudes of many.

The liberal professions, such as lawyers, notaries and physicians are already overcrowded; and, nevertheless, for want of any other pursuits, a large number of young men study law or medicine. Whereas in following the course we now open, a young man can embrace the useful, honorable and often brilliant careers of civil engineering, mechanism and industry.

This work we present as eminently useful to the greater part of our youth, and above all, as eminently desirable for a country that is actually obliged to seek in foreign lands for hands and genius to direct its rising and fast-increasing industries.

It is a patriotic work which we submit to the patriotism of our countrymen.

PROGRAMME

FOR THE ADMISSION OF CANDIDATES.

FRENCH AND ENGLISH LITERATURE.

ARITHMETIC: Decimal and vulgar fractions. Weights and measures of Canada and neighboring countries. Metrical system. Proportion. Extraction of Square and Cube roots.

ALGEBRA: Properties of numbers. Addition. Subtraction. Multiplication. Division. Algebraic fractions. Simple Equations as far as radicals and quadratics.

GEOMETRY. The first four Books of Euclid, Davies or Legendre. General notions on the construction of figures. Properties of the right-angled triangle. Evaluation of surfaces and Specific gravity of solids. (Practical Problems.)

PHYSICAL AND POLITICAL Geography, particularly of America and Europe.

WELL-EXECUTED linear drawing.

GENERAL NOTIONS of natural history and the Sciences.

The examination will be both oral and written. The questions on the following branches may be either oral or written: Arithmetic, Algebra and Geometry.

Questions in Geography, natural history and the Sciences, oral only; French and English literature, written.

The model for linear drawing will always be simple enough to allow its being executed in a short time. The precision of measures and the distinctness of the lines will suffice to decide. The requisite knowledge of the Sciences will be very elementary; but on the motion of the earth; the use of common metals, plants, animal species, &c. examples shall be required.

A failure in Geometry, Arithmetic or Algebra will be sufficient to justify a refusal of admission.

Synoptical Table

ON THE BRANCHES OF MATHEMATICS, PHYSICS, AND ASTRONOMY, IN THEIR RELATION TO THE HISTORY OF THE HUMAN MIND, AND TO THE PROGRESS OF SCIENCE.

Mathematics. Calculations on various subjects, etc. their organs. Study of spectral lines.
 Scales of the history of wells, galleries. Evaluations. Calculations. elines. Calculation of the different

Synoptical Table

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| <p>ON THE BRANCHES OF SCIENCE AND ARTS, AND THEIR APPLICATIONS TO THE ARTS AND MANUFACTURES.</p> <p>Study of the digging of wells, galleries. Evaluations. Calculations on excavating.</p> | <p>HYDRAULICS: Water currents. Conditions for the establishment of hydraulic powers, turbine, pumps, &c.</p> | <p>CHEMISTRY OF MINERALS and ores, of fuel, light. Chemical reactions at high temperature. Laboratory work. Fusion, &c.</p> | <p>Work: Shops. Digging of wells and galleries. Ventilation. Preparation of the ores. <i>Exploitation</i>. Drainage, Metallurgy. Blast-furnaces, fuel, casting and moulding. Puddling, &c.</p> | <p>CONSTRUCTION and setting of steam machines, mills, machines driven by water, wind or electricity. Locomotives. Repairs and inspection of machines, boilers, &c.</p> | <p>FACTORY WORK: The working of metals. Construction of machines. Laboratory work.</p> | <p>FACTORY AND LABORATORY WORK. Manipulation of re-agents. Fabrication.</p> | <p>PHOTOGRAPHY: Telegraphy. Electro-plating.</p> | <p>INDUSTRY: Productions. Manufactures. Study of special industries.</p> | <p>HISTORY of inventions and discoveries. Development of different industries. Industries peculiar to such and such countries. Places whence come merchantable produce.</p> |
| <p>ART OF BUILDING: Architecture. Stability. Resistance. Settling. Ventilation.</p> | <p>HISTORY of remarkable edifices: master-pieces and wonders of architecture. Insight into the great enterprises and achievements of the present century: Suez; the Pacific; Mt. Genis; Tubular bridges, &c.</p> | <p>SPECIFICATIONS AND ESTIMATES: Produce and returns. Miscellaneous practical problems. ETCHED AND COLORED TOPOGRAPHICAL DRAWING. Levelling. Architecture. Joining of wood, stone. Perspective.</p> | <p>SPECIFICATIONS AND ESTIMATES: Practical problems on the proceeds. FACTORY WORK: Metals. Forges. Visits to foundries.</p> | <p>MECHANICAL DRAWING.....</p> | <p>LINEAR AND ARTISTIC DRAWING. Pencil and pen drawing. Water-colors. Chromos. Engraving. Modelling and carving.</p> | | | | |

Synoptical Table

OF THE BRANCHES STUDIED DURING THE THREE YEARS OF THE SCIENTIFIC COURSE.

| | Civil Engineering. | Mines & Metallurgy. | Mechanics and the working of Metals. | Diverse industries. Productions. |
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| 1 st Year. | <p>ARITHMETIC: Review of the metrical system and complex numbers; extraction of square and cube roots. Arithmetical and geometrical Progressions. Calculation of Logarithms.</p> <p>ALGEBRA: Review of the examination matters. Powers and roots. Quadratic Equations. Arithmetical, geometrical and harmonical progressions. Permutations and Combinations.</p> <p>DESCRIPTIVE GEOMETRY: The first six books of Legendre. Definitions. Circle and measurement of angles. Proportion of figures. Regular polygons and measurement of the Circle. Plane and solid angles. Polyhedrons. Elements of surveying and levelling. Measurement of heights and distances. Projections. Graphical and numerical Problems.</p> <p>GEOGRAPHY AND GEOLOGY: Physical geography of the earth. Meteorology and climatology. Elements of descriptive Geology. Stratum of soils.</p> <p>NATURAL HISTORY: Division of Beings. Comparative anatomy. Classification of animals. Characters of each class, species, &c. Botany: Flora and Fauna of different continents.</p> <p>NATURAL PHILOSOPHY: Elementary notions. General properties. Easy calculations. Attraction. Hydrostatics. Gases. Elements of acoustics. Caloric; conductivity; radiation. Light. Static electricity.</p> <p>CHEMISTRY: Elementary notions. Classification and formulas. Metals and metalloids. Organic chemistry.</p> <p>ELEMENTS OF MECHANICS: Forces and motion. Resultant power. Equilibrium. Gravity. Lever, scales and dynamometers. Pendulum. Inclined plane and pulleys.</p> <p>LINEAR AND ORNAMENTAL DRAWING: Architectural drawing. Colored projections of organs of machines.</p> <p>PHILOSOPHY AND LITERARY COMPOSITIONS.</p> <p>HISTORY.</p> | | | |
| Scientific Class. | | | | |
| 2 nd Year. | <p>TRANSCENDENTAL AND ANALYTICAL GEOMETRY: Conic sections. The last two books of Legendre. The sphere. The three round bodies. Plane and spherical Trigonometry. Geodesy. Plans. Graphical operations on the ground. Underground surveying. Levelling. Architecture.</p> <p>NATURAL SCIENCES: Review of the branches studied during the first year (comparative anatomy and botany). Physiology. Palaeontology.</p> <p>GEOLOGY: Theoretical geology. Physical history of a planet. Mineralogy.</p> <p>PHYSICAL SCIENCES: Calculations. Gravitation and astronomy. Density. Caloric: expansion of solids, liquids and gases; calorimetry; tension of steam. Optical instruments. Dynamic electricity.</p> <p>PRACTICAL MECHANICS: Mechanism of fluids and solids. Hydraulics. Law of the running of fluids in pipes. Velocity of water currents. Power: hydraulic, hot-air and steam drivers.</p> | <p>INORGANIC CHEMISTRY and its applications. Crystallography. Organic chemistry. Assays of minerals. Chemistry of fuel.</p> <p>POLITICAL ECONOMY AND HISTORY... LINEAR DRAWING: Topography. Coloring. Architectural projections from sketches. Scales. Shades. Hewing of stones and wood cutting. Pen and ink drawing.</p> <p>FACTORY WORK AND MOULDING....</p> | <p>PRACTICAL MECHANICS: Calculations on the different pieces of machines. Sections. INORGANIC CHEMISTRY and its applications. Crystallography. Organic chemistry.</p> <p>POLITICAL ECONOMY AND HISTORY..... MECHANICAL drawing of organs of machines from sketches. Scales. Coloring, ornamental and artistic drawing.</p> <p>FACTORY WORK.</p> | <p>INORGANIC CHEMISTRY and its applications. Crystallography. Organic chemistry. Assays and analysis of organic chemistry. Industrial and practical chemistry.</p> <p>POLITICAL ECONOMY AND HISTORY.... LINEAR AND ARTISTIC DRAWING. Pen and ink drawing.</p> <p>FACTORY AND LABORATORY WORK...</p> |
| 3 rd Year. | <p>GEODESY. Practical Trigonometry. Work on the ground followed by office work. Topographical and hydrographical operations. Division of the ground. Levelling, &c.</p> <p>Geological and mineralogical excursions.</p> <p>STUDY AND LAYING OUT public roads, canals, railroads, tunnels. Evaluations. Calculations on excavations and embankments, &c. Study of the digging of wells, galleries. Evaluations. Calculations on excavating.</p> <p>HYDRAULICS: Water currents. Conditions for the establishment of hydraulic powers, turbine, pumps, &c.</p> <p>CHEMISTRY of building materials and fuel.</p> <p>ART OF BUILDING: Architectural. Stability. Resistance. Settling. Ventilation.</p> <p>HISTORY of remarkable edifices: master-pieces and wonders of architecture. Insight into the great enterprises and achievements of the present century: Suez; the Pacific; Mt. Conis; Tubular bridges, &c.</p> <p>SPECIFICATIONS AND ESTIMATES: Produce and returns. Promiscuous practical problems.</p> <p>ETCHED AND COLORED TOPOGRAPHICAL DRAWING. Levelling. Architecture. Joining of wood, stone. Perspective.</p> | <p>MINE MACHINERIES. CRANES. Exhaustion-pumps. Ventilators. Forges machines. Blasting machines.</p> <p>CHEMISTRY OF MINERALS and ores, of fuel, light. Chemical reactions at high temperature. Laboratory work. Fusion, &c.</p> <p>Work: Shops. Digging of wells and galleries. Ventilation. Preparation of the ores. Exploitation. Drainage. Metallurgy. Blast-furnaces, fuel, casting and moulding. Puddling, &c.</p> <p>HISTORICAL view of the different ways of working mines. Mines in actual operation. Great manufactures of America, England and France.</p> <p>CERTIFICATIONS AND ESTIMATES: Practical problems on the proceeds.</p> <p>FACTORY WORK: Metals. Forges. Visits to foundries.</p> | <p>CHEMISTRY of metals and alloys, of building materials, fuel, light, &c. Metallurgy. Casting. Moulding. Electroplating and its applications. Gliding and silvering.</p> <p>STUDY AND SKETCHING of machines and their organs. Study of special machines. Calculation of the different pieces.</p> <p>HISTORY of machines, specially of steam-machines. Master-pieces of machinery. Recent ameliorations and discoveries.</p> <p>PROBLEMS on the durability and resistance of machines and boilers. Practical problems on the amount of work obtained. Friction. Loss of heat.</p> <p>CONSTRUCTION and setting of steam machines, mills, machines driven by water, wind or electricity. Locomotives. Repairs and inspection of machines, boilers, &c.</p> <p>FACTORY WORK: The working of metals. Construction of machines. Laboratory work.</p> <p>MECHANICAL DRAWING.....</p> | <p>QUANTITATIVE and qualitative analysis. Chemistry of fuel. Light. Building materials. Feenla. Soda. Soap. Gas. Gelatine. Dye-stuffs and chemical produce. Glass and crystals. Sugar. Alcohol. Textile matters. Medical matters.</p> <p>HISTORY of inventions and discoveries. Development of different industries. Industries peculiar to such and such countries. Places whence come merchantable produce.</p> <p>INDUSTRY: Productions. Manufactures. Study of special industries.</p> <p>PHOTOGRAPHY: Telegraphy. Electroplating.</p> <p>FACTORY AND LABORATORY WORK. Manipulation of re-agents. Fabrication.</p> <p>LINEAR AND ARTISTIC DRAWING. Pencil and pen drawing. Water-colors. Chromos. Engraving. Modelling and carving.</p> |

