CALENDAR

OF

DALHOUSIE COLLEGE AND UNIVERSITY,

HALIFAX, NOVA SCOTIA.

FOUNDED - - - 1820.
REORGANIZED - 1863.

1881-82.

UNIVERSITAS DALHOUSIANA
HALIFAX, N. S. A. D. MDCCCXVIII.

CONTENTS.

RECENT DONATIONS.

THE MUNRO FUNDS.

Regarding the recent benefactions of George Munro, Esq., of New York, to Dalhousie College, the Governors desire to place on permanent record their high sense of his enlightened public spirit and his unparalleled munificence. Two years ago Mr. Munro placed in the hands of the Governors the funds necessary for the endowment of a Professorship of Physics, enabling them thus to meet the more clamant needs of the undergraduate curriculum. This year he has reinforced their obligations and their gratitude to him by providing the means for the establishment of a Professorship of History. To connect the donor's name for all time with the favorite endeavor by him, the Governors have decided that these chairs shall be known as the George Munro chairs of Physics and History respectively. To Mr. Munro it is owing that Dalhousie College, in the departments of Arts and Science, now stands furnished with educational forces of which no college in these Provinces, and few in the Dominion, can offer the equivalent.

Mr. Munro's liberality has not stopped with these desired additions to the teaching faculties of the College. The Exhibitions and Bursaries which he has offered at the beginning and also at the middle of the Arts course, hold out to capable students pecuniary inducements superior, so far as the Governors are aware, to any not only in this Dominion but in the United States as well, and place Dalhousie College in this respect on a level with the old and richly endowed universities of Europe. By these facilities and inducements, offered at the youth of our country as an incentive and an aid to higher education, and distributed to different localities, so as to stimulate and improve the education of our high schools and academies, Mr. Munro has not only, in a manner without precedent or parallel, made himself the benefactor of our youth, but placed the public under lasting obligation. The Governors heartily thank him for coming to their help in the work of building up a great unsectarian educational centre in Nova Scotia; for seeking the good of his native land by so generously providing for the quickening of its intellectual life, and for the free, unsolicited and unostentatious manner in which he has made his contribution to what must be regarded by all as an institution essential to the true and permanent welfare of the Maritime Provinces.

6

ENDOWMENT FUND.

Hon. Sir William Young	$1,000	Hon. Robert Boak	$1,000
W. J. Stairs	1,000	Alison Brown	500
Hon. Stayley Brown	1,000	Peter Jack	500
John Gibson	1,000	Hon. Jeremiah Northup	500
John F. Stairs	1,000	George Lawson	500
William F. West	1,000	Alex. McLeod	500
Thos. A. Ritchie	1,000	D. C. Fraser	500

SCIENTIFIC APPARATUS FUND.

Hon. Sir William Young	$500	Robert Morrow	$ 50
Alison Association Dal. College	150	Peter Jack	50
W. J. Stairs	100	John S. Maclean	50
Hon. Jeremiah Northup	100	A Friend	50
Thos. Bayne	100	Thos. A. Brown	50
Alex. McLeod	100	Simon L. Co.	25
John Gibson	100	James Thompson	25
W. F. West	100	John Gibson	25
James F. Avery & Co.	100	Prof. Lawson	25
Hon. Robert Boak	100	Smaller subscriptions amounting	
Hon. J. W. Ritchie	50	to	$45
Devill & Miller	50		

FIVE YEARS' FUND—1870-75.

Principal Grant, D.D.	$500	J. Donaldson	$100
J. Duvit	500	A. K. Mackinlay	100
W. J. Stairs	500	T. A. Ritchie	100
Sandford Fleming	500	E. Smith	100
Hon. Sir William Young	500	R. K. Shiremings	100
Medical Faculty	300	Hon. Jodge Ritchie	80
R. Boak, Jr.	250	Prof. Lawson	100
Dr. Avery	250	J. W. Carmichael	100
A. Burns	225	C. D. Hunter	100
Sir Charles Tupper	200	James Scott	50
Dr. Ross	200	Robert Boak	50
Mr. Forsyth	200	J. J. Bremner	50
Prof. Johnson	200	Lawson, Harrington & Co.	50
Prof. DeMill	200	Prof. Lyell	50
Prof. Lawson	200	Hon. S. L. Shannon	50
John S. Maclean	150	L. P. Fairall	50
James Thomson	200	W. H. Neal	50
Robert Morrow	200	H. W. Fraser	50
J. Stairs	150	J. B. Duffus	50
Hon. Jeremiah Northup	150	G. Thomson	50
Joseph Northup	100	J. Jack	50
B. H. Collins	100	Smaller subscriptions amounting	
Alex. McLeod	100	to	$260

UNIVERSITY CALENDAR, 1881-82.

1881. WINTER SESSION.

Oct.	5, Wo.	Meeting of Governors.
	12, W.	Meeting of Senate, 4 P. M.
	18, Mo.	Winter Session begins—Examinations for Exhibitions and Bursaries, 10 A. M.; Latin, 2 P. M., Geometry.
	20, Tu.	Examinations for Exhibitions, &c. continued—10 A. M., Algebra; 2 P. M., Greek, French and Gaelic.—Matriculation Examinations, 10 A. M., Mathematics; 2 P. M., Classics.—Supplementary Examinations, 10 A. M.
	26, Wo.	Examinations for Exhibitions, &c., and for Matriculation, &c., concluded.
	27, Tu.	Meeting of Senate, 10 A. M.—Matriculation, Registration and Issue of Library Tickets, 1 P. M.
	21, Mo.	Classes meet and Class Tickets issued.—Entrance Examination in Classical History and Geography, 8 P. M.
Nov.	1, Tu.	Meeting of Governors, 8 P. M.—Opening Address by Prof. Forrest.
	9, Wo.	Final Matriculation and Supplementary Examinations, 1 P. M.
	15, Tu.	Reading of Senate and Faculty of Session, 8 P. M.
Dec.	20, Tu.	Meeting of Senate, 4 P. M.
	23, Fr.	No session.—Christmas Vacation begins.

1882.

Jan.	3, Tu.	Meeting of Governors.
		Class lectures resumed.—Supplementary Examinations in Classical History and Geography, 2-8 P. M.
	10, Tu.	Meeting of Senate and Faculty of Session, 4 P. M.
Feb.	7, Tu.	Meeting of Senate, 4 P. M.
	10, Wo.	Ash Wednesday.—No lectures.
March	1, Wo.	Last day for receiving M. A. Theses.
	21, Tu.	Meeting of Senate, 4 P. M.
April	4, Tu.	Meeting of Governors.
	5, Wo.	Last day of lectures.—Meeting of Senate, 4 P. M.
	7, Fr.	Good Friday.
	12, Wo.	Sessional Examinations begin.—10 A. M., Latin; 2 P. M., English Language and History of Classics.
	13, Th.	10 A. M., Logic, Metaphysics, Ethics, Mathematics and Ethics.
	14, Fr.	10 A. M., Greek; 2 P. M., Greek and History of Classics.
	17, Mo.	10 A. M., Geology, Botany, Zoology, History Physics and History Chemistry.
	18, Tu.	10 A. M., Mathematics, Mathematical Physics and History Chemistry; 2 P. M., Mathematics, Experimental Physics and History Chemistry.
	19, Wo.	10 A. M., Mechanical History; 2 P. M., Honour Classics and Honour Mathematics.
	20, Th.	10 A. M., French and Gaelic; 2 P. M., French, German, Hebrew and Modern Chemistry.
	21, Fr.	10 A. M., Chemistry, Honour Classics and Honour Mathematics.
	22, Sa.	10 A. M., Last day for returning books to the Library.
	25, Tu.	10 A. M., Meeting of Senate.
	26, Wo.	Meeting of Governors, 10 A. M.—President of Examinations begins.
	28, Fr.	Meeting of Senate, 10 A. M.

SUMMER SESSION.

May	1, Mo.	Summer Session begins.—Registration of students, 10 A. M.—Meeting of Senate, 11 A. M.—Class Tickets issued. 11 M.
	24, Wo.	Queen's Birthday. No lectures.
June	21, Wo.	Shorter settled. First—Scholars.
	20, Tu.	Sessional Examinations.
	28, Wo.	Do. Do.
	29, Th.	Sports in session.—Session closes.
	30, Fr.	Meeting of Governors.
July	4, Tu.	Meeting of Governors.

Dalhousie College & University.

BOARD OF GOVERNORS.

Hon. Sir William Young, La. D., Kt, late Chief Justice, *Chairman.*
Hon. Sir Charles Tupper, K. C. M. G., C. B., M. D., M. P.
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George Thomson, Esq., *Treasurer.*
William M. Doull, Esq., *Secretary.*

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Rev. William Lyall, La. D.
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James Gordon MacGregor, M. A., D. Sc., F. R. S. E., *Recording Secretary.*
Rev. John Forrest.

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REV. JOHN FORREST, *George Munro Professor of History.*

PROFESSOR LIECHTI, M. A., *Tutor in Modern Languages.*

FACULTY OF SCIENCE.

THE PROFESSORS OF THE FACULTY OF ARTS, WITH

JAMES LIECHTI, M. A. (Vind.), *Professor of Modern Languages.*

REV. DAVID HONEYMAN, D. C. L., F. S. A., *Professor of Geology and Palæontology.*

Librarian :

PROFESSOR FORREST.

Janitor :

JOHN WILSON.

REGULATIONS.

§ I.—SESSIONS.

In the Academic year there are two Sessions, a Winter and a Summer Session.

The Winter Session of 1881–2 will commence on Monday, October 24th, 1881, and end on Wednesday, April 26th, 1882.

The Summer Session of 1882 will commence on Monday, May 1st, and end on June 30th.

§ II.—ADMISSION OF STUDENTS.

Students may enter the College, as Undergraduates, with the intention of applying for a University Degree in Arts or Science; at the end of their course; or, as General Students who do not look forward to a University Degree.

The ordinary course for Undergraduates in either Arts or Science extends either over four Winter Sessions, or over three Winter Sessions with the two intervening Summer Sessions. The latter alternative is, however, contingent on arrangements to be made by the Governors. Undergraduates taking either of these courses are required to pass the Matriculation Examination for the First Year, in Arts or Science, as the case may be, (see § III.) and to take the classes prescribed for their respective courses.

Students may also complete their course in three Winter Sessions without the intervening Summer Sessions, by passing the Matriculation Examination for the Second Year in Arts or Science, as the case may be, (see § III.), and taking the usual undergraduate course for the Second, Third and Fourth Years.

The Matriculation Examinations this year will begin on October 25th, at 10 o'clock, A. M. Candidates are expected to bring their own writing materials, except paper.

General Students are not required to pass a Matriculation Examination, and may attend such classes as they choose.

No person can be admitted as an Undergraduate after ten days from the opening of the classes, without the special permission of the Senate.

Undergraduates from other Universities will, on producing satisfactory certificates, be admitted to similar standing in this University, if, on examination, they be found qualified to enter the classes proper to their year. But if their previous courses have not corresponded to the courses on which they enter in this College, they may be required by the Senate to take extra classes.

Students who have passed the Matriculation Examination at the University of Halifax, are admitted as Undergraduates without further examination, and Students who have passed the first B. A. Examination of that University, will be admitted to the standing of Undergraduates in Arts who have completed two Winter Sessions.

§ III.—MATRICULATION EXAMINATIONS.

(A) IN ARTS.

FOR THE FIRST YEAR.

The Examinations are partly oral and partly written. The subjects for entrance into the First Year of the course are :

I. IN CLASSICS.—Latin Grammar, Greek Grammar, one Latin subject, one Greek subject. The following subjects are recommended :

In Latin.—For 1881 : *Cæsar,* Gallic War, Book VI.; or *Virgil, Æneid,* Book VI.

For 1882 : *Cæsar,* Gallic War, Book VI.; or *Ovid,* Metamorphoses, Book I.

In Greek.—For 1881 : *Xenophon,* Anabasis, Book IV.

For 1882 : *Xenophon,* Anabasis, Book III.

Instead of the above, equivalents may be offered, if they be not parts of the Undergraduate course, on giving a week's notice to the Secretary of the Senate.

II. IN MATHEMATICS.—Arithmetic; Euclid's Elements of Geometry, Books I. and II.; Algebra—Simple Rules, and Simple Equations of one unknown quantity, including Surds.

III. IN ENGLISH.—Grammar; History of England; Geography; Composition.

Competitors for Munro Exhibitions and Bursaries, whose examinations are approved by the Senate, shall be exempt from further examination for Matriculation.

FOR THE SECOND YEAR.

I. IN CLASSICS.—The subjects of the Matriculation Examination for the First Year and the subjects of the First Year's course as specified in § XIV., or their equivalents.

II. IN MATHEMATICS.—The subjects of the First Year's course as specified in § XIV.

III. IN ENGLISH.—The subjects of the Matriculation Examination for the First Year.

IV. IN ROMAN HISTORY AND ANCIENT GEOGRAPHY.—As specified in §§ IV. and XIV.

(B) IN SCIENCE.

FOR THE FIRST YEAR.

I. IN MATHEMATICS.—The subjects of the Matriculation Examination for the First Year in Arts.

II. IN ENGLISH.—The subjects of the Matriculation Examination for the First Year in Arts.

III. IN LATIN OR GERMAN OR FRENCH :—

Latin.—The subjects of the Matriculation Examination for the First Year in Arts.

German.—Adler's Reader, Part I., Nos. 1–15.

French.—Voltaire's *Charles XII.,* Book I.

Grammatical questions in the modern languages based upon the passages selected.

FOR THE SECOND YEAR.

I. IN MATHEMATICS.—The subjects of the First Year's course as specified in § XIV.

II. IN ENGLISH.—The subjects of the Matriculation Examination for the First Year.

III. IN LATIN OR GERMAN :—

Latin.—The subjects required for Matriculation in the Second Year of the Arts Course.

German.—Adler's Reader, Part II., first fifteen pieces. First twenty lessons in Otto's German Grammar.

IV. IN INORGANIC CHEMISTRY.—The subjects of the First Year's course.

§ IV.—COURSES FOR DEGREE OF B. A.

COURSE OF FOUR WINTER SESSIONS.

First Year.—(1) Latin. (2) Greek. (3) Mathematics.
(4) English Language and Rhetoric.

Second Year.—(1) Latin. (2) Greek. (3) Mathematics.
(4) Inorganic Chemistry. (5) Logic and Psychology.

Undergraduates of the Second Year are required to pursue Examination
in Roman History and Ancient Geography, on the second Monday of the
Winter Session. (See § XIV.)

Third Year.—(1) Latin. (2) Mathematical Physics. (3)
Experimental Physics. (4) Metaphysics. (5) and (6) Any
two of the following; French, German, Greek.

Undergraduates of the Third Year are required to pursue Examination
in Grecian History and Ancient Geography on the second Monday of the
Winter Session. (See § XIV.)

Fourth Year.—(1) Latin. (2) Ethics and Political Economy.
(3) History. (4) and (5) Any two of the following; French,
German, Greek, Astronomy, Hebrew.

An undergraduate who takes a modern language in the Third Year
must take the same language in the Fourth Year.

COURSE OF THREE WINTER SESSIONS AND TWO SUMMER SESSIONS.

First Winter.—(1) Latin. (2) Greek. (3) Mathematics.
(4) English Language and Rhetoric.

First Summer.—(1) Latin and Greek, or Mathematics.*
(2) French or German † (3) English Literature.

Second Winter.—(1) Latin. (2) Greek (3) Mathematics.
(4) Inorganic Chemistry. (5) Logic and Psychology.

Second Summer.—(1) Astronomy, or Latin and Greek.*
(2) French or German.* (3) Ethics and Political Economy.

Third Winter.—(1) Latin. (2) Metaphysics. (3) Mathe-
matical Physics. (4) Experimental Physics. (5) and (6) Any
two of the following ; French, German, Greek.

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* The Student must take that subject of these two on which lectures are being
given.

† The Student may take whichever modern language he pleases, but he must take
the same language during both Summers.

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§ V.—COURSES FOR DEGREE OF B. Sc.

COURSE OF FOUR WINTER SESSIONS.

First Year.—(1) Mathematics. (2) Inorganic Chemistry.
(3) Rhetoric. (4) Latin or German.

If German be taken the First Year it must be taken throughout the
course ; but Latin may be taken the first two years, and German the last
two.

Second Year.—(1) Mathematics. (2) Botany. (3) Organic
Chemistry. (4) Latin or German. (5) French. (6) Either
(A) Extra Mathematics and Chemical Laboratory or (B) Class-
ical Laboratory (three extended course).

Whichever group, (A) or (B), is taken in the Second Year must be taken
in subsequent years.

Third Year.—(1) Logic. (2) Latin or German. (3) French.
(4) Geology. (5) Mathematical Physics. (6) Either (A)
Mathematics or (B) Chemical Laboratory.

Fourth Year.—(1) Latin or German. (2) French. (3)
Experimental Physics. (4) Geology. (5) Either (A) Mathe-
matics and Astronomy or (B) Organic Chemistry and Chemical
Laboratory.

COURSE OF THREE WINTER SESSIONS AND TWO SUMMER SESSIONS.

First Winter.—(1) Mathematics. (2) Inorganic Chemistry.
(3) Rhetoric. (4) Latin or German.

If German be taken the first winter session it must be taken throughout
the course ; if Latin, German may be substituted for it the third winter
session.

First Summer.—(1) Mathematics, or Logic.* (2) Botany.
(3) German. (4) Histological Laboratory.

Second Winter.—(1) Mathematics. (2) Zoology. (3)
Organic Chemistry. (4) Latin or German. (5) French. (6)
Either (A) Extra Mathematics and Chemical Laboratory or
(B) Chemical Laboratory (extended) or (C) Geology and
Chemical Laboratory.

Second Summer.—(1) Logic or Ethics and Political Econo-
my.* (2) German. (3) French. (4) Either (A) Astronomy
or (B) Chemical Laboratory and Biology, (Field, Museum and
Laboratory work).

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* The Student must take that subject on which lectures are being given.

Third Winter.—(1) Latin or German. (2) French. (3) Mathematical Physics. (4) Experimental Physics. (5) Either (A) Mathematics and Additional Mathematical Physics or (B) Organic Chemistry and Chemical Laboratory or (C) Geology and Biological Laboratory.

Whichever group, (A) or (B) or (C), is taken in the second winter session must be taken in subsequent sessions.

§ VI.—HONOUR COURSES.

Honour Courses are intended for Undergraduates whose tastes and ability lead them to prosecute special subjects of the Curriculum, and examinations of classes are granted to those studying such courses.

Honour Courses are provided in the following* departments :—(1) Classics ; (2) Mathematics and Physics ; (3) Mental and Moral Philosophy, and Political Economy ; (4) Experimental Physics and Chemistry ; (5) Botany and Geology. Instruction of an advanced kind is provided in the first two of these departments during the third and fourth winters of the Curriculum. In the fifth department summer work will be prescribed.

Examinations in these courses are held at the final examinations for Degrees, and a Student passing First or Second Class in any of the above departments obtains the Degree of Bachelor, with First or Second Rank Honours in such department. But First Rank Honours shall not be awarded to any one who has not passed First Class in the corresponding subjects of the Ordinary Course of the Fourth Year ; nor second Rank Honours to one who has not passed Second Class in the Ordinary Course.

Students studying for Honours must attend the Honour Lectures of their respective course, and their progress must be satisfactory to their Professors. Students who intend to take the Honour Course in *Mental* and *Moral Philosophy* and *Political Economy* must give notice of their intention to the Secretary of Senate before the close of the lectures of their Third Year.

No Student will be allowed to enter on an Honour Course who has not stood in the First or Second Class at the previous examination in the corresponding part of the Ordinary Course.

A Student taking an Honour Course, but failing to obtain Honours, will receive the Ordinary Degree, if his examination in the course be approved.

An Undergraduate in Arts, studying for Honours in Classics may in the Third Year omit any two and in the Fourth Year any one of the ordinary subjects of the year, provided they are not in immediate connection with his Honour Course.

An Undergraduate in Arts, studying for Honours in Mathematics and Physics may in the Third and Fourth Years omit any two of the subjects of those years, provided they are not in immediate connection with his Honour Course.

An Undergraduate in Arts, studying for Honours in Mental and Moral Philosophy and Political Economy may in the Fourth Year omit any one of the subjects of the year except Ethics.

An Undergraduate in Science, studying for Honours in Mathematics and Physics, or in Experimental Physics and Chemistry, may in the Third and Fourth Years omit any one of the subjects of those years, provided they are not in immediate connection with his Honour Course.

A candidate for Honours may defer his Honours Examination until a year after he has passed the Ordinary Examinations in the necessary subjects of the Fourth Year. But he shall not be entitled to the Degree of Bachelor until he has passed the Honours Examination.

§ VII.—FEES.

The class fee to each Professor or Lecturer is *six dollars* for the Winter Session, and *three dollars* for the Summer Session.

An Undergraduate in Arts pays only one fee during the Winter Sessions of his course to the Professors of Logic and of Physics, and to the Tutor in Modern Languages.

An Undergraduate who has completed two years of his course may attend the Classics and Mathematics during the remaining Winter Sessions of his Undergraduate course without the payment of additional fees.

An Undergraduate in Science pays during the Winter Sessions of his course only one class fee to the Professor of Physics, and only two class fees to the Professors of Chemistry, Biological Science, and Modern Languages.

A fee of *six dollars* is charged for every three months of practical work in the Chemical Laboratory. Students taking this class are required to provide their own materials, which, it they wish, will be supplied to them at first cost. The use of the larger articles of apparatus will be given in the Laboratory free of expense, and Students will be charged with breakage.

General Students pay a fee for every class they attend, and Undergraduates taking classes in addition to the prescribed Curriculum pay additional fees.

In addition to the Class Fee, there is a Matriculation Fee of *two dollars*, payable by Undergraduates at their first entrance. General Students pay a Sessional Registration Fee of *one dollar*.

Both Undergraduates and General Students are also required, at the beginning of each Winter Session, to pay a Library Fee

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* For details of subjects see p. 2 V.

of one *dollar*, which entitles to the use of the Library for the Session.

Matriculation or Registration Tickets, and Class Tickets, must be taken out before attending Lectures, no Students being allowed to enter a class without them.

The total fees of Undergraduates, who take the course of four Winter Sessions in Arts, are as follows:—

Classes of First Winter, with Library and Matriculation Fees		...$11.00
"	Second "	Fee.....................25.00
"	Third "	" 12.00
"	Fourth "	" 12.00

The total fees of Undergraduates in Science, who take the course of four Winter Sessions, are as follows:—

Classes of First Winter, with Library and Matriculation Fees		...$11.00
"	Second "	Fee.....................10.00
"	Third "	" 15.00
"	Fourth "	" 15.00

The total fees of Undergraduates in Science, who take the course of three Winter Sessions, are as follows:—

Classes of First Winter, with Library and Matriculation Fees		...$27.50
"	Second "	Fee.....................15.00
"	Third "	" 7.00

§ VIII. GRADUATION.

DEGREES OF B.A. AND B.Sc.

The Degrees of Bachelor of Arts and Bachelor of Science may be obtained by passing the proper Matriculation Examination, attending the prescribed courses of Lectures, and passing the Sessional Examinations of the several years. Undergraduates in Arts have also to pass the Entrance Examinations of the Second and Third Years, as mentioned in § IV.

The fee for the Diploma, payable before the Final Sessional Examination, is *five dollars*. The fee is returned in case of failure at the examination.

DEGREE OF M.A.

A Bachelor of Arts, of at least three years' standing, maintaining meanwhile a good reputation, shall be entitled to the Degree of Master of Arts, on producing an approved Thesis on some literary, philosophical or scientific subject.

Fee for Diploma, which must accompany the Thesis, *twenty dollars*. Thesis to be handed in on or before the 1st March.

§ IX.—REGULATIONS FOR EXAMINATIONS.

1. If any Undergraduate absent himself from any University Examination, except from such cause as may be held good by the Senate, he shall lose his Session.

2. If any Undergraduate fail to pass in any subject at the Sessional Examinations, he will be allowed a Supplementary Examination on the first Tuesday of the following Winter Session, or of a subsequent Winter Session, on giving notice to the Secretary of the Senate at least one week before the opening of such Session; but failure in more than two subjects at the Sessional Examinations will involve the loss of the Session.

3. In the case of a Student having to take a Session over again, the Senate may remit attendance on classes the examinations of which he has already passed with credit.

4. An Undergraduate who, at the end of the first year of the Four Years course, fails in more than two subjects, shall not be disqualified by Rule 2 from presenting himself for matriculation into the Three Winters course, provided he give a week's notice to the Secretary of the Senate before the opening of the Winter Session.

5. In all cases, a Student who presents himself for Supplementary Examination on any day except that specified in Rule 2, will be required to pay an extra fee of *two dollars*.

6. Undergraduates in Arts of the Second and Third Years who fail to present themselves for the Entrance Examinations in Ancient History and Geography on the second Monday of the Winter Session may, on payment of a fine of *two dollars*, and on giving notice to the Secretary of the Senate at or immediately after the opening of the Winter Session, have another day appointed them for such examinations.

7. Students are forbidden to bring any book or manuscript into the Examination Hall, unless by direction of the Examiner, or to give or receive assistance, or to hold any communication with one another at the examinations. If a Student violate this rule he shall lose his Sessional Examinations for the year;

20

and it shall be at the discretion of the Senate whether he be allowed Supplementary Examinations.

8. Students who pass the examinations in the several subjects of the respective years are arranged in three classes, First Class, Second Class and Passed, according to the merit of their answers in these subjects.

§ X. ATTENDANCE AND CONDUCT.

1. All Undergraduates and General Students attending more classes than one are required to provide themselves with caps and gowns, and to appear in academic costume at Lecture, and at all meetings of the University.

2. Attendance upon all classes of the year, except those announced as optional, shall be imperative on all Undergraduates.

3. Professors will mark the presence or absence of Students immediately before commencing the work of the class, and will note as absent those who enter thereafter, unless satisfactory reasons be assigned.

4. Absence without sufficient excuse, or lateness, or inattention, or disorder in the class room, if persisted in after due admonition by the Professor, will be reported to the Senate.

5. The amount of absence which shall disqualify for the keeping of a Session will be determined by the Senate.

6. Injuries to the building or furniture will be repaired at the expense of the person or persons by whom they have been caused, and such other penalty will be imposed as the Senate may think proper.

7. Any improper conduct on the part of a Student, whether in the College or elsewhere, may subject him to the censure of the Senate; and the Senate may fine, reprimand (either privately or in the presence of the Students), report to the parents or guardians, disqualify for competing for Prizes or for holding Certificates of Merit, or report to the Governors for suspension or expulsion.

8. Students not residing with parents or guardians must report to the Principal their places of residence with one week after their entering College, and the Principal may disallow such residence if he see good cause. Any change of residence must also be reported.

9. It is expected that every Student will attend Divine Worship regularly, in one of the city churches or chapels.

21

§ XI.—MUNRO EXHIBITIONS AND BURSARIES.

IN THE FACULTY OF ARTS.

The following Exhibitions and Bursaries are offered by George Munro, Esq., of New York, for competition at the commencement of the Winter Sessions of 1881-2, 1882-3, 1883-4:

In October, 1881, { I. Five Junior Exhibitions.
 II. Thirteen Junior Bursaries.

In October, 1882, Seven Senior Bursaries.

In October, 1883, { I. Five Senior Exhibitions.
 II. Ten Senior Bursaries.

The Exhibitions, and the Seven Senior Bursaries (1882) are each of the value of $200 per annum; the other Bursaries are each of the value of $150 per annum. Both Exhibitions and Bursaries are tenable for two years.

CONDITIONS OF COMPETITION.

1. *The Junior Exhibitions and Bursaries* are offered for competition (as limited by sections 4 and 6) to candidates for matriculation in Arts, provided they have previously neither matriculated* at any University conferring Degrees in Arts, nor appeared as candidates for those Exhibitions and Bursaries more than once.

2. *The Senior Exhibitions and Bursaries* are offered for competition to Undergraduates entering the Third Year of the Undergraduate course in Arts. Candidates must have completed two and only two years of their course in Arts either at this or at some other University,† and have matriculated within three academic years of the date of competition. Candidates from other Universities must comply with the conditions of § II.

3. *The Exhibitions are open to all candidates satisfying the conditions of sections 1 and 2.*

4. *The Bursaries* (the seven Senior Bursaries of 1882 excepted) are limited to candidates from the undermentioned districts, according to the following scheme :

Four Bursaries to District No. 1, comprising the Counties of Halifax, Colchester, Pictou and Yarmouth.

Three Bursaries to District No. 2, comprising the remaining Counties of Nova Scotia proper.

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* An exception will be made in 1881 in the case of candidates who in 1880 matriculated in the University of Halifax, or in the Science course of this University.

† Undergraduates of the University of Halifax, who have passed the First B.A. Examination, shall be regarded as having completed two years of their Arts course.

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Two Bursaries to District No. 3, viz. : the Island of Cape Breton.

Two Bursaries to District No. 4, viz : Prince Edward Island.
Two Bursaries to District No. 5, viz. : New Brunswick.

5. The district under which a candidate competes shall be determined either by the locality of the last school or academy* which he has attended for one school or academic year within the two calendar years immediately preceding (for Junior Exhibitions and Bursaries) the date of the competition, (for Senior Exhibitions and Bursaries) the date of the matriculation ; or in the event of his not having attended for a school or academic year any school or academy† within these two years, by his permanent or usual residence previously to matriculation.

6. *The Seven Senior Bursaries* of 1882 are limited to candidates from the following districts, to each of which one Bursary is allotted.

No. 1.—The Island of Cape Breton.

No. 2.—The Counties of Picton, Antigonish and Guysboro'.

No. 3.—The Counties of Colchester, Cumberland and Hants.

No. 4.—The Counties of Halifax, Lunenburg and Kings.

No. 5.—The Counties of Annapolis, Digby, Yarmouth, Shelburne and Queens.

No. 6.—New Brunswick.

No. 7.—Prince Edward Island.

CONDITIONS OF TENURE.

7. *The Junior Exhibitions and Bursaries* shall be held during two years, provided the holder (*a*) attend in consecutive years the classes proper to the first and second years of the Four Years Arts Course to the satisfaction of the Senate, (*b*) shew special proficiency in at least two† of the subjects of examination at the end of the first year, besides passing in the others, and (*c*) pass either the Sessional or the Supplementary Examinations of the second year.

8. *The Senior Exhibitions and Bursaries* shall be held during the third and fourth years of the Arts course on conditions similar to those for Junior Exhibitions and Bursaries. But in the case of an Undergraduate studying for Honours in any department, the favourable report of the Professor or Professors in that department on his Honours work in the Third Year shall be considered equivalent to special proficiency in one of the two subjects mentioned in section 7.

* A College and having University powers shall, for the purposes of this rule, be considered a school or academy.

† For the purposes of this condition Mathematics shall be reckoned as two subjects.

GENERAL REGULATIONS.

9. The annual amounts of the above Exhibitions and Bursaries will be paid in three instalments, the first on the first Monday after the opening of the classes, the second on the first Monday after the Christmas vacation, and the third on the day of the Spring Convocation, the payment of each instalment being dependent upon the fulfilment of the conditions of tenure at the date at which it becomes due.

10. Candidates are required to make application for the above Exhibitions and Bursaries by means of a printed form, to be obtained from the Principal, which must be filled up and returned to him with the necessary certificates, at least one fortnight before the date of the competition.

11. A certain standard of answering at the Examinations, fixed by the Senate, will be required for obtaining any of the above Exhibitions or Bursaries. A higher standard will be required for Exhibitions than for Bursaries.

12. The Senate shall have in all cases the right of deciding as to the fulfilment of the above rules and conditions.

13. The Examinations for the Exhibitions and Bursaries which are offered for 1881 will begin on October 24th.

SUBJECTS OF EXAMINATION.

14. The subjects of examination for the *Junior Exhibitions and Bursaries* in 1881 shall be as follows :—

IN LATIN.—*Cæsar, Gallic War, Book VI. ; Virgil, Æneid, Book VI.* Grammar : Accidence, Syntax, Prosody, Scansion of Hexameter Verse. *Text Book* : Smith's Smaller Latin Grammar or Bryce's.
    Composition : Easy sentences to be translated into Latin. *Text Book* : Smith's Principia Latina, Part IV. Exs 1-35.

IN GREEK.—*Xenophon, Anabasis, Book IV.* Grammar : Accidence (omitting accentuation), chief rules of Syntax. *Text Book* : Hadley's Elements of Greek Grammar.

IN MATHEMATICS.—Arithmetic : the ordinary rules of arithmetic, Vulgar and Decimal Fractions, Proportion and Interest. Algebra : as far as Simple Equations and Surds. Geometry : First and Second Books of Euclid or the subjects thereof.

IN ENGLISH.—Grammar, Analysis, Outlines of English and Canadian History and general Geography.

The relative values of these subjects shall be as follows : Classics, 200 ; Mathematics, 200 ; English, 100.

13. The subjects of examination for the *Seven Senior Bursaries* in 1882 shall be as follows :—

CLASSICS :

LATIN : *Horace*, Odes, Books III. IV ; *Livy*, Book XXI. Composition : An easy English passage on some classical subject to be turned into Latin prose. *Text Book* : Smith's Principia Latina, Parts IV. and V.

GREEK : *Xenophon*, Hellenica, Book I ; *Demosthenes*, the Olynthiacs. Composition : *Text Book*—Smith's Initia Græca, Part III.

CLASSICAL HISTORY AND GEOGRAPHY : History of Greece to death of Alexander. Geography of Græcia, Asia. *Text Books*—Smith's Students' Greece ; Tozer's Primer of Classical Geography.

MATHEMATICS* :

ALGEBRA: Algebraic Proportion and Variation. Permutations and Combinations. Compound Interest and Annuities. Simple and Quadratic Equations. The properties and use of Logarithms.

GEOMETRY : The relations of Similar Figures. The Eleventh Book of Euclid to Prop. 21, or the subjects thereof. The Mensuration of the Simpler Plane and Solid Figures, including the Cylinder and the Cone.

PLANE TRIGONOMETRY : The solution of the various cases of Plane Triangles. The general values of the Trigonometrical Functions of angles. The Functions of the sum and of the difference of two or more angles, and of multiple angles. The relations of the angles, area, inscribed and circumscribed circles of a triangle to the sides of the triangle.

LOGIC OR ENGLISH LITERATURE :

LOGIC : Sir Wm. Hamilton's Lectures on Logic. Enumeratic : the Doctrine of Concepts. Apophantic : the Doctrine of Judgments. The Doctrine of Reasonings. Syllogisms : their Divisions according to internal form, their Divisions according to external form. Reasoning in Comprehension, and Reasoning in Extension. Fallacies.

ENGLISH LITERATURE : Spenser's "Faerie Queene," 1st Book ; Six Cantos. Shakespeare : "As you like it," "Richard II.," "King Lear." The Augustan Age and its writers.

INORGANIC CHEMISTRY OR BOTANY :

INORGANIC CHEMISTRY : Affinity. Definite Proportions by weight. Equivalents. Volumetric Proportions. Atomic Theory. Non-metallic Elements (except F, Se and B), their distribution in nature, preparation, properties, their oxides, acis or other compounds of theoretical importance. The Metals, general chemical character and classification. Constitution of Salts. Details relating to the following Metals so far as regards their mode of occurrence in nature, their oxides and more important salts, and common processes and manufacture, illustrating their chemical character :—K, Na, Ba, Ca, Mg, Al, Fe, Zn, Mn, Cr, Bi, Sn, Pb, Cu, Hg, Ag, Au, Pt. Reactions are required to be given in form of chemical equations.

BOTANY : The Cell, its structure, contents and development. Tissues. External conformation of Plants. The Axis. Leaves, structure, functions, principal forms and modifications in form in the principal families of plants. Reproductive process in flowering plants. The Fruit, morphology, principal modifications. The Seed, embryo. Reproduction of Ferns, Mosses, Algæ, Fungi. General principles of the Natural System of Classification, with examples of the principal divisions. Details of structure, relations, and geographical distribution in North America of the following orders :— Ranunculaceæ, Nymphaeaceæ, Cruciferæ, Violaceæ, Vitaceæ, Leguminosæ, Rosaceæ, Onagraceæ, Cucurbitaceæ, Cactaceæ, Grossulariaceæ, Umbelliferæ, Cinchonaceæ, Compositæ, Ericaceæ, Convolvulaceæ, Boragineaceæ, Solanaceæ, Chenopodiaceæ, Polygonaceæ, Urticaceæ, Betulaceæ, Coniferæ, Orchidiaceæ, Liliaceæ, Cyperaceæ, Gramineæ, Polypodiaceæ.

The relative values of the above subjects shall be as follows :—Classics, 200 ; Mathematics, 200 ; Logic or English Literature, 150 ; Chemistry or Botany, 150.

§ XII.—MEDALS, PRIZES AND CERTIFICATES OF MERIT.

MEDALS.

THE GOVERNOR-GENERAL'S GOLD MEDAL.

This medal shall be awarded to the Undergraduate standing highest among those taking Honours in the department of Classics, the winner of the Sir William Young medal being excluded.

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* Those are, with some alterations, the mathematical subjects of the First B. A. Examination at the London University.

THE SIR WILLIAM YOUNG GOLD MEDAL.

This medal shall be awarded to the Undergraduate standing highest among those taking Honours in the department of Mathematics and Physics, the winner of the Governor-General's Gold Medal being excluded.

THE GOVERNOR-GENERAL'S SILVER MEDAL.

This medal shall be awarded to the Undergraduate standing highest among those taking Honours in one of the following departments, viz.: (1.) Experimental Physics and Chemistry, and (2.) Botany and Geology, in this order of preference, the winner of a gold medal being excluded.

FURNICIPION.

(The Senate reserves to itself the right of withholding Prizes and Bursaries, unless sufficient merit be shown.)

THE UNIVERSITY PRIZES.

These Prizes will be awarded to those Students who stand first in the several subjects at the Sessional Examinations.

No Student will be allowed to hold a Prize more than once in the same class.

THE SIR ARCHIBALD'S PRIZE.

This Prize will be awarded this year to the Undergraduate who shall stand first in Mathematics at the Sessional Examinations of the Second Year, the winner of the North British Bursary being excluded.

NORTH BRITISH SOCIETY BURSARY.

A Bursary, of the annual value of $80, has been founded in connection with Dalhousie College by the North British Society of Halifax, to be competed for at the Sessional Examinations of the Second Years Course in Arts, and held by the successful competitor for two years, namely, during the Third and Fourth Years of the Undergraduate Course in Arts. Candidates must be Undergraduates who have completed two years of the Curriculum, and must be eligible, at the proper age, to be Members of the North British Society. The next competition will take place in April, 1882, at the Sessional Examinations. In awarding this Bursary, Classics, Mathematics, and Chemistry will be reckoned each 100; Logic, 50.

THE WAVERLEY PRIZE.

This Prize or sixty dollars (which comes in place of the Waverley Bursary) will be awarded to the Student of the Second Mathematical Class who stands highest at the Sessional

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Examinations in the Mathematics of the year. The first annual competition will take place at the Sessional Examinations in April, 1883.

THE DR. AVERY PRIZE.

A Prize of the value of $25 is offered by Dr. Avery for competition to the Undergraduates of the Fourth Year, who are not studying for Honours. It will be awarded to the Student who stands highest at the Sessional Examinations.

CERTIFICATES OF MERIT.

Certificates of Merit of the First or Second Rank will be given to Students who have respectively obtained a First or Second Class standing in the aggregate of the branches of study proper to any one year.

§ XIII. THE LIBRARY.

The Library consists of a careful selection of the most useful books in each department of study embraced in the University Course. There are likewise a few works in general literature. The Library embraces in all upwards of 2000 volumes. All Students are entitled to the use of the Books, on payment of the sessional fee of *one dollar*. A deposit of *two dollars* must be made by a Student with the Librarian before any book can be taken from the Library. This deposit will be repaid to him at any time, if he have returned all the books which may have been entrusted to him.

§ XIV.—ORDINARY COURSES OF LECTURES.

CLASSICS.

LATIN.

FIRST YEAR'S CLASS.

Class: De Imperio Cn. Pompeii; * Fourth Oration against Catiline; Virgil. The Eclogues.
Composition: Smith's Principia Latina, Part IV., (Second half.)

SECOND YEAR'S CLASS.

Virgil Book I.; *Horace,* Odes, Book I.; * Book III.
Composition: Smith's Principia Latina, Parts IV., V.

THIRD AND FOURTH YEAR'S CLASS.

Tacitus: Agricola; *Terence:* Adelphi; *Juvenal:* Sat. III., X., XIII.
Composition: Principia Latina, Part V.
Comparative Philology: Peel Black, Müller's Science of Language, vol. I., chaps. 1-7; Bischoff's Historical French Grammar.

*Students seeking a First or Second Class at the Sessional Examinations are permitted to take additional work which is not read in class, and students are also required to show special accuracy in grammar.

† A passage taken from a work not previously read will be set for translation to Students seeking a First or Second Class in these years.

GREEK.

FIRST YEAR'S CLASS.

Lucian: Select Dialogues; * *Xenophon:* Cyropædia, Book I.
Grammar: Text Book, Hadley's Elements of Greek Grammar.

SECOND YEAR'S CLASS.

Xenophon: Memorabilia, Book I.; *Homer:* Odyssey, Book IX.;
* *Demosthenes:* Olynthiacs.
Composition: Initia Græca, Part III.

THIRD AND FOURTH YEAR'S CLASS.

Plato: Apologia Socratis; *Euripides:* Medea.
Composition: Initia Græca, Part III.

‡ CLASSICAL HISTORY AND GEOGRAPHY.

SECOND YEAR.

History of Rome to B. C. 31; Geography of Italia, Sicilia, Gallia, Hispania.

THIRD YEAR.

History of Greece to the death of Alexander. Geography of Græcia, Asia, Africa.

Books recommended: Liddell's Students' History of Rome; Smith's Students' or Cox's History of Greece; Pillans' Classical Geography, or Tozer's Primer.

MATHEMATICS.

FIRST YEAR.

ARITHMETIC.—Revision of the Theory of Proportion, Vulgar and Decimal Fractions.

ALGEBRA.—Common Measure, Involution, Evolution, the Arithmetical Extraction of Roots, Fractions, Equations of the First and Second Degree, Proportion, Inequalities, Variation, Progressions, Indeterminate Equations.

GEOMETRY.—First and Second Books of Euclid revised, Third and Fourth Books, Definitions of Fifth, and Sixth Book to the Twentieth Proposition, with Geometrical Exercises and Practical applications.

PLANE TRIGONOMETRY.—Solution of Plane Triangles.

SECOND YEAR.

GEOMETRY.—Sixth Book of Euclid finished; Geometrical Exercises continued; Geometrical Drawing.

PLANE TRIGONOMETRY.—Circular and Gradual Measure ; Functions of sum and difference of angles, &c.; Relations of the sides and angles of triangles ; Mensuration of Heights and Distances ; Elementary Problems in Navigation ; Use of Logarithms.

SPHERICAL TRIGONOMETRY —As far as the solution of Right Angled Triangles.

ALGEBRA.—Propositions in Theory of Equations ; Binomial Theorem ; Properties of Logarithms ; Compound Interest ; Annuities.

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* Students seeking a First or Second Class at the Sessional Examinations are examined in the additional work which is not read in class: such students are also required to show special accuracy in grammar.

‡ A passage taken from a work not previously named will be set for translation to Students seeking a First or Second Class in these years.

‡ The examinations in these subjects will be held at the beginning of the Winter Session. (See § 17.)

EXTRA.

GEOMETRY.—31 Propositions of the Eleventh Book of Euclid ; Geometrical Exercises.

TRIGONOMETRY.—Extension of Ordinary Course.

ALGEBRA.—Permutations, Combinations, Probabilities, Life Assurance, Investigation of Binomial Theorem and Theory of Logarithms ; Indeterminate Coefficients, with application to Expansions and Series.

Books recommended: For First Year—Hamblin Smith's (Miller & Co.) Elements of Geometry or Colenso's or Todhunter's ; Colenso's or H. Smith's Algebra. For Second Year—Colenso's Algebra; 2nd part ; Colenso's Trigonometry, 1st part ; Todhunter's Spherical Trigonometry ; or Hann's Trigonometry, (Weale's Series) ; Chambers's Logarithmic, &c., Tables.

PHYSICS.

MATHEMATICAL PHYSICS.

Velocity, Acceleration, Projectiles, Harmonic Motion, Rotation, Force, Momentum, Impulse, Energy, Composition of Forces, Centrifugal Force, Pendulum, Centre of Mass, Moments of Force, Moments of Inertia, Parallel Forces, Centres of Inertia and Gravity, Couples, Degrees of Freedom, Conditions of Equilibrium, Simple Machines, Friction, Impact.

Text Book: Wormell's Principles of Dynamics. Candidates for First Class will be examined on Maxwell's Matter and Motion.

EXPERIMENTAL PHYSICS.

Properties of Solids, Liquids, and Gases ; the Law of the Conservation of Energy ; Heat, Electricity and Magnetism, Light and Radiant Heat, Sound.

Text Book: Balfour Stewart's Lessons in Elementary Physics. Candidates for First Class will be examined on parts of Maxwell's Theory of Heat, and Cumming's Theory of Electricity.

ASTRONOMY.

Text Book: Ball's Elements of Astronomy (one of Longmans' Text Books of Science).

ETHICS.

(Fourth Year.)—Text Books: Stewart's Active and Moral Powers of Man. Whewell's Elements of Morality.

POLITICAL ECONOMY.

(Fourth Year.)—Text Book: Mill's Political Economy. Senior's Political Economy.

LOGIC AND PSYCHOLOGY.

(Second Year.)—Text Books: Sir William Hamilton's Lectures on Logic. Prof. Lyall's " Intellect, the Emotions, and the Moral Nature."

METAPHYSICS AND ÆSTHETICS.

(Third Year.)—Text Books: Sir William Hamilton's Lectures on Metaphysics. Mansel's Metaphysics. Lowns' Biographical History of Philosophy. Cousin on the Beautiful. Allison's Essays on the Nature and Principles of Taste.

RHETORIC.

The course includes Style, Figures of Speech, Composition, Description, Narration, Exposition, Oratory, Poetry.

Text Book: Rhetoric and English Composition, by Alex. Bain, LL.D.

HISTORY.

(Fourth Year.)—Text Books: Taylor's Modern Europe. Gibbon's Decline and Fall of the Roman Empire. Hallam's Middle Ages. Green's History of the English People. Student's History of France. Student's History of Germany. Hallam's Constitutional History.

MODERN LANGUAGES.

FRENCH.

THIRD YEAR IN ARTS AND SECOND YEAR IN SCIENCE.

Scribe: "Le Diplomate," and Voltaire: "Charles XII."
Grammar: The Accidence; Translation from English writers; Dictation and Parsing.

FOURTH YEAR IN ARTS AND THIRD YEAR IN SCIENCE.

Racine: "Iphigénie"; Molière: "L'Avare."
Grammar: Syntax; Translation from English writers.

FOURTH YEAR IN SCIENCE.

Corneille: "Le Cid"; Molière: "Les Femmes Savantes."
Grammar and Translation as in Third Year.

GERMAN.

THIRD YEAR IN ARTS AND FIRST YEAR IN SCIENCE.

Adler's Reader, and Schiller's "Wilhelm Tell."

FOURTH YEAR IN ARTS AND SECOND YEAR IN SCIENCE.

Schiller's "Maria Stuart"; Goethe's "Hermann and Dorothea."

THIRD AND FOURTH YEARS IN SCIENCE.

Lessing's "Minna von Barnhelm," and Goethe's "Faust," Part I.
Otto's German Grammar. Translation from English writers.

HEBREW.

(Fourth Year.)—Text Book: Green's Elementary Hebrew Grammar, with Reading and Writing lessons and Vocabularies.

CHEMISTRY.

THEORETICAL CHEMISTRY.

INORGANIC.—*Second Year of Arts Course and First Year of Science Course.*

General Principles: Chemical Affinity; Combination; Mixtures; Solution; Suspension; Laws of Combination, by weight, by volume; Equivalent Numbers; Atomic Numbers; Atomic Theory; Nomenclature; Notation; Formulæ; Equations; Elements and their modes of occurrence in Nature, their preparation, their compounds, important Chemical Processes, natural and artificial, and manufactures, to which they are related; the Metals, their general characters, classification, occurrence in nature; metallurgical processes, Alloys; description of all the important Metals, their Salts and other compounds, and of chemical processes and manufactures connected with them, modes of testing, etc.

Class Book: Green's Edition of Watts's Elements of Chemistry, or Fownes' Manual of Chemistry, or Roscoe.

ORGANIC.—*Second Year of Science Course.*

Principles of Classification; Organic Series, Comparison of the principal series of the Fatty Group, viz.: Paraffins and Olefines; Monatomic, Diatomic, Triatomic and Hexatomic Alcohols and Ethers, Monatomic, Diatomic and Tetratomic Acids; Aldehydes, Cryogens, Comparison of Amines, Diamines, Triamines; Artificial Bases; Alkaloids; Phosphines, Stibines, Arsines; Anilins (including Urea and its derivatives); Uric Acid, Colouring Matters, Dutilus of Animal Chemistry—Tissues, Blood, Milk, Urine; Respiration, Digestion, Nutrition.

LABORATORY PRACTICE.

Preparation and Examination of Gases, Liquids and Solids, chiefly the Metalloids and their combinations with each other. Collection of Gases. Use of Pneumatic Trough. Fitting up of Glass Apparatus. Analysis and Synthesis of Water. Air. Illustration of meaning of terms: *Base, Acid, Salt, Neutralization, Combustion, Solubility, Affinity, &c.* Illustrations of processes of *Crystallization, Distillation, Oxidation, &c.* Systematic Analysis commenced.

Flame Reactions. Use of Spectroscope.

Text Book: Laboratory Practice and Qualitative Analysis, by Thorpe and Muir.

The class meets three times a week in the afternoon.

QUALITATIVE CHEMICAL ANALYSIS.

Systematic Qualitative Analysis. Detection of Bases and Acids, separate and in mixtures.

Will's Tables of Chemical Analysis.
Qualitative Analysis, Fresenius, Thorpe, or Appleton.
Class meets in the afternoon.

QUANTITATIVE CHEMICAL ANALYSIS.

The Laboratory will be open daily (except Saturday) from 9 A. M. to 1 P. M., for work in this department. There is a reference library in the Balance Room for the use of Students.

BOTANY.

Morphology of the Cell, of the Tissues, and of the External Conformation of Plants. Special Morphology of Thallophytes, Characæ, Muscineæ. Muscular forces in the Plant. Aggregation of Organised Structures. Movements of Water and Gases. Chemical Processes, Constituents of Plant Food, Assimilation, Respiration. Influence of Temperature, Light, Electricity, Gravitation. Mechanical Laws of Growth, Tension, Pressure, Friction. Periodicity of Growth, Periodic Movements, Reproduction. Hybridisation. Origin of Species. Origin of Varieties. The Theory of Descent. Classification, including a Description of the Principal Natural Orders of American Plants. Geographical Botany. Outline of Vegetable Palæontology.

Histology.—In connection with the Botanical Class—Instruction will be given in the general use of the Microscope, the preparation and mounting of Vegetable Tissues, and the Microscopical Observation of Vital phenomena in living plants.

On Saturdays during favorable weather there will be Field Excursions for collecting Botanical Specimens.

GEOLOGY.

FIRST WINTER SESSION: (*Historical Geology.*)—Text Book: Dana's Text Book (last *edition*).

SUMMER SESSION: (*Practical Geology and Mineralogy.*)—In the Field and Museum.

SECOND WINTER SESSION: (*Petrography, Stratigraphy, Dynamics, Physiography, Palæontology.*)—Lecture Notes.

§ XV.—HONOUR COURSES.

I.—CLASSICS.

LATIN.—Plautus: Trinummus.
    Terence: Heautontimorumenos.
    Virgil: Georgics, Books I, IV.
    Horace: Epistles, Books I, II, Ars Poetica.
    Juvenal: Satires, VII., VIII., XIV.
    Cicero: De Oratore, Books I., II.
    Tacitus: Germania, Agricola.

GREEK.—Euripides: Agamemnon.
    Sophocles: Œdipus Coloneus.
    Homer: Odyssey, Books V.—VIII.
    Thucydides: Book VII.
    Plato: Phædo.
    Demosthenes: De Corona.

COMPOSITION—Latin Prose.

PHILOLOGY.—Müller's Science of Language, Vol. I., Chaps. 1.—7.
    Peile's Introduction to Greek and Latin Etymology.
    Class Lectures.

LITERATURE.—Müller and Donaldson's History of Ancient Greek Literature (the portions bearing on the authors and subjects of the course); Roman Classical Literature (Browne), Selected chapters; Theatre of the Greeks, (Donaldson), Selected portions.

II.—MATHEMATICS AND PHYSICS.

MATHEMATICS.

TRIGONOMETRY.—DeMoivre's Theorem and Angular Analysis. Theory of Equations, with Horner's Method of Solution, and Sturm's Theorem.

ANALYTICAL GEOMETRY.—The Straight line, the Circle, Parabola, Ellipse, Hyperbola. The Locus of the General Equation of the Second Degree between two Variables.

DIFFERENTIAL CALCULUS.—Differentiation : Theorems of Leibnitz, Maclaurin, and Taylor ; Maxima and Minima of functions of one Variable ; Expansion of functions of two Variables ; Maxima and Minima of such Functions ; Radius of Curvature, Osculating Circle ; Envelopes ; the tracing of Curves by means of their Equations.

INTEGRAL CALCULUS.—Integration of Simple Forms ; Integration by Parts, and formulæ of Reduction. Integration by Substitution, &c. Applications to determine Lengths of Curves, Surfaces, Volumes, &c.; Differential Equations, (selected cases) ; Application to Physical Investigation : e.g., Centre of Gravity, Attraction, Central Forces, &c.

BOOKS RECOMMENDED—(In order of preference).

Todhunter's Spherical Trigonometry.
Todhunter's Plane Trigonometry, or Colenso's (2nd part).
Todhunter's Euclid's, or Salmon's Conic Sections.
Hall's, Hind's, or Todhunter's Differential and Integral Calculus.
Todhunter's or Young's Theory of Equations.
Boole's Differential Equations.

PHYSICS.

Selected chapters in Kinematics, Dynamics of a Particle and of a Rigid Body (including Statics and Kinetics), Hydrodynamics, Thermodynamics, Electrodynamics and Optics.

No one text book can be recommended ; but advice will be given by the Professor during the course of lectures as to the books which should be consulted.

III.—MENTAL AND MORAL PHILOSOPHY AND POLITICAL ECONOMY.

LOGIC.

Sir William Hamilton's Lectures on Logic. Whately's Logic, Books II., III., IV. Mill's Logic, I., II. Bacon's Novum Organum.

METAPHYSICS AND ÆSTHETICS.

Descartes' Principles of Philosophy. Reid's Essays, VI. Sir William Hamilton's Lectures on Metaphysics. Sir William Hamilton's Philosophy of Perception and Philosophy of the Unconditioned. Lewes' Biographical History of Philosophy. Cousin's Philosophy of the Beautiful. Allison's Essays on the Principles of Taste. Burke on the Sublime and Beautiful.

ETHICS.

Mackintosh's Dissertation on the Progress of Ethical Philosophy. Butler's Sermons on Human Nature, with the Preface and the Dissertation on the Nature of Virtue.

Smith's Theory of Moral Sentiments.
Thomson's Christian Theism.
Aristotle's Ethics, Books I., III., VI., X. (in English).

POLITICAL ECONOMY.

Smith's Wealth of Nations, by McCulloch.
Principles of Political Economy, by Bowen.
Plato's Republic, Books I. and IV. (in English).

IV—EXPERIMENTAL PHYSICS AND CHEMISTRY.

EXPERIMENTAL PHYSICS.

Properties of Solids, Liquids and Gases, including the principles of the Kinetic Theory of Gases.

Heat, including the principles of the Dynamical Theory.

Sound, Light and Radiant Heat, including the principles of the Undulatory Theory.

Electricity and Magnetism.

The Conservation of Energy as the great co-ordinated law of Physical Phenomena.

No mere profound Mathematical knowledge will be demanded than is necessary for the Bachelor degree. Candidates will be required to show considerable familiarity with the methods of determining physical constants, such as the *specific heat*, the *specific inductive capacity*, the *electrical and thermal conductivity*, the *intensity of light*, its *absorption*, &c., and with the physical methods and instruments usually employed in chemical research.

Books on this above subjects will be suggested to candidates by the Professor of Physics. Practical Experimental work may be had in the Physical Laboratory.

CHEMISTRY.

A Course of Extra Study will be prescribed by the Professor, who will explain the nature and extent of the work to be done, and advise what books should be read and consulted.

V—BOTANY AND GEOLOGY.

BOTANY.

Candidates for Honours will be required to form a Herbarium, consisting of properly prepared specimens of the Native Plants of the District in which they reside (or by the Summer, all carefully named and classified according to the Natural System. The determinations of species must be done from books, without other assistance, and the examination specimens will be so framed as to test the Candidate's knowledge of the distinctive characters of the species contained in his Herbarium.

GEOLOGY.

Candidates will be examined in Dana's Manual of Geology (last edition), Chapman's Outlines of the Geology of Canada, and Nicholson's Manual of Paleontology, and will be required to make a report on a field selected by the Professor.

TIME TABLE—WINTER SESSION, 1881-82.

HOURS	FIRST YEAR	SECOND YEAR	THIRD YEAR	FOURTH YEAR
9—10 A.M.	Inorganic Chemistry (daily till February)	Inorganic Chemistry (daily till February)	Hon. Physics (Experiment. Ph.; Th.) German (Science) (M. W. F.)	Hon. Classics (Greek Prose; Th.; Th.; Th.) German (Science) (M. W. F.)
10—11 A.M.	Mathematics (daily)	Latin (M. W. F.) Greek (Tu. Th.)		Hon.y Chemistry (Tu. Th.) Organic
11—12 M.	Latin (M. W. F.) Greek (Tu. Th.)	Mathematics (daily) Organic Chemistry (Tu.)	Math. Physics (Th. Th.) Exp. Physics (M. W. F.)	Bible, (daily) Exp. Physics (M. W. F.)
12—1 P.M.	Rhetoric (daily)	French Mathematics (Fri.) Zoology (Tu. Th.)	Latin (M. W. F.) Greek (Tu. Th.)	Latin (M. W. F.) Greek (Tu. Th.) Astronomy (Tu. Th.) Hon. Physics
1—2 P.M.			Hist. Mathematics	Hist. Mathematics
2—3 P.M.	German (Science) (M.W.F.)	French (Science) (Tu.Th.)	German (Anal.) (M. W. F.) French (Anal.) (Tu. Th.)	German (Adv.) (M. W. F.) French (Hist.; Tu. Th.; Th.)
3—4 P.M.		German (History) (M.W.F) Logic (M. W. F.)	Metaphysics (Tu. Th.) Logic (M. W. F.)	German (Adv.) (M. W. F.) French (Hist.; Tu. Th.; Th.) Balance (Tu. Th.)
4—5 P.M.	German (Science) (M.W.F.) French (Science) (Tu.Th.)		Geology ( )	Geology ( )

DEGREES, 1880-81.

MASTER OF ARTS.

NOVEMBER, 1880.

DAVID F. CREELMAN, B.A. ....Shelburne.

APRIL, 1881.

WILLIAM C. HERMAN, B. A. ....Elmsdale.
EDMUND L. NEWCOMBE, B. A. ....Kentville.

BACHELOR OF ARTS WITH HONOURS.

APRIL, 1881.

HUGH GRAHAM CREELMAN .... Stewiacke.

ORDINARY DEGREE OF BACHELOR OF ARTS.

NOVEMBER, 1880.

CHARLES W. BLANCHARD.... ....Truro.
HENRY B. CREIGHTON .. .. Dartmouth.

APRIL, 1881.

ALFRED COSTLEY.... ....Halifax.
WALLACE M. MACDONALD .... Halifax.
JAMES A. SEDGEWICK ....Musquodoboit.
WILLIAM H. SPENCER .. .. Londonderry.

LIST OF PRINCIPAL DISTINCTIONS, 1880-81.

UNDERGRADUATES IN ARTS.

FOURTH YEAR.

H. G. CREELMAN; The Governor-General's Gold Medal; B.A. Honours of the Second Rank in Mathematics and Physics; First Class Certificate of Merit; Prize in Physics; First in German; First Class in Latin, Physics, German.

J. A. SEDGEWICK; The Dr. Avery Prize; Second Class Certificate of Merit; Prize in Classics; First Class in Greek.

THIRD YEAR.

J. S. TRUEMAN; First Class Certificate of Merit; Prize in Classics; First Class in Latin, Greek, Metaphysics and French.

G. N. CAMPBELL; First Class Certificate of Merit; Prize in Metaphysics; First Class in Greek, Metaphysics, French, Classical History.

HUMPHREY MELLISH; Second Class Certificate of Merit; Prize in French; First Class in French.

G. S. CARSON; Prize in Physics; First Class in Metaphysics.

SECOND YEAR.

J. A. DIAL; The Waverley Bursary; First Class Certificate of Merit; Prize in Classics; First Class in Latin, Greek, Mathematics and Classical History.

J. W. McLENNAN; Second Class Certificate of Merit; Prize in Logic; First Class in Logic, Chemistry and Classical History.

T. S. McGREGOR; Second Class Certificate of Merit; First Class in Mathematics and Chemistry.

J. A. MCDONALD; The St. Andrew's Prize; Second Class Certificate of Merit; First Class in Classical History.

E. DICKIE; Prize in Inorganic Chemistry; First Class in Logic and Chemistry.

B. McLEOD; First Class in Chemistry.

FIRST YEAR.

J. P. McLeod (Prince of Wales College, Charlottetown); MIRDO BURSARY; First Class Certificate of Merit; First Prizes in Classics and Mathematics; Prize in Rhetoric; First Class in Latin, Greek, Mathematics and Rhetoric.

H. ELLIOTT (Private Study); MUNRO BURSARY; First Class Certificate of Merit; Second Prize in Mathematics; First Class in Greek, Mathematics and Rhetoric.

E. S. AMARO (Halifax High School); First Professors' Scholarship; First Class Certificate of Merit; Second Prize in Classics; First Class in Latin and Greek.

FRANK JONES (Undy Academy); MUNRO BURSARY; Second Class Certificate of Merit; First Class in Latin and Rhetoric.

E. M. DILL (Private Study); MUNRO BURSARY; Second Class Certificate of Merit; Second Young Prize in Elocution; First Class in Mathematics.

JOHN PETRLANO (Private Study); Second Professors' Scholarship; Second Class Certificate of Merit; First Class in Mathematics.

D. I. MORRISON (Pictou Academy); MIRDO BURSARY; Second Class Certificate of Merit; First Class in Mathematics.

UNDERGRADUATES IN SCIENCE.

THIRD YEAR.

A. G. CAMERON : Prize in Geology; First Class in Geology; Chemical Laboratory and Zoology.

SECOND YEAR.

A. G. Rhind. First Class Certificate of Merit; Prizes in Mathematics, German and Organic Chemistry; First Class in Latin, Mathematics, Zoology, Organic Chemistry, Chemical Laboratory and German.

J. A. Morris : Second Class Certificate of Merit; Prize in Zoology; First Class in Zoology and Chemical Laboratory.

FIRST YEAR.

H. M. Smith : Professors' Scholarship.

GENERAL STUDENTS.

Thomas Stewart : Special Certificate of Merit of Second Class; Prizes in Ethics and French; First Class in Ethics and French.

W. M. Fraser, B. Sc.: Prize in Metaphysics (assigned in favour of the Student next in order of merit); First Class in Metaphysics.

J. K. Forsyth : First Young Prize in Education.

A. Bain : Special Prize in Geology; First Class in Geology.

A. McKinlay : First Class in Rhetoric.

HONOURS, PRIZES, CERTIFICATES OF MERIT, BURSARIES, SCHOLARSHIPS.

B.A. HONOURS.

Mathematics and Physics—Second Rank—Hugh Graham Creelman.

UNIVERSITY PRIZES.

Classics : *Fourth Year*, J. A. Sedgewick. *Third Year*, J. S. Trueman. *Second Year*, J. A. Bell. *First Year*, (1) J. P. McLeod; (2) H. S. Adams.

Mathematics : *Second Year*, A. G. Reid. *First Year*, (1) J. P. McLeod; (2) H. Elliott.

Optics and Astronomy : H. G. Creelman.

Physics : G. S. Carson.

French : T. Stewart.

Metaphysics : (1) W. M. Fraser, B. Sc.; (2) G. M. Campbell.

Logic : J. W. McLennan.

Rhetoric : J. P. McLeod.

Chemistry (*Organic*) : A. G. Reid; (*Inorganic*) : H. Dikke.

Geology : A. G. Cameron.

Zoology : J. A. Morris.

French : *Fourth Year*, T. Stewart. *Third Year*, H. Mellish.

German : A. G. Reid.

SPECIAL PRIZES.

The St. Andrew's Prize : J. A. Macdonald.

The Sir W. Young Elocution Prizes : (1) J. K. Forsyth; (2) E. M. Dill.

The Waverley Bursary : J. A. Bell.

The Dr. Avery Prizes : J. A. Sedgewick.

The Governor-General's Gold Medal : H. G. Creelman.

CERTIFICATES OF MERIT.

(The names in the several years are arranged alphabetically.)

First Class : *Fourth Year*, H. G. Creelman. *Third Year*, G. M. Campbell, J. S. Trueman. *Second Year*, J. A. Bell, A. G. Reid. *First Year*, H. S. Adams, H. Elliott, J. P. McLeod.

Second Class : *Fourth Year*, J. A. Sedgewick. *Third Year*, H. Mellish. *Second Year*, A. A. Macdonald, T. S. McGregor, J. W. McLennan, J. A. Morris. *First Year*, R. M. Dill, E. Jones, D. I. Morrison, J. Pitblado.

SPECIAL CERTIFICATE OF MERIT.

Second Class : Thomas Stewart.

THE BURSD BURSARIES.

1. (Island of Cape Breton) : Not awarded.

2. (Pictou, Antigonish, Guysborough) : D. I. Murdoch, Pictou, (Pictou Academy).

3. (Colchester, Cumberland, Hants) : R. M. Dill, Hants, (private study).

4. (Halifax, Kings, Lunenburg) : Hiram Elliott, Kings, (private study).

5. (Annapolis, Digby, Yarmouth, Shelburne, Queens) : Frank Jones, Digby, (Digby Academy).

6. (New Brunswick) : Not awarded.

7. (Prince Edward Island) : John P. McLeod, Valleyfield, (Prince of Wales College, Charlottetown).

PROFESSORS' SCHOLARSHIPS.

In Arts : (1) Henry S. Adams, Halifax High School.
(2) John Pitblado, private study.

In Science : Henry M. Smith, private study.

EXAMINATIONS.

MATRICULATION EXAMINATION, OCTOBER, 1880.

(The passes are arranged alphabetically.)

ARTS.

FIRST YEAR: Adams, Calder, Dell, Elliott, Hamilton, Jones, Den. McDonald, J. P. McLeod, Miller, Morrison, J. Pitblado, Taylor.

SCIENCE.

FIRST YEAR: Kaye, Trueman, Slayter Smith.

SUPPLEMENTARY EXAMINATION, OCTOBER, 1880.

THIRD YEAR: Macpherson, Spencer.
SECOND YEAR: Lepe, Knowles.

ENTRANCE EXAMINATION IN CLASSICAL HISTORY.

(The passes are in order of merit.)

THIRD YEAR: Class I. Campbell; Class II. Fraser, J. S. Trueman. *Passed*, Mellish, Carson, Davidson, Patterson.
SECOND YEAR: Class I. (Bell), McLennan; J. A. Macdonald. Class II. A. McLeod. *Passed*, McInnes, A. Campbell, McGregor.

SUPPLEMENTARY EXAMINATION IN CLASSICAL HISTORY.

THIRD YEAR: Knowles, Torey.
SECOND YEAR: Doidls, McKenzie, Meffee.

SESSIONAL EXAMINATIONS, APRIL, 1881.

GENERAL PASS LIST

(containing the names of undergraduates who passed in all the subjects proper to their years.)

(The passes are arranged alphabetically.)

ARTS.

FOURTH YEAR: R. G. Creelman, A. Cowley, Wallace H. Macdonald, J. A. Sedgewick, W. H. Spencer.
THIRD YEAR: G. M. Campbell, G. S. Carson, W. R. Fraser, James E. Knowles, Robert Lindells, Humphrey Mellish, Geo. Patterson, Edgar Torey, James S. Trueman.
SECOND YEAR: J. A. Bell, J. A. MacDonald, Hector McLinnon, T. S. McGregor, J. W. McKenzie, J. W. McLennan.
FIRST YEAR: Adams, Blair, Dell, Elliott, Jones, Den. McDonald, J. P. McLeod, Miller, Morrison, Pitblado, Taylor.

SCIENCE.

SECOND YEAR: McColl, Morse, Reid.
FIRST YEAR: Buchill.

FOURTH YEAR IN ARTS: Newall.

CLASS LISTS

(containing the names of Undergraduates and General Students who passed in the various subjects of the course.)

(The names are in order of merit.)

LATIN.

THIRD AND FOURTH YEARS: Class I., Creelman, J. S. Trueman; Class II., Newall, Sedgewick, Cowley. *Passed*, Fraser, Knowles, Spencer, Carson, Patterson, Torey, Lindells, W. H. Macdonald.
SECOND YEAR: Class I. Bell, Bold. Class II. Morse, J. A. Macdonald, McGregor. *Passed*, McInnes, McLennon, J. McLeod, McKenzie, Doidle.
FIRST YEAR: Class I. J. P. McLeod, Adams, Jones. Class II. (Miller, Pitblado), Elliott, Smith, Morrison, Dell, Blair. *Passed*, Taylor, H. Trueman, Slayter, Den. McDonald, Hamilton, Calder.

GREEK.

THIRD AND FOURTH YEARS: Class I. J. S. Trueman, (Sedgewick, (no. M. Campbell). Class II. Mellish, Spencer. *Passed*, Stewart, Patterson, Fraser, Carson, Cowley, Lindells, W. H. Macdonald.
SECOND YEAR: Class I. Bell. Class II. J. A. Macdonald. *Passed*, McLennon, McGregor, J. McLeod, McInnes, Dickie, McKenzie.
FIRST YEAR: Class I. J. P. McLeod, Elliott, Adams. Class II. Dell, Pitblado, James Morrison. *Passed*, W. M. Fraser, P. So., Blair, Taylor, Den. McDonald, Miller.

MATHEMATICS.

SECOND YEAR: Class I. Reid, McGregor, Bell. Class II. J. A. Macdonald, McLennon. *Passed*, McColl, Morse, McKenzie, McEse, McInnes. *Passed in Geometry, but not in Trigonometry*, A. Campbell.
FIRST YEAR: Class I. J P McLeod, Elliott, Morrison, Pitblado, Dell. Class II. McKeigan, Adams. *Passed*, Hamilton, Jones, McDonald, Dadd, Blair, Taylor, Miller. *Passed in Geometry, but not in Algebra*, H. Trueman, Currie, Storey.

MATHEMATICAL AND EXPERIMENTAL PHYSICS.

Class I. Newt. Class II. Carson, G. M. Campbell. *Passed*, Mellue, Torey, Lindells, Patterson, Knowles, Davidson, W. R. Fraser.

EXPERIMENTAL PHYSICS.

Passed, J. S. Trueman.

OPTICS AND ASTRONOMY.

Class I., Creelman. Class II., Stewart. *Passed*, Spencer, Cowley, Sedgewick, W. H. Macdonald.

ETHICS.

Class I. Stewart. Class II., Cowley, (Sedgewick, Creelman). *Passed,* Spencer, W. M. Macdonald.

METAPHYSICS.

Class I. W. M. Fraser. B. Sc., G. M. Campbell, Cameron, J. S. Trueman. Class II., Mellish, Landells, (Fisher, Patterson), Tovey. *Passed,* Davidson, Knowles.

LOGIC.

Class I., McLennan, Dickie. Class II., McInnes, J. A. Macdonald. *Passed,* Bell, McKenzie, McGregor.

RHETORIC.

Class I., J. P. McLeod, Jones, Elliott, McKeigan. Class II., Dill, Adams, Don. McDonald, (Blair, Morrison), Pithlado. *Passed,* Taylor, Logan, Miller, Hamilton.

INORGANIC CHEMISTRY.

Class I., Dickie, McGregor, McInnes, McLennan, Moren. Class II., J. A. Macdonald, Campbell, Bell, II. Trueman. *Passed,* Smith, Slayter, Rays, McRae, J. McLeod, McKenzie, Currie.

ORGANIC CHEMISTRY.

Class I., Reid. Class II. Moren, Davidson. *Passed,* McCoil.

ZOOLOGY.

Class I., Moren, Cameron, Reid. Class II. McCoil.

FRENCH.

FOURTH YEAR; Class I. Stewart. Class II., Sedgewick, Cowley. *Passed,* W. Macdonald, Spencer.

THIRD YEAR; Class I. Mellish, G. M. Campbell, J. S. Trueman. Class II., Patterson. *Passed,* Knowles, Moren, Tovey, Fraser, Davidson, McCoil, Landells, Carson, Ross, Cameron.

GERMAN.

FOURTH YEAR; Class I. Creelman. Class II., Cameron. THIRD YEAR; Class I. Reid. Class II., Tovey. *Passed,* Knowles, McCoil.

GENERAL LIST OF HONOURS, MEDALS, SCHOLARSHIPS, SPECIAL PRIZES, &c., 1866-81.

HONOURS.

1873—MATHEMATICS AND PHYSICS: *Second Rank,* Alex. H. McKay.
1874—CLASSICS : *Second Rank,* James Chalmers Herdman.
    MENTAL AND MORAL PHILOSOPHY : *Second Rank,* James McD. Oxley.
1876—MATHEMATICS AND PHYSICS: *Second Rank,* Jas. McG. Stewart.
    CLASSICS : *Second Rank,* Francis H. Bell
1877—MATHEMATICS: *Second Rank,* John Waddall.
1878—CLASSICS : *Second Rank,* Isaac M. McLean.
    HISTORY AND ENGLISH LITERATURE: *Second Rank,* Charles S. Cameron.
1880—HISTORY AND ENGLISH LITERATURE : *Second Rank,* Edwin Crowell.
1881—MATHEMATICS AND PHYSICS : *Second Rank,* H. G. Creelman.

THE GOVERNOR GENERAL'S MEDALS.

1873—*Gold Medal :* Louis H. Jordan. *Silver Medal :* George McMillan.
1874—*Gold Medal :* Francis H. Bell. *Silver Medal:* Jas. McG. Stewart.
1877—*Gold Medal :* John Waddall. *Silver Medal :* Burgess McKittrick.
1878—*Gold Medal :* L. B. George. *Silver Medal :* J. H. Cameron.
1880—*Gold Medal :* Edwin Crowell. *Silver Medal :* W. M. Fraser.
1881—*Gold Medal :* E. G. Creelman. *Silver Medal :* Not awarded.

PROFESSORS' SCHOLARSHIPS.

1866—1. A. P. Silver. Halifax Grammar School ; 2. A. W. H. Lindsay, Pictou Academy.
1867—1. James G. MacGregor, private study ; 2. Jas. M. Inglis, Prince of Wales College, Charlottetown, P. E. I.
1868—1. Alex. W. McKay : 2. W. P. Archibald, Halifax Schools.
1869—1. Charles D. Macdonald, Pictou Academy ; 2. Bruce A. Lawson ; 3. Henry Macdonald, Halifax Schools.
1870—1. Andrew C. Herdman, Pictou Academy ; 2. Alex. C. Patterson, Fort Massey Academy.
1871—1. William Brownrigg, Pictou Academy ; 2. George McMillan, private study.
1872—1. Francis H. Bell, private study ; 2. Fred. W. O'Brien, Pictou Academy.
1873—1. Jas. McLean, private study ; 2. John Waddall, Pictou Academy.
1874—1. J. L. George, Pictou Academy; 2. John Stewart.
1875—1. George W. McQueen, New Glasgow Academy; 2. Isaac M. McLean, private study.
1876—1. Howard Murray, New Glasgow Academy ; 3. W. B. Fraser.
1877—1. H. Graham Creelman, Pictou Academy ; J. James B. Trueman, St. John Grammar School.
1878—1. G. M. Campbell, Pictou Academy ; 2. James T. Wyllie, Pictou Academy and Halifax High school.
1879—1a Atto : 1. J. Albert Bell, Halifax High School ; 2. James A. Norris, do ; 3. James A. Macdonald, do. In Science : Arthur G. Reid, Halifax High School.
1880—In Arts : 1. H. S. Adams, Halifax High School ; 2. John Pirblado, private study. In Science : Henry M. Smith, private study.

THE GRANT PRIZE.

For Essays—1865: Joseph H. Chase. 1867: Aubrey Lippincott. 1868: Arthur P. Silver. 1869: Herbert A. Bayne. 1870: Hugh W. Scott. 1871: Duncan C. Fraser. 1872: Alexander H. McKay.

THE YOUNG PRIZES.

General Prize, voted by students. 1867: 1 John Gow, 2nd and 4th years; 2 Alexander C. McKenzie, 1st and 2nd years. 1868: 1 George Murray, 2nd and 4th years; 2 Wentworth Eaton, 1st and 2nd years. 1869: 1 John J. McKenzie, 2nd and 4th years; 2 Hiram Logan, 1st and 2nd years. *For Essay*, Walter M. Thomson; *For Elocution*, Duncan C. Fraser. 1871: *For Essay*, James G. MacGregor; *For Elocution*, Robert O. Stockton. 1872: *For Essay*, Ephraim Scott; *For Elocution*, W. A. Mills. *For Elocution*, 1873: Fred. W. Archibald. 1874: Richmond A. Logan. 1875: S. J. MacKnight. 1876: 1 Francis H. Bell; 2 Colin Pitblado. 1877: H. H. Whidley; 2 A. E. Lawson. 1874: 1 J. A. Sedgewick; 2 Duncan Cameron. 1875: 1 Charles D. McLaren; 2 Edwin Crowell; 3 William F. Payne. 1880: 1 D. A. Murray; 2 Romulsey Mellish. 1881: 1 J. E. Forsyth; 2 E. M. Dill.

THE ROY PRIZES.

For Elocution, 1888: 1. Alexander G. Russell; 2. James G. MacGregor. 1889: 1. Albert B. Quinn; 2. William M. Booth.

THE NORTH BRITISH SOCIETY BURSARY.

1866: Hugh M. Scott. 1870: Ephraim Scott. 1872: Jas. C. Herdman. 1874: James McG. Stewart. 1876: John H. Cameron. 1878: Albert E. Thomson. 1880: George M. Campbell.

THE DE AVERY PRIZE.

1880: A. E. Thomson. 1881: J. A. Sedgewick.

THE WAVERLEY BURSARY.

1871: William Bearisto, Wm. B. Ross equal. 1874: James Fitzpatrick. 1876: Jas. McLean. 1878: John Waddell. 1877: Rod. McKay. 1879: Howard Murray. 1881: J. A. Bell.

THE LAURIE PRIZE.

1871: Hugh M. Scott. 1872: Duncan C. Fraser. 1873: David F. Creelman. 1874: Archibald Cross. 1875: Alex. McLeod. 1876: No competition. 1877: Richmond Logan

THE ST. ANDREW'S PRIZE.

1871—For Classics: *First Year*, John W. McLeod.
1872—For Mathematics: *Second Year*, John W. McLeod.
1873—For Classics: *Second Year*, James McLean.
1874—For Mathematics: *Second Year*, T. A. LaPage.
1877—For Classics: *Second Year*, G. W. McQueen.
1878—For Mathematics: *Second Year*, Albert E. Thomson.
1879—For Classics: *Second Year*, Howard Murray.
1880—For Mathematics: *Second Year*, Humphrey Mellish.
1881—For Classics: *Second Year*, James A. Macdonald.

GRADUATES AND UNDERGRADUATES OF THE UNIVERSITY, AND GENERAL STUDENTS.

GRADUATES.

MASTERS OF ARTS.

1869.
Chase, Jos. Henry, Onslow.

1869.
McKenzie, Hugh, Truro.
Scott, Ephraim New Glasgow.

1870.
McNaughton, Samuel, Pictou, G.E.
McDonald, John H., Shelburne.

1870.
Allan, John M., Madeira.

1871.
Cameron, J. J., Shubenacadie, Onc.
Chet, Arthur J., Alberton, P.E.I.
Smith, David H., Truro.

1878.
McLeod, W. F., Cavendish, P.E.I.
Eastman, James D., B.B., Cornwallis, N.B.
Jordan, Louis H., B.D., Halifax.
McLeod, Alexander, Onslow.
Trueman, Arthur I., St. John, N.B.

1872.
Annand, Joseph, New Hebrides.
Bayne, Herbert A., Ph.D., Kingston, Ont.
Forrest, James, Halifax.
Mackenzie, John J. Ph.D. [obit.]

1880.
Creelman, D. F., Shubenac.
Logan, Richmond, Stone Harbour.
McLeod, John W., Trinidad.

1874.
MacGregor, J. G., D.Sc., Halifax.

1881.
Herdman, W. C., Eberndale.
Newcombe, E. L., Kentville.

DOCTORS OF MEDICINE AND MASTERS OF SURGERY.

1872.
DeWolfe, George H., England.
Hiltz, Charles W., Halmon Bay.
McMillan, Bishop, [obit.]
McRae, William Reformed, C. B.
Sutherland, Robert, [obit.]

Chisholm, Donald, Antigonish.
Moore, Edmund, Cardazon.

1875.
Cox, Robinson, Stewiacke.
Drahme, J. L., Baddeck, C.B.
Lindsay, A. W. H., Halifax.
Muir, W. H., Truro.

1874.
Campbell, Dan. A., Halifax.

Robert, Chastinan, Archbat, C. B.

BACHELORS OF ARTS.

1865.
Chase, J. Henry, Onslow.
Shaw, Robert, Charlottetown.

1867.
Burgess, Arthur C., Carleton, N.B.
Cameron, J. J., Shelagore, Onc.
Lippincott, Andrew, Pickings, Pa.
McDonald, John H., Shelburne.
McNaughton, Saml., Pictou, G.B.
Ross, Alexander, Dalhousie, N.B.
Sedgewick, Robert, Halifax.
Smith, David H., Truro.
Smith, Edwin, Stewiacke.

1868.
Carr, Arthur F., Alberton, P.E.I.
Chisholm, Thomas M., Trinidad.
Creighton, Jas. G. A., Montreal.
Forrest, James, Halifax.
McKay, Kenneth, Richmond, N.B.
Simpson, Isaac, LeHave.

1870.
Annand, Joseph, New Hebrides.
Bayne, Herbert A., Ph.D., Kingston, Ont.
Miller, Rhos. D., Lunenburg.
Mackenzie, J. J. Ph.D. [obit.]
Sutherland, Jno. B., St. James, N.B.

1870.
Lindsay, Andrew W. H., Halifax.
Scott, Hugh M., E.D., Glasgow.
Thurloor, Walter M., Madras.
Wallace, John, Bermuda.

1871.
Burns, E. S., Murray Harbor, P.E.I
MacGregor, Jas. G., D.Sc., Halifax.
Russell, Alexander G., Oyster Bay,
Long Island, N. Y.

1872.
Archibald, W. P., Cavendish, P.E.I.
Brnes, Wm. T., M.D., Colchester
Carmichael, Jas. M., New Glasgow
Fraser, Duncan C., New Glasgow
Gunn, Adam Kennetcook.
McKenzie, Hugh, Truro.
Pickel, Alex. W. [obit.]
Scott, Ephraim, New Glasgow.
Trueman, Arthur I., St. John, N.B

1873.
Allan, John M., Madeira.
Brydon, Chas. W., Salisbury, N.B

Cameron, William, Pictou Co.
Crowinan, David F., Roadstran.
Duff, Kenneth, Musboda.
Hunter, John, California.
Logan, Neville, Halifax.
Macdonald, Charles D., Pictou.
McKay, Alex. K, B.Sc., Pictou.
McKeen, James A., Barometia.
Robinson, J. Millar, Halifax.
Ross, Wm., Prince William, N. B.

1874.
Doull, Walter S., Halifax.
Fraser, D. Stiles, Malone Bay.
Herdman, Jas. C., B.D., Campbell'n.
Herdman, Wm. C., Elmsdale.
McGregor, Daniel, Merigomish.
McLeod, Don., Strathalbyn, P.E.I.
Oxvy, James M., Ln.B., Halifax.

1875.
Pitzpatr,k, J., Salt Springs, N. S.
Jordan, Louis H., B.D., Halifax.
McLeod, Alexander Pottesburg.
McMillan, G. W, Princetown, P.E.I
Stramberg, H. A., Canso,John, Pictou

1876.
Bell, Francis H., Halifax.
Forbes, Geo. H, Scarborough
McDowall, Isaac, [obit.]
McLean, James A., Barrington.
McLeod, John W., Trinidad.
Moren, Joseph Stellarton
Stewart, J. Noel, Pictou.

1877.
Archibald, E. W. M.A., Amherst.
Chambers, Robt. S., New Glasgow.
Grant, W. R., [obit.]
Hamilton, Howard E., Pictou.
Beerdman, A. W, Pictou.
Laird, George A., Joxiaride.
Logan, Richmond, Stone Harbour.
Mason, Wm. A., New London, P.E.I.
McCurdy, Stanley T, New Glasgow
McKinlick, Burgess, Sydney, C.B.
Nicholls, J. S, Charlottetown, P.E.I
Riddah, Chas. Missouri, Onto Ca.
Smith, John W.D, North Shore Co.
Waddell, John, Edinburgh Univ'y.

1878.
Cairns, I. A. N.a., Princetown, N.J.
Cameron, John H., Pine Hill, Hfx.
Georgen, John L, M. J, Picton.
McKenzie, James, Greenhill, Pictou.

1850.

Munro, George W., New York
Newcombe, Kennrd L., Kentville.
Rogers, Anderson, Post Off., Hfx.
Williams Alfred, Bridgetown.

1879.

CAMERON, Charles S., Shediock, C. B.
Chambers Fred. B., Truro.
Dickie, Alfred, Stewiacke.
Emmerson, R. K. J., Halifax.
McLean, Isaac M., Hopewell, Picton.

1850.

Blackland, Chas. W., Winnipeg.
Crowell, Edwin, Barrington.
Creighton, H. S., Dartmouth.
Kaemaan, Fred. S., Centreville.
Thomson, Alwn E., Halifax.

1851.

Conley, Alfred. Halifax.
Creelman, H. G., Up. Stewiacke.
Macdonald. W. M., Halifax.
Sedgewick, J. A., Halifax.
Spencer, W. H., Londonderry.

BACHELOR OF SCIENCE.

1850.

William M. Fraser, Dartmouth.

Graduates are particularly requested to notify the Principal or Secretary of Senate of any change of address.

UNDERGRADUATES IN ARTS, 1880-81.

FOURTH YEAR.
Conley, Alfred, Halifax.
Creelman, H. G., Up. Stewiacke.
Macdonald, Wallace M., Halifax.
Sedgewick, Jas. A., Musquodoboit.
Spencer, Wm. H., Great Village.

THIRD YEAR.
Campbell, G. M., Truro.
Carson, G. S., Sussex, N. B.
Davidson, Johnson P., Halifax.
Fraser, W. R., Mt. Thom, Picton.
Knowles, James H., Shuben.
Lamishli, Robert, Halifax.
Nutbhili, Humphrey, Halifax.
Patterson, C. G., New Glasgow.
Torey, E. T., Scarborough.
Trueman, Jas. S., Carleton, N. E.

SECOND YEAR.
Ball, John A., Halifax.
Campbell, Arthur, Truro.
Dickie, Henry, Upper Stewiacke.

FIRST YEAR.
Adams, H. S, Halifax.
Blair, G. B., Truro.
Calkin, W. C., Halifax.
Dill, E. M., Canso Rawdon.
Elliott, R. Weston, Cornwallis.
Henllion, G. Dushonte, N. B.
Jones, Frank, Lipple.
McDonald, Don, Cape North, C. B.
McLeod, J. P., Valleyfield, P. E. I.
Miller, J. A., Halifax.
Morrison, D. I., Picton.
Philander, J. Halifax.
Taylor, W. H., Halifax.
Whidden, B. C., Canso.

UNDERGRADUATES IN SCIENCE, 1880-81.

THIRD YEAR.
Cameron, A. G. Newtown, Saysboro'

SECOND YEAR.
McDull, Arch., New Glasgow.
Moora, James A., Halifax.
Dodd, Arthur G., Halifax.

FIRST YEAR.
Bayn, F. C., Halifax.
Nixeter, J. H., Halifax.
Smith, B. M., Halifax.
Trueman, H., Turmansville, Cumberland Co., N. B.

GENERAL STUDENTS IN ARTS, 1880-81.

Blair, J. T. St. John, N. B.
Cameron, D., F. River. St. Mary's
Curtie, J., Halifax.
Fisher, G. Middle Stewiacke.
Forrith, J. F., Cornwallis.
Fraser, W. M., Esq., Dartmouth.
Forrester, H. J. St. John's, Nfd.
Jamison, J. L., Halifax.
Lundell, R. M., Halifax.
Logan, A. F., R. Sydney.

McDougall, B., Maitland.
Mickey, Jno., Waverooungl.
McGuIgan, A., Sydney Mines.
Ross, J., Halifax.
McManage, R. H., Halifax.
Stewart, W. W., Wintoncough.
Stover, R. T., Halifax.
Symonds, F. A., Great Village, Londonderry.
Thomson, A., Halifax.

GENERAL STUDENTS IN SCIENCE, 1880-81.

Angus, A. C., Goose River, Cumbld.
Buchanan, R. W., Halifax.
Chipmaill, A., Dartmouth.
DeMill, W. B., Halifax.
Freeman, W. S., Shelburne.
Gourley, J. N., Stewiacke.
Hare, A. A., Bedford.
Henderson, G. W., Dartmouth.
Hill, A., Halifax.
Lewis, E., Canborce.
Jennings, B. J., Halifax.

Kelly, F. W., Shelburne.
Kingsford, H. Dover, Kent.
Macdonald, J. S., Halifax.
Maxwell, Dr., Halifax.
McLeod, J. B., Sydney, C. B.
Morrison, J. N. River, P.E.I.
Pritchard, Geo., B.A., Halifax.
Peircoss, A., Halifax.
Lindsay, A. W. H., B.A., M.D., C.M., Halifax.
Thomson, J. E., B.A., Halifax.

Undergraduate 57
General Students 30

Total 87

ALUMNI ASSOCIATION OF DALHOUSIE COLLEGE AND UNIVERSITY.

(Incorporated 1876.)

EXTRACT FROM THE CONSTITUTION.

ART. II.—The object of the Association shall be the protection of the best interests of the University.

ART. III., Sec. I.—All graduates of the University and all students who have attended classes throughout one academic year shall be eligible for membership; but no person shall become a member until three years have elapsed from the time of his matriculation or first registration.

Sec. 2.—Other persons, not eligible for membership under section 1 of this Article may be elected as Honorary Members, on the nomination of the Executive.

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A. H. McKAY, B. A., B. Sc. ....*Vice-President.*
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J. G. MacGREGOR, M. A., D. Sc.
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J. A. SEDGEWICK, B. A.,
A. P. SILVER.

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CHARLES MACDONALD, M. A., *Professor of Mathematics, Dalhousie College.*
JOHN JOHNSON, M. A., *Professor of Classics, Dalhousie College.*
GEORGE LAWSON, Ph. D., LL. D., *Professor of Chemistry, Dalhousie College.*
JAMES LIECHTI, M. A., *Professor of Modern Languages, Dalhousie College.*
DAVID HONEYMAN, D. C. L., *Professor of Geology, Dalhousie College.*
REV. JOHN FORREST, *Scotch Manse Professor of History, Dalhousie College.*

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NAME	OCCUPATION	RESIDENCE
Allen, John M.	Clergyman	Radotta
Archibald, William F.		Greenfield, P. E. I.
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Bayne, Ernest S.	Clergyman	Murray Harbor, P.E.I.
Bell, Francis R.	Barrister	Halifax
Black, H. W. O.		Halifax
Bruce William E., M. D.	Clergyman	Coldstream
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Chambers, Robt. E.		New Glasgow
Chase, Joseph R.	Clergyman	Onslow
Carmichael James M.	Merchant	New Glasgow
Coakley, A.		Halifax
Cocoloue, H. G.		Upper Stewiacke
Caswell, Edwin	Theol. Student	Remington
Cruikshank, William, p. b.	Clergyman	Montreal.
Fielden, Alfred,	Merchant	Newfield
Duff, Walter S	Barrister	Halifax
Duell, W. H.	Merchant	Halifax
Emmerson, Robt. B. J.	...	Halifax
Forrest, James	Broker	Halifax
Fraser, Duncan C.	Barrister	New Glasgow
Fraser, W. K.	Analyst	Halifax
Fitzpatrick, James	Clergyman	Salt Springs Picton.
Fraser, D. Stiles		Malone Bay
Goldert, J. M.	Barrister	Halifax
George, John L., B. A.		Pictou
Hamilton, Howard H.	Manufacturer	Pictou
Money, Hugh Bell.	Barrister	Halifax
Hardman, J. C., B. S	Clergyman	Campbellton, N. B.
Humphrey, S.	Clerk	Halifax
Henderry, W.	Bookkeeper	Halifax
Jordan, Louis H., B. D.	Clergyman	Edinburgh
Lindsay A. W., B., M. D.	Physician	Halifax
Logan, Releoud	Clergyman	Sweet Harbor
Miller, Eben. D.		Lunenburg
Mills, W. A.	Barrister	Halifax
Morton, Joseph H.	Principal of Academy	Shelburne
Mearn, John		
Macdonald, Charles D.	Barrister	Pictou
Macdonald, W. M.	Law Student	Halifax
McKay, Alex. H., B. Sc.	Principal of Academy	Pictou
Maclennan, Hugh	Barrister	Truro
MacGregor, Jas. G., D. Sc	Professor	Halifax
McLennan, Jno. A.,	Clergyman	Barrington
McLintock, Emvyor	Principal of Academy	Sydney C. B.
McNaughton Samuel	Clergyman	Pennfield, G. B.
Oxley, James McD., LL. B.	Barrister	Halifax

NAME.	OCCUPATION.	RESIDENCE.
Robinson, J. M.	Theol. Student	Halifax
Russell, Alexandre G.	Clergyman	Oyster Bay, L. I., N.Y.
Robert, Cecilia, M. D.	Physician	Arichat
Ross, J. J.	Barrister	Halifax
Ross, W. R.	"	"
Scott, H. McD., B. D.	Professor	Chicago
Sedgewick, E.	Barrister	Halifax
Sedgewick, J. A.	Law Student	
Spencer, W. H.		Londonderry
Stairs, J. F.	Manufacturer	Halifax
Story, J. D.	Deputy P. O. Insp't	
Strathony, Hector		Montreal
Stewart, James McG.	Barrister	Pictou
Thomson, A. B.	Medical Student	Edinburgh University.
Thorburn, W. M.	India Civil Service	Malboa Presidency.
Troop, W. H.	Merchant	Halifax
Troutman, A. I.	Barrister	St. John, N. B.
Tupper, Chas. H.		Halifax
Vallace, John	Clergyman	Berwick
Whitman, Alfred W.	Law Student	Halifax
Waddell, John	Science Student	Edinburgh University.
West, E. S.	Merchant	Halifax

EXAMINATION PAPERS, 1881.

GREEK

Examiner,...............................JOHN JOHNSON, M.A.

FIRST YEAR.

XENOPHON : CYROPÆDIA, Book I.

TIME: THREE HOURS.

I.

A. Translate bk. i, chap. 1, sec. 2, beginning Ἐννοίᾳ δὲ ποτ᾽ ἐπήλθεν ὅτι Κῦρος ἐγένετο Πέρσης; ending, ἀγασθείς δ᾽ ὧν, εἰ τοῦ ἑαυτοῦ ἔθνους ἄρχειν δοκούντων.

2. What conjunctions may be followed by the infinitive?

3. κατεστράφατο δὲ Σύρους (᾿Ασσυρίους . . . φησίν ἀκανθίδωρος. Where did these nations dwell?

B. Translate bk. I, chap. 4, secs. 21, 22, beginning, οἱ δ᾽ ἀμφὶ τὸν Κῦρον ἐπεξελαύνοντες; ending, προσδεχόμενοι ὥστε τὰ τοῦ τείχους πρὸ τὰ τὸν πολεμίων καὶ οἱ μὲν πλεν πρὸς τοὺς ἑαυτῶν ἵλασαν ὄντες.

1. Explain the syntax of:—ὡς ταυτολογίας τῇ διώγματι.

2. What object had Xenophon in view in writing the Cyropædia? Sketch his life.

3. How does Xenophon's account of Cyrus's boyhood differ from that of another writer?

II.

1. Give the gender and meaning, and write the nom. and gen. sing. of:—σφαγή, ὦα, Πέρσης, πόλις, χείρ, παραγγελίᾳ.

2. Form (a) accus. and voc. sing. and dat. sing. of:—Πέρσης, εἶχε, διωγμή, ᾿Αστυάγης, δέος, κέρας; (b) nom. sing. and nom. pl. (all genders) of:—κατεστάτω, τάχα, δοκοῦν, ὄνομα, μεῖζον, σφός.

3. When words in the outer degrees of comparison correspond in gender, number and case, or otherwise, to ἀνδρί, χρηστέ, φίλε, μείζονι δούλου, πλεῖον?

4. What is the Greek for: 26, 300, 360th, thrice?

5. What is the difference between a "root" and a "stem"? Give examples in nouns and verbs.

6. Distinguish the meanings in act. and mid. voices, of—ποιῶ, δῶ, ἄγχω, δείκω, ἴσταμαι, χρῶς, λανθάνω. Also distinguish εἰμι, ἐξ᾽ ποίησα, ἀγαγεῖν· ταμεῖν, πεσεῖν· χρόνον εἰδέναι, χρόνου ἰσταθῆναι, (give Latin equivalents.)

7. Form 1st sing. imperf. indic. (giving contracted forms) of:—οἰκοδομέομαι, ἱστάω, συνετιθέω, λέγοιμεν, δεκνυμένω, σημαίνοιλαν.

8. What is the 1st aorist optative in the active and passive of—δήλω, πράττω, λανθάω, λανθω, κατάξομεν?

9. Give examples of the different ways in which verbs ending in —ω form the perfect passive.

10. Write the perfect infinitive passive of—πείθω, ἀγγέλλω, πάσσω, κομίζω, ἀθερω, δέρεω.

11. Parse, giving chief parts —εἰπεῖν, δεῖλωσαι, ἀχραξάμεις—ἀγθεσαν, ἀσταθ, ἐκείτατον—ἐπελθουσῆς, ἐπιβλέσαστες.

III.

(Additional for Candidates seeking a First or Second Class.)

XENOPHON: Cyropaedia, Book IV., Chaps. I-IV.

Time: Two Hours.

A. Translate chap. II, secs. 40, 41.

1. Explain clearly the syntax of the clauses beginning, (α) ἵν᾽ οἱ δ᾽ μᾶλλον ἑωσκεὶν κ.λ.. (β) ἀλλ᾽ οὐ μὰ Δίας τὰ λαχοτι κ.τ.λ.

2. Point out peculiarities of declension (writing the accents) of ψώος, αἴλου, γόνυ.

3. What adjectives are found in the second declension only?

4. What verbs (α) simple and (β) compound take a double augment?

5. Give a list of twelve futures middle that are used as fut. active.

6. Write with accents all the personal forms in the Attic dialect of (α) the aor. opt. of νοστέω : (β) fut. opt. of ἀγγέλλω.

7. Accentuate and parse these verbal forms —ἀπαγόμεναι, ἀναπεπτάμενε, ἱσταστω, προσέχον.

8. What are *Atonics*? Give a list of them.

9. Write in Latin :

   α. οἱ μὴ ἰκνέννεις ἀλγ ννετέ τε ἐν.
   β. ὅσος ἂν νεί οἱ αἱ σωτηρίαστης τὰ ἐπιτήδεια.

SECOND YEAR.

XENOPHON : Memorabilia, Book I, Chaps. 1-3.
 HOMER: Iliad, Book IX.

Time: Three Hours.

I.

A. Translate Mem. bk. 1, chap. 2, secs. 19, 20, 21.

1. From what author is the first quotation in this extract taken ?

2. What is unusual in the syntax of the clause :—ἐσκεγ οὐ πᾶ εὐ-φυτος ἵνχα τοῖς σὺ τὰ σώνατα ἀσκοῦσιν οἱ ἀνασάνεῶι νοστα. Why are different negatives used with the participles ?

3. Explain the construction of the clause :—τῷ δὲ τὸν σωκράτει συνεῖναι.

4. Account for the oblique cases in the following clauses:—
   (α) ἀὐτι ὡς δεῖ ἀνγγεσθαι ἄνεστανι.
   (β) ἐτελεύσατο· καί ἐν ἢ ψεχή πλεγκεσε τῷ σωφροσύνης ἀσκῆσαι.

5. Distinguish εἰδι, γνῶσαι (giving Latin equivalents),—ὅκνευ ἐκ-αστι—οἶνεν τίνεν, οἶνεν πίνεν—εἶδε τινὶ, εἰδέσαι τινι.

6. (α) Give all the forms in the singular of: ἀκερότις, τινὰς, ἰδρωτάς. (β) Parse, giving chief parts —δεδίειι, φθάνεις, προσέφθαρεω.

B. Translate Iliad, IX, 430-435.

1. What are the Attic forms of—πλείω, πελέκεσσι, κατά, αντοσάν, ἑοῦ, βασιλέϊ, ἐδείομεν, ἐελδομένοισι.

2. Write the Homeric terminations of the gen. sing. and dat. pl. of 1st and 2nd declensions.

3. Parse, giving other parts—ληΐσσατο, μελαίνεα, θείομεν.

4. Scan the last three lines.

5. What diseases are here included about the authorship of the Iliad? What discrepancies have been noted in it? State briefly the reasons for supposing it was act originally written.

6. What is the Greek for— All day long—in this manner; to speak well of a person—three times a year—as quickly as possible—οἱ ἀναξ ἀπὸ φὠψ φωρύμμ.

7. Translate into Greek:—The city was fortified in the reign of Cyrus, and taken three years afterwards by the Persians. Socrates seemed to me to be worthy of honour rather than of death, at the hands of the state. Alcibiades was able to conquer in a improper design as long as he associated with Socrates, but he was afterwards neglected himself.

III.

(Additional for Candidates seeking a First or Second Class.)

HERODOTUS: Book I, Sect. 86–130.

Time: Two Hours.

A. Translate Herod. I, sec. 89, to πεθσμη οἱ οἱ μήρηθες.

1. Explain the syntax of the following persons found in the extract:

(a) τοι ἀκρη ἔχρη σε τριμσ.
(b) ἀλωθσνία τσερφα μεσλω τι οί ακγίαδι ... στρωπ δσνρηα ἐλωθεσ ἐωτσεστεν.
(c) τὰ μὴν σου τι και τὰ χρανσι τσωμρηθεω, οχόνθεν ἦν.

2. τὰ δὲ ἄσ δὰ φέφτσ ἐν τ ριγω ναδά τὰ· Ἀθρημδ ἀλωθι μηθασ πσ εω σὰ μηθσωθεν. How long was the war?

3. What is the force of the article in Herodotus?

B. Translate Herod. I, sec. 128, beginning at Κύρος εί Κύρος.

1. Write the long forms of—λωψι, τάτε, διέκσιοι, ἐκσεληθε, σῶθις, Εσωι, ψα.

2. Give examples of the Ionic Imperfect; the Epic Aorist; the Ionic 2 pl. pluperfect passive of γ nuttu and γ ματα verbs.

3. Decline with accents in the Ionic dialect:—(a) ὁ ἐν singa σε, ὁσε, Ἀχιλλεύς. (b) In the plural, πολις, ναῦς.

4. Accentuate, give the Attic equivalents, and parse the following verbal forms—ἐκφπθψμσο, σμσω, αρττσει, παρτσσς, ανσατσρε.

5. The account of Cyrus's death, as given by Herodotus, if differs from that given by Xenophon.

6. A short sketch of Herodotus.

7. Translate and accentuate the following sentences:—Νσε γσρ, σσν του τουτε του τσαγρσε, οχγ σιν σλοσσετσαι ἀν τσσσ, αλλ ανα συννσεετσθεν σν ανσ αχγσστσε τετεων τ τσαχγστα τσρσεν. Κσ ο Τσσρωτετ σσ τα γστ, σν ο Κσσως, σναμ σσε γοτριστς, σσι τα τσε γσσσω σσ τσω τσυσσθεν σσσετστ· Κσσ των τσωε τσσωσ σσν· σα τθετ σσ σε ονσ τσα τωμσ σσσ σσμσα ασ Λιεισσανς ρεφσσε σ ρσ· Οσσ σσ τσω ονσσσα τστσ σστσσ τσ σα τσωσθετ τ(ω σστρσωσσσ τσσε σσσρατσττσε σν σδωσσ σσ.

THIRD AND FOURTH YEARS.

DEMOSTHENES: OLYNTHIAN. SOPHOCLES: ANTIGONE.

Time: Three Hours.

A.

1. Translate Olynth. I, secs. 3, 3, 4, beginning 'Ω γὰ οἰσ κφσίσε σασωτ ὁ ᾗ ὑμἐ λσθτες Ἀϑφτα.

2. Account for one of oblique cases and infin. moods in the following extracts from the preceding passage:—εσσ ἐστσα σίνηγ ὁσ σὰ σσησσσ ... τσσα · ἐιετσν ἀσσ ἀσσρστσ σσωσ ασ ... γσστε κσνσν δστησεμσσ σσθσραθσσ ... τσ τσ τσ σσ τσανσας ... τσσ ὁ τσω τσλστσσε.

3. τὰ εσσσσε Ἀσσστσσσ ἐσγλσε, μστ' σσετ τιθσστ, νσσσε Ἀρσσσσον, ἀισσσασσ σστσσε, στο ἐσστσλσσρ ἐσσθε. Describe their situation and give the dates of the events. What caused Philip to interfere in Thessaly?

4. σ τσστιτστσ τισ σσσσστ σσ τσσσττε τι σσ τσσσε τσστσσσεσ.—Translate, parse the verb and account for case of σσσσσε.

5. σσωσψ σσ τσσ τσ μιατστσσ σσ τσσστσσ σιστσσ τιν τσσσσσσε, σσσστστσ, τσσσσ τσ σσσσα σ σ.—Translate. What is the force of τσ adjective preceding the article? Explain an unusual construction in the sentence.

6. Give some account of the Theoric fund.

II.

B. Translate Antig., vss. 1064–1090.

1. Illustrate the use of participles from the extract.

2. ἀσθ᾽ οὐ λέγειν μὲν τῶν ἐπὶ βλάβῃ κέρδος κ. τ. λ.—What governs τῶν ?

3. In what different ways may a purpose be expressed ?

4. What is the derivation of the name *Tragedy* ? What improvements in its mode of representation are ascribed to Sophocles? What is a Trilogy ? Describe the appearance of an actor on the stage.

5. A brief sketch of Sophocles.

C. Translate into Greek (*For Passing*, D may be substituted.)

1. This year the King sent Ambassadors to the Thracians, who dwell beyond the Hellespont.

2. We must look how we may journey safely, and how we may get provisions.

3. He is so beautiful as to be admired by all.

4. I am not ashamed of having conferred many benefits upon him.

5. He is too wise not to know that.

III.

(Additional for Students seeking a First or Second Class.)

D. Translate the following extract from a work not prescribed to be read :—Τούτο γράφονται ἑκεῖ τότε, καὶ τὸ τῆς πόλεως σεμνύνεσθαι μὴ δὲ ὅλως ἐρούμενος, βιαζῆ φρονίσεσθαι οἱ μριστή ὀφελείσις ἐν Μακεδονίᾳ τρεῖς ὅλους χρόνος ἵνα ἔδοθε πολεμεῖν τῇ πόλει, πάντα καταστρεφόμενος τούτι, εἶτα ἥγιου ἔδει, μᾶλλον δ᾽ ἐγὼ δ γεγόνασιν ἐὲ τὸν Ἑλλήσποντον ἀφίχθαι, καὶ τὰ χρυσία πάσας, διὰ ταύτας τοὺς λόγους, πρὸι λαῖσαν ἐχθελα αὐτὰς οὐδὲ εἰς τὰ χαὶ ᾶ οὐ τὸν ἄρα βεβαίως αὐτόδ᾽ ἀστε τῆς εἱρήνη ἐν θαιγατρίαν καὶ τὰν ἐν ἀνθρώπῳ εἰχε, καὶ τὴν εἱρήνην καὶ τὰ χρ ἀσία.

LATIN

Examiner .... JOHN JOHNSON, M. A.

FIRST YEAR.

CICERO : FIRST PHILIPPIC, VIRGIL, ECLOGUES.

TIME: THREE HOURS.

A. Translate:

Illud usque vereor ne ignorans versus iter gloriae gloriosum patie pius te manu poem quam omnes et mortui a civibus tuis quam diligi malis. Quod si ita putas, totam ignoras viam gloriæ. Carum esse civem, bene de republica mereri, laudari, coli, diligi gloriosum est : metui vero et in odio esse invidiosum, detestabile, imbecillum, caducum. Quod vidimus etiam in fabula illi ipsi qui.

Odeint, dum metuant.

dixerit, perniciosum fuisse. Utinam, Antoni, avum tuum meminisses, de quo tamen multa audivi et sæpe sæpissime. Putasne illum immortalitatem meruisse nostram ut propter armorum laudationem Romilius meruerere ? Illa erat vita, illa secunda fortuna, libertate esse parem, ceteris, principem dignitate. Itaque ut omitam res et tua prospera, acerbissimam illam supremam malim quam L. Cinnæ dominatum, a quo ille crudelissime est interfectus.

1. Quod videmus etiam in fabula illi ipsi qui, Odeint dum metuant, dixerit, perniciosum esse. Name the work quoted in this passage, and its author, and explain the reference.

2. Utinam, Antoni, avum tuum meminisses. What do you know about the grandfather of Antonius ? How are verbs expressed ?

3. Point out the different uses of the subjunctive mood in the extract.

4. When and where was this speech made ? Describe Cicero's movements from the assassination of Cæsar up to the time of its delivery, giving his own reasons therefor.

B. Translate :

Ultima Cymaei venit iam carminis aetas;
Magnus ab integro saeclorum nascitur ordo.
Iam redit et Virgo, redeunt Saturnia regna ;
Iam nova progenies caelo demittitur alto.
Tu modo nascenti puero, quo ferrea primum
Desinet ac toto surget gens aurea mundo,
Casta fave Lucina : tuus iam regnat Apollo.
Teque hoc labor decus tuo aevi, te Consule, inibit,
Pollio, et incipient magni procedere menses ;
Te duce, si qua manent sceleris vestigia nostri,
Inrita perpetua solvent formidine terras.
Ille deum vitam accipiet divisque videbit
Permixtos heroas et ipse videbitur illis,
Pacatumque reget patriis virtutibus orbem.
At tibi prima, puer, nullo munuscula cultu
Errantis hederas passim cum baccharae tellus
Mixtaque ridenti colocasia fundet acantho.
Ipsae lacte domum referent distenta capellae
Ubera, nec magnos metuent armenta leones.
Ipsa tibi blandos fundent cunabula flores.
Occidet et serpens, et fallax herba veneni
Occidet ; Assyrium volgo nascetur amomum.

1. s. Nascenti puero. Whom may Virgil have meant ?

2. How is the date of this Eclogue fixed ?

2. Write explanatory notes on the following lines:

    a. Ultimo Cymaea venit jam carminis aetas.

3. Describe the situation of the place mentioned:

    a. Nec tantum Phoebo gaudet Parnasia rupes,
       Nec tantum Rhodope miratur et Ismarus Orphea.

    b. Mantua, vae, miserae nimium vicina Cremonae.

    Way are these epithets used ?

4. Whose did Virgil balance in the Eclogues ? When were they written? Which of his contemporaries does he mention in them ? Tell what you know of any one of them. Where it occurred Latin and in English, the idea, month and year of Virgil's birth.

5. *a.* Give the gender, and genitives singular and plural (if used), and mark the quantity of the increment in the genitive singular of: fuces, pigues, palmes, clade, lex, pinus, superbo, fas.

    b. Parse here, iuvidet, conveniam, concupisse

6. Account for the case of: casto, pasto, mundo, formidine, illis, scansibo,

7. Scan the lines quoted in B. 3.

C. Translate into Latin: Three years afterwards Caesar returned from Gaul to Rome, and remained there three months. Next day the enemy burst into the town, and having killed all the citizens and carried off the women took their way . . . I shall ask for his opinion without any delay. The light of the sun is brighter than that of the moon.

(Additional for Candidates seeking a First or Second Class)

CICERO: FOURTH ORATION AGAINST CATILINE.
TIME: TWO HOURS.

A. Translate:

Quae quum ita sint, patres conscripti, pro imperio, pro exercitu, pro provincia, quam neglexi, pro triumpho ceterisque laudis insignibus, quae mea a me propter Urbis custodiam salutisque repudiata, pro clientelis hospitiisque provincialibus, quae tamen urbanis opibus non minore labore tueor, quam comparo; pro his igitur omnibus rebus, pro summo meo . . .

---

c. At vero C. Caesar intelligit Legem Semproniam esse de civibus Romanis constitutam. Two ways of dealing with the arrested conspirators were suggested in the Senate. How did the Lex Sempronia support Caesar's proposal ? How did Cicero try to shew that the law did not apply ?

6. *Pro provincia, quam neglexi:* What fact does he refer to. Name some of the Roman Provinces, and tell how they were governed.

7. *Sno silio periculis.* What is the construction of *suo* ?

8. How were the last seven days of a February of twenty-nine days denoted ?

9. Write in Roman capitals, 16,417. What is the Latin for: ½, 4, 287½0 ?

4. What names of the second declension end at the fourth are feminine ?

5. Give two (or more) meanings of each of the following words, and mark quantities: carla, aacaro, lumen, condno, nata, solem, os, liloro, sino, sero, pedes, ante, labor, clades, visdom, populus.

6. *a.* What adjective of one termination form the ablative in *i* only?
    b. What adjectives lack the comparative degree only ?

7. Form single sentences to show the cases governed by : opus est, conudo, utile, cavco, colo, adoo, supergo, mereo.

SECOND YEAR.
CICERO: PRO MILONE. HORACE: ODES, BOOK I.
TIME: THREE HOURS.

A. Translate: Nec vero me, judices, Clodianus crimen movet: nec tam sum demens tamque vestri amans ignarus atque ingrato, ut nesciam . . .

c. Give in English and Latin the day on which this speech was to have been made.

4. Mention in order the subjects with which Cicero deals.

5. Describe the cost and the method of procedure at the trial, pointing out what was unusual.

B. Translate:

Tu ne quaesieris, scire nefas, quem mihi, quem tibi
Finem di dederint, Leuconoë, nec Babylonios
Tentaris numeros. Ut melius quidquid erit pati,
Seu plures hiemes seu tribuit Iuppiter ultimam,
Quae nunc oppositis debilitat pumicibus mare
Tyrrhenum. Sapias, vina liques, et spatio brevi
Spem longam reseces. Dum loquimur fugerit invida
Aetas: carpe diem quam minimum credula postero.

Parvos deorum calice at infrequens
Insultavi dum nutantium
Cogebam arro, nunc retrorsum
Vela dare iterque incurro cursus.
Cogor relictos: ingaque Diospiter
Igni corusco nubila dividens
Plerumque, per jarvos tonantis
Egit ab nisu rubicroncque curium,
Quo bruta tellus et vaga flumina,
Quo Styx et invisi lacunta Taenari
Sedes Atlanteusque finis
Concutitur. Valet ima summis
Mutare et insignem attenuat deus
Obscura promens: hinc apicem rapax
Fortuna cum stridore acuto
Sustulit, hic posuisse gaudet.

1. 2. *Tu ne quaesieris.* Give the different forms of *quaesieris.*

1. 3. *Vela his stemen melore.* It what case is *summer*? Mato admila of two constructions. Write this *summer* in prose.

e. *Hinc apicem rapax Fortuna cum stridore acuto sustulit.* To what Horace supposed to refer by using *apicem*? What is the force of *sustulit*?

2. Write explanatory notes on:

a. Berberis Vanio lovis et hostien..
   Viram blandit cut-mitis alto..

b. Quid dedicatum poscit Apollinem
   Vates?

3. Name the odes with their epithets that are mentioned in the First Book of the Odes; or, Quote what Horace writes of Maecenas.

a. Scan these lines, and give the rules for quantities of last line:

c. Matrem too sine vane.

b. Nec vegna vital antime tello.

e. Stnavere et aline subtime stelane.

5. Give the gender and the nom. and gen. sing. and plural (if used) of: calix, pulvera, archita, pecus, lgva, glans, fides, femalie.

6. Note peculiarities of declension of: Tempe, Argos, Achillei, pendeus, Orphens.

7. Diem, giving chief parts: supice, liques, concute, reareno, admota, bisolante.

8. What changes are made in turning *omnis retu* into *oratio oblijua*?

7. In conditional sentences, how do the primary and secondary tenses of the subjunctive differ in meaning?

8. Show by a simple example the different ways in which a purpose may be expressed.

C. Translate into Latin:—Tiberius Sempronius Gracchus, descended from a very noble family, would not suffer Scipio Africanus, though an enemy, to be carried to prison. The latter, when he was praetor, attacked Gaius; in his first consulship he conquered Spain, and in his second, Sardinia. When he was inaugurating of the people on a capital charge, Sempronius swore that he was not deserving of death, and that if he were banished he would go into exile along with him. Upon this he was acquitted.

(Additional for Candidates seeking a First or Second Class.)

HORACE: ODES, BOOK III.

TEXT: TWO HOURS.

A. Translate Ode V, ver. 1—28.

1. The fourth stanza may be translated in two ways according to the reading.

2. Carlo Tonantem credidimus Jovem
   Regnare : praesens divus habebitur
   Augustus—
   What is the force of *credidimus* and *praesens divus*?

3. Milesne Crassi coniux barbara
   Turpis maritus vixit. Explain.

4. *A celiberem ... diline.* What is meant? What a peculiar in the form *auctumne*?

B. Translate Ode XXII.

1. How does Bentley translate the last stanza?

2. Parse: *regnasse, concessit, minet, refiget, placaris.*

3. Explain the reference in the following verses:

a. Tolgani jaga periclibus.

b. .... Urentes arenes

c. Literia Assyrii viror.

c. Noc Lauvirguck Bacchus in amphora.

4. The situation and modern names of: Praeneste, Tibur, Tibir, Faventum, Canalis, Falarena, Uasnis.

5. Write notes on the syntax:

a. Attaliscu

b. Dixit, carum calidisque mne.

c. Umer metuol deris eue meuen This may be translated in two ways.

e. Et qua pauper aquae Daunus agrestium
   Regnavit populorum.

6. Ammaa tho scaaca as a Sapphic storo : Cuncta muena fortiust, hoc et illos posthar preenia oatitia celevar : flnunaua communa condalum fanuum variea trngiuiat.

7. What occurs in Horace's Ode era mentioned in the Third Book of the Odes?

B

THIRD AND FOURTH YEARS.

HORACE: Selected Satires. TACITUS: Annals, Book I.

THIRD YEAR: HORACE.

A. Translate:

Hic ego mecum editans, quam tu, praeclare senator,
Milibus atque aliis vivas... Quamquam sibila est,
Incedo salus; personaque cuncta si adsit,
Pauca... collationes, nativerar, seraentem.

B. Translate:

1. *a.* Write the ablative singular of the following nouns, and give the reason:—*puer,* &c.

   b. Write the nominative of the following nouns:—ablative &c.

   c. Parse: collationes, nativerar, referes, serqentem.

2. *a.* Falluntur Circum vaccentiumque perero Saepe Jueum.

3. *a.* Ad quartam pote. How was the day divided by the Romans?

H. Translate:

Nec me diversa impleo, cum laribar festa apella. hæc canor aut trist mensa scriptia vallitos aa ronibasere aures coedepsant, æed Romano lernisti apos, hiterpunte virea, atque ipar honem quum deferretri, firmatam magis quam perdita. Distemque trinuli dira apos: næc Quintilena Varum saucipsar calloss et palustlans ersonere, meruere et antins virum sui osbit tenentum, nom lutras oboschte et minim htmetalus morqhan. Contra line ciomus in latere legnum, neret an canistem, barum deseruerat, cepta impuan cinnerans timan. Juæta canios timant filia viscus logiones? *Stand tune et suis febris subtili agmen unispuo matam velisata lequusti.* What is meant in the axiom of the following sentences?

4. How were the Provinces divided under Augustus?

5. *a.* Shew by examples how guttural mutes are modified in English, Latin and Greek.

   b. The Latin perfect is formed variously. Illustrate by examples.

   c. What is the termination of the Locative? Where is it found in Greek and Latin?

C. Translate into Latin: But two of the Roman Generals were defeated; one was killed in battle; and the panic spread to the Iceni before Veil and even to Rome itself, where the rumour prevailed that the whole force of Britain was on its march; that the camp before Veil was actually assailed by the enemy; and that the victorious bands might be expected at any moment in Rome. So great was the fear that the matrons crowded into the temples to avert by prayers and sacrifices their country's peril, and the Senate resolved to appoint a dictator.

(Additional for a First or Second Class.)

D. Translate this extract from a work not prescribed to be read:

At Sectanus miro constantia mellas inter bonum Laudetlum portenti, cognomentorobit-rodienum amicos, velregis cognationem ai communitatem ratione: Sol amplexus, ne illani aciem belle deligere, circumspecto infrogentia sollitis. atque magnas documenta temetritas Paulii exbiciam, si coeperim et sui...

MATHEMATICS.

Examiner . . . . C. MacDonald, M. A.

FIRST YEAR.—GEOMETRY.

April 19—10 a. m. to 1 p. m.

1. If a straight line be divided into two equal and also into two unequal parts prove—by the division of the line if you can—that the squares of the unequal parts are together double of the square of half the line and of the square on the line between the points of section.

2. In any triangle the square of the side opposite an acute angle is less than the squares of the sides containing it by twice a certain rectangle. Complete the enunciation of the proposition, and prove it in the case of an obtuse-angled triangle.

3. A line drawn from the end of a diameter of a circle, not perpendicular to it, cuts the circle. (The line may be produced.)

4. Prove that if a secant and a tangent to a circle be drawn from the same point, the square of the tangent is equal to the rectangle contained by the secant and its external segment. (Take the case when the secant does not pass through the centre.)

Inscribe a square in a given circle, and shew it is the greatest inscribed rectangle.

4. Illustrate the processes in proportion, "Inversion," "Alternation," "Composition," "Division;" and explain the reason of the equals.

7. If a straight line be drawn parallel to one side of a triangle cutting the other two, it cuts them proportionally; and conversely. (Draw only one diagram.)

8. If two triangles have one angle of the one equal to one angle of the other and the sides about these equal angles proportional, the triangles are equiangular, &c.

9. Given a point within an angle; draw through it a line meeting the lines containing the angle and making with them the least possible triangle.

10. The construction of the diagram in Euc. II. 11th prop., is suggested by the solution of the Quadratic, $x^2=a\cdot a\;(a-x)$.

11. From P, a point without the circle whose centre is C, tangents PQ and PT are drawn, and QT and UT are joined, UT cutting the circle in S. Prove that S is the centre of the circle inscribed in the triangle PQT.

12. Find a point within a triangle at which its sides subtend equal angles.

FIRST YEAR.—ALGEBRA.

3 TO 5½ P. M.

1. Give the rule for finding the square of a polynomial, and apply it to find the square of $a+b+c+d+e$. Adopt your method to the case where c and d are negative.

2. What is the arithmetical advantage of rationalising the denominator of a surd expression? Treat the example: $\dfrac{\sqrt{3}}{\sqrt{6}+\sqrt{2}}.$

3. Shew that a surd cannot be equal to the difference of a rational quantity and a surd. Also if, $a^2-b^2=c$, prove $a+b+\sqrt{c}=a+(a-b+\sqrt{-1})^2$.

4. Solve the equation $\dfrac{x+2}{x-5}+\dfrac{4}{21}=\dfrac{7}{5x}$; and the simultaneous equations, $x-2y=1$, and $x^2-4y^2=145$.

5. Solve the equation : $1+\sqrt{1+x}-\sqrt{1+x}+\sqrt{1-x}=0$.

6. Given $x^2-ax-a=0$. Find the equation whose roots are the halves of the roots of this equation; and also the other equation whose roots are ten even and the product of its roots.

7. Invest at different quarterly for yourself, and solve it without completing the square. (Not to be solved by the method called imperfect.)

8. A farmer bought a flock of sheep for $300, out but 5 of them in a snowstorm. He now sold the remainder at $2 a head more than he paid for them, gaining thus $15 on the whole transaction. How many sheep did he buy?

9. Taking the usual notation, sum a Geom. Series to n terms. Deduce the limit of the sum when n is infinite and $r<1$. Shew that the value of a circulating decimal $.72\dot{}$

10. The nth term of an Arith. series, whatever n be, is $\dfrac{1}{6}(3n-1)$. Find the series and the sum of p terms.

5. Find cos (A + B), tan 2A, cot (A + D), cot 2A, from the fundamental formulæ.

6. Given the diameter of the earth and the dip of the horizon observed from a mountain-top; to find the height of the mountain.

7. Find the radius, R, of the circle circumscribing a triangle, and prove $R = \dfrac{abc}{2\sqrt{a+b+c}}$

8. Given two sides and the included angle of a triangle; find the third side without finding the angles.

Ex.: $a = 14$, $b = \frac{9}{2}$, $C = 150°$: find c.

9. Write four terms of the expansion of $\dfrac{1}{\sqrt{a^2 - x^2}}$. Write also the $(r + 1)$th term.

10. How are Involution and Evolution (in Arithmetic) facilitated by the use of logarithms? Prove what you say. Also if $\log x = n$ to base $m^{\frac{1}{4}}$, find $\log x^{2}$ to base n^{a}.

11. A young man, age 18, is at the age of 25 to come into a freehold property of the annual value of $A. Find its present value, writing the logarithmic equation concerned.

SECOND YEAR—EXTRA.

April 22, 3 to 5½ P.M.

1. The combinations of a things, r together, are equal in number to their combinations, $n-r$ together. Also, if the coefficient of the $(p+1)$th term of the expansion of $(a+x)^{n}$ be equal to that of the $(p+11)$th term, $p = n - 1$.

2. Twelve persons are to be seated round a table, their places being determined by lot. Show that the odds against A having B for his next neighbour are 9 : 2.

3. Resolve $\dfrac{3x^2 - 7 + \frac{1}{6}}{x^2(x+1)}$ into its partial fractions.

4. If $mx + n = my = o$; $\cot x = mt$ and $y = nb$; and $x + y = z$: prove $\cot o = \dfrac{1}{b} - \dfrac{1}{a}$.

5. If the perpendiculars from the angles $y = o$ and $x + y = z$: prove
$\cot o = \dfrac{1}{b} - \dfrac{1}{a}$.

6. Show that $\sec(x^2 + 1) - \log(x^2 - 1) = \frac{1}{2}$, nearly, if x be so large that ...

Examiner .... J. G. MacGregor, D. Sc.

MATHEMATICAL PHYSICS.

Time: Three Hours.

N.B.—No more than twelve questions to be answered. Those marked with an asterisk have the higher values.

1. Define uniform velocity, average velocity, acceleration. Prove that the average velocity of a uniformly accelerated particle during a certain time is $V + \frac{1}{2}at$, where V is the initial velocity, a the acceleration, and t the time.

2. Given the direction and magnitude of the initial and final velocities of a particle, find the change of velocity.

*3. The points A, B of a system are displaced. If ab represent the displacement of A in magnitude and direction, and OI that of B, then ab will represent the displacement of B with respect to A. How?

4. A particle is projected with a velocity V whose direction is inclined at θ to the horizontal plane. To what height will it rise? How long before it returns to the level of its starting point?

*5. What is simple harmonic motion? Define amplitude, period, phase. The acceleration of a particle whose motion is simple harmonic is towards the middle point of its swing, and proportional to its displacement from that mean position.

*6. State and explain the three fundamental laws of dynamics. From one of them determine the absolute unit of force, that of mass having been chosen. Find also value of the weight of 16 lb. in terms of it.

7. If P and Q are two component forces, whose directions are inclined at the angle θ, the resultant force is equal to $\sqrt{P^2 + Q^2 + 2PQ\cos\theta}$.

6. When may a force be said to do work on a body? What forms of energy may a body gain by having work done upon it? Give illustrations.

8. Two bodies are connected by an inextensible string. One moves on a smooth horizontal table, the other hangs over the edge. If the masses are m and n, find the acceleration.

10. Apply the Law of the Conservation of Energy to the determination of the "mechanical advantage" of any arrangement of pulleys.

*11. If an external force act on a system of particles, the velocity of the centre of mass is constant. Prove and give illustrations.

*12. The kinetic energy of a system of two particles A and B is equal to that of a mass equal to (A + B) moving with the velocity of the centre of mass, together with that of the motion of the particles relative to the centre of mass.

*13. When the rotating power of a force is proportional to its moment.

*14. What is the theory of Capt. Kater's pendulum? How would you use it?

*15. Motion is communicated to a cylinder of 100 lbs. mass, moveable about a horizontal axis, by the weight of a body m^2 or its mass attached to a cord coiled on the cylinder. How far will this body descend in the 10th second? (Value of radius of material of cylinder?).

16. Given two parallel forces whose directions intersect a given line, determine the magnitude of the resultant and the point in which its direction intersects the given line.

Any number of forces acting as a body in one plane, may be resolved into a single force and a single couple.

*18. Show that component couples in inclined planes are to be compounded according to the parallelogram law.

*19. A uniform beam A B is in equilibrium with one end A on the inner surface of a hemispherical bowl and a point C resting on the edge. Find the inclination of the beam to the horizontal, friction being neglected.

EXPERIMENTAL PHYSICS.

TIME: THREE HOURS.

N. B.—No more than twelve questions to be answered. Those with an asterisk bear the higher values.

1. Prove that the pressure at any point of the surface of a fluid in a static condition is normal to the surface.

*2. What becomes of the energy expended in blowing a soap-bubble? Account for the rise of certain liquids in capillary tubes of glass.

*3. Prove that, if the pressure of a gas, and of its density, and if it consists of particles whose velocity of mean square is V or 1 of VV. Show that this equation expresses Boyle's Law. Sketch the molecular theory of electrolysis.

4. If V is the volume of a certain mass of gas, P its pressure, and if its temperature reckoned from the absolute zero of the air thermometer, show that ... is constant.

*5. How did the caloric theory of heat account for the production of heat by the superposition of such? Show how Carey's experiment decided for the dynamical theory as against the caloric theory.

*6. Sketch and account for the more important phenomena of glacier motion.

7. Describe seven method of determining the specific heat or the latent heat of fusion of a given substance.

*8. Given two similar bars of different metals, how would you determine which has the greater thermal conductivity? Justify your method.

9. How would you show by experiment that good absorbers of radiant energy are good radiators? Sketch the theory of exchanges.

*10. State the two laws of Thermodynamics. How does Thomson deduce a scale of absolute temperature from the second law?

11. What are lines of force? What form have they in the neighborhood of a single magnetic pole? Determine the direction of the resultant force at any point in the neighborhood of two equal and similar poles.

12. What properties of magnets may be accounted for on the supposition that they consist of polar particles?

*13. How would you determine the value of the moment of a magnet at different times?

*14. How would you determine the law of electrical attraction? What is the most convenient unit of electrical quantity? Find its dimensions.

*15. Prove that the unit of change of potential at a point is the direction in which it varies most quantity of electricity in electrostatic measure. Show how the value of a condenser ... plate is constant?

16. Describe the essential portions of the Leyden Jar. Sketch the theory of its action.

17. How would you charge a conductor by means of an electrophorus? Show that the possibility of producing great quantities of electricity by means of this instrument does not involve a violation of the Law of the Conservation of Energy.

*18. Define specific inductive capacity. How would you measure it in the case of any given dielectric?

*19. Describe an instrument, the principle of which may be used for measurement of difference of potential.

20. A current flows through a circuit of two metals, if their junctions are at different temperatures. No current flows if they are at the same temperature. Account for this difference. Enumerate the possible transformations of the energy of the electric current.

21. Describe methods of obtaining induced currents. What is the general use of the direction of such currents?

*22. Show that the electromotive force of a galvanic cell may be determined if the chemical changes which occur in it during the passage of the current are known. Is this possibility inconsistent with the contact theory of the cell?

ACOUSTICS, OPTICS AND ASTRONOMY.

TIME: THREE HOURS.

N. B.—No more than twelve questions to be answered. Those with an asterisk bear the higher values.

1. Shew how the displacement of a particle in an elastic medium may originate a wave. Shew that the velocity of propagation is equal to the product of the wave length into the number of oscillations per second made by each disturbed particle.

*2. Shew by the application of Huyghens' principle that if a wave passes from one medium to another, it is so refracted at the bounding surface that the ratio of the sines of incidence and refraction is equal to the ratio of the velocities in the first and second media respectively.

3. How would you prove by experiment that the pitch of a musical note depends on the rapidity of vibrations made by the sounding body? How does such a method help us to compare the rates of different instruments.

4. Waves may differ geometrically in three respects. What are the three corresponding physical differences in musical notes and terms of sight?

*5. Describe one method of analysing complex musical notes. How does such analysis enable us to determine the cause of the difference of quality in the notes produced by different instruments.

6. Account for beats.

7. Describe a method of measuring the velocity of light.

*8. A divergent pencil of rays is incident directly on a concave spherical mirror. Find the relation between the radius of the mirror and the distances of the conjugate foci from the mirror. As the luminous point moves from an infinite distance up to the mirror find the successive positions of its geometrical focus.

9. Determine the character of the images formed by convex and concave lenses respectively, the luminous body being small and placed at different distances on the principal axis.

*10. Any ray passing through a lens in such a manner that its direction while within the lens passes through the centre of the lens will on its emergence have a direction parallel to its initial direction.

"15. Show by a diagram the course of the rays of light in the astronomical telescope.

"16. Explain the appearance of the bottom of a uniformly deep pond to an eye placed above the surface of the water.

"17. Describe the spectroscope. Sketch the principles of spectrum analysis. How would you employ this method to determine the constitution of a comet?

"18. A comet has Nicol's prism. Put a plate of a doubly refracting crystal between them. Let a parallel beam of light pass through the crystal. If the second prism is rotated what changes may be observed. If the second plate be rotated what changes may be observed in the exterior of fragments of the emergent light? How does the ware theory account for these changes?

"19. Describe one method of determining the density of the earth.

"20. Deduce the general relation between the brightness and obliquity of incidence of light upon a mirror.

"21. Explain the nature, magnitude, obliquity of ecliptic. Illustrate your references by reference to diagrams.

"22. Show that the latitude of a place is equal to the elevation of the pole above. Describe and account for the variations in the length of the day at a place whose latitude is 50° 52'.

"23. Why do the skitend, the apparent color and the mean solar days differ in length?

"24. Does the aberration of light bear upon the question of the relative motion of the sun and earth?

"25. Describe Foucault's pendulum experiments and account for them on the supposition that the earth rotates.

"26. State Kepler's Laws. Prove that the forces acting on the planets are directed towards the sun; and that the planets moving in circular orbits they would vary inversely as the squares of the distances of the planets from the sun.

ETHICS.

Examiner . . . . Very Rev. Principal Ross, D.D.

APRIL 25, 1881.

1 Explain the methods which Mental Science employs in investigating mental phenomena.

2. Why are the principles of Mental, and especially of Ethical, Science so much more unsettled than those of the Physical Sciences?

3. Specify particularly the points on which Libertarians and Necessitarians agree, and the points on which they differ.

4. Show that liberty and necessity are compatible terms.

5. By what inferences is the Will sometimes enslaved?

6 What was the Ethical Formula of the ancient Stoics? Explain its meaning.

7. State the Utilitarian theory of morals. Point out its defects.

8. Explain the inference which the publication of Hobbes' theory of morals exercised on the progress of Ethical Science.

9. What is the foundation of Virtue? What its standard?

10. On what points are nearly all Puritans agreed?

11. Mention some recent views abundities which Pantheism involves.

12. Supernatural Revelation does not supersede the necessity of the study of Natural Religion.

POLITICAL ECONOMY.

Examiner . . . . Very Rev. Principal Ross, D.D.

1. Distinguish between Capital and Wealth, and between Price and Value.

2. Mention the conditions on which the largest amount of production depends.

3. What circumstances limit the division of labor?

4. Is capital ever unproductive? Assign reasons.

5. In what different ways may exchanges be effected?

6. Explain how the purchase of cotton cloth, say from England, by a nation which has very little direct trade with the American Union, affects the balances of the Statesman, Northern, and Western States, respectively.

7. Under what conditions would the issue of an inconvertible paper currency be perfectly safe?

8. Specify the points on which Free Traders and Protectionists agree, and the points on which they differ.

9. State and explain the different kinds of consumption.

10. Injurious consumption is injurious to the interests of the laboring classes.

LOGIC AND PSYCHOLOGY.

Examiner . . . . Rev. Wm. Lyall, Ll.D.

THREE HOURS.

1. What rises have we taken of mind and its phenomena? How may this view be vindicated as opposed to the older and more common view?

2. What is meant by the Practical Processes of Mind? Give the philosophy of its prazeticising process and distinguish it from abstraction simply.

3. How may Memory to shown to be reducible to knowledge, and how may this view be carried to a practical account?

4. To what single law may the laws of Association be reduced? What is the peculiarity in Imagination?

5. Under what different divisions may Logic be regarded, and which of these forms the subject of our Course? Divide Pure Logic into its constituent parts.

6. What view of our concepts affords Deduction and Division respectively, and what two kinds of reasoning proceed upon this distinction? Give the true theory of reasoning.

7. Give the rules of the extension and Intension or Explanction respectively; the earlier proceed and under folness' of the distinction and hypothetical syllogisms. What is the content of the Disjunctive and Hypothetical-Disjunctive? What are syllogisms in respect of their external form?

8. How is a statement, and in what case may it be converted simply? How are Land I converted? What are the shapers, respectively, of the four Figures of the syllogism?

9. Give a scheme of the Fallacies.

10. Give the laws of Deduction and Division, with the rules of Probation.

METAPHYSICS AND ÆSTHETICS.

Examiner.....................Rev. Wm. Lyall, LL.D.

TIME, THREE HOURS.

1. How far may the problem of "Being per se" be allowed to affect our beliefs, whether as respects matter or mind, our own existence, or the existence of the world around us?

2. What do you understand by the "Noumenon" of Plato, and how may Aristotle's doctrine of a soul in everything be shown to correspond with this? Show also how Aristotle's "Final Cause" corresponds with the archetypal idea of Plato.

3. What was there in the "Supernatural Faith" of Philo and the doctrine of "Absorption" as held by Plotinus inconsistent with Philosophy?

4. How did Descartes approach the Problem?

5. In what form does the ontological problem survive in modern philosophy? How does it necessitate the solution of the present-day, and demand a solution or faith, from everyone as respects his own being and destiny? What fallacy of assumption is involved in Spinoza's account of relations?

6. How have the Emotions been dealt with in a profoundly scientific view of our spiritual nature? Upon what different principles have they been classified, and how may they be classified?

7. Give some account of the classical Emotions. Find the æsthetic emotion among these.

8. Name briefly the theories on the subject of "Beauty and Sublimity," showing how Cousin's theory is in perfect accord with Alison's, apart from the intellectual conditions of the former.

9. How may the Arts be classified? What styles may be enumerated in Poetry and Painting respectively? Name some of the masters in the different schools of painting.

10. Give the Æsthetic Powers. What regulative principle may be recognized among these, apart from any service which they can do? What is the place of Conscience and the Will among these Saints? For what purpose have the Desires and Volitions been brought under the general class of "Operative Sauces." Can this view be justified?

RHETORIC.

Examiner.....................Rev. Wm. Lyall, LL.D.

TIME, THREE HOURS.

1. In speaking, what are the three principal ends? What are the departments of the human mind corresponding?

2. Unto what general divisions may Rhetoric be conducted? Give the different kinds of composition.

3. What are the figures of Similitude?

4. Specify those of Contiguity, with examples.

5. Give the figures of Contrast, with examples.

6. What is considered under the number and order of words?

7. What is the first generalized element in Enunciation? What is the procedure in respect to it in order to exposition?

CHEMISTRY.

Examiner............Charles Lawson, Ph.D., LL.D., F.I.C.

INORGANIC CHEMISTRY.

FOR UNDERGRADUATES IN ARTS, SECOND YEAR.

FOR UNDERGRADUATES IN SCIENCE, FIRST YEAR.

FINAL EXAMINATION.—APRIL, 1881.

1. Explain briefly the distinctive nature of an Acid, the distinction between a synthetic and an oxacid, and give examples. What is a Base? Explain fully and classify the nature or chemical constitution of the class of compounds called Salts, and their relation to Acids.

2. Give an outline of Classification of the Metals based on their chemical affinities, i.e. the compounds which they form; use also what relation exists between the chemical characters of the metals, and their modes of occurrence in nature.

3. Calcium.—In what form does it occur in nature? When limestone is burnt what change does it undergo; what water is added from lime what change? When lime is made into mortar what further change? What is the chemical difference between Calcium Chloride and the powder commonly called Chloride of Lime?

4. Describe the chemical changes which take place in the iron furnace during the reduction of iron ore. Upon what does the value of an iron depend?

5. Explain the mode of occurrence of Gold in nature, and the process of obtaining it at the Nova Scotia mines. State what substances are apt to be mistaken for gold, and how they may be readily known.

6. Describe Aluminium with special regard to its natural compounds.

ORGANIC CHEMISTRY.

FOR UNDERGRADUATES IN SCIENCE, SECOND YEAR.

PRELIMINARY EXAMINATION.—DECEMBER, 1880.

1. Wherein does Organic Chemistry, so called, chiefly differ from Inorganic? On what principle or principles are organic compounds classified?

2. Describe the processes for Elementary Analysis: (1) Determination of C and H; (2) of N; (3) Calculations.

3. Compare (1) Monobasic Acids; (2) Compound Ethers, (3) Aldehydes, (4) Acetones, (5) Chlorides of Acid Radicals, (6) Amides, (7) Amines, (8) Phosphines, (9) Anilins, (10) Stibines.

4. Describe common Alcohol, with regard to its mode of formation, chemical properties, and its relations to Ether, Aldehyde, and Acetic Acid.

5. Give process for preparing Chloroform, and show what change take place in the materials used, so as to yield Chloroform.

FINAL EXAMINATION,—APRIL, 1881.

1. Show the composition of an Amine or Compound Ammonia, and why Anilins are classified into primary, secondary, tertiary.

2. What is known or believed respecting the chemical constitution of the Natural Alkaloids?

3. Explain briefly the nature of an Animal Fat, and the process of formation of soap. What is Glycerine? and what are Ethers of Glycerine?

4. Give an account of Citric, Tartaric, and Malic Acids.

5. Describe Creosote, its sources and general properties, action on polarised light, chemical constitution, and compare with it (as regards constitution and transformations) Saccharose, Starch, Celulose. What is a Glucoside?

6. What are the so-called Aromatic Compounds, as distinguished by some general features? Benzoh,—action upon it of Cl and of Nitric Acid? Anilin?

SPECIAL EXTRA QUESTIONS FOR MEDICAL STUDENTS.

1. In examining Water to ascertain its suitability for household use, what are the chief impurities to be looked for? By what methods may their presence and proportions be determined. Give an example of a water sample that should be condemned as unfit for use, although containing only a small percentage of foreign matter; also an example of a water that contains a large amount of impurity and be yet not necessarily unwholesome.

2. What compounds does the common Arsenic form with oxygen, and under what circumstances is they respective power in solution. Give (1) a process for separating Arsenic in solution from organic matter; (2) methods of testing, (3) methods of estimating amount present.

3. Describe briefly, with special reference to their chemical characters: (1) Chlorine; (2) Hydrochloric Acid; (3) Chlorate of Lime; (4) Chloroform; (5) Chloral Hydrate. Give process for determining presence of Chloral in contact with a stomach, &c.

4. What form of Sugar occurs in diabetic urine? Describe one or more methods of rapidly ascertaining its existence and the amount present.

5. What is known of the chemical constitution of the Natural Alkaloids and in what groups or genera of well-ascertained compounds may they be compared? Give a general process for testing for Strychnine in cases of poisoning.

SPECIAL EXTRA QUESTIONS FOR PHARMACEUTICAL STUDENTS.

1. Estimate the percentage of Hydrocyanic Acid in Solution.

2. Test for H_2SO_4 in Acetic Acid and estimate amount.

3. What is Iodine? In what substances is it soluble? How would you test the purity of Iodine? Give tests for Iodines.

4. In what way would you prepare pure Nitrate Potash. What are its properties.

5. Compare Mercurous and Mercuric Chlorides. In what way would you test Calomel for traces of Corrosive Sublimate, and in what way would you readily remove the latter.

6. What is the cause of the appearance of a White Precipitate in Bismuth Solutions on addition of distilled water to the solution?

CHEMICAL LABORATORY.

FOR UNDERGRADUATES IN SCIENCE, SECOND YEAR.

APRIL 22, 1881.

1. Solution contains four bases. Give a clear and concise account of the method by which you would ascertain what the bases are, and that there are no others present. (Bases of Ag, As, Ba, NH₄.)

2. State briefly what work you have done in the Laboratory during the Session

ZOOLOGY.

Examiner .... GEORGE LAWSON, PH.D., LL.D., F.I.C.

FOR UNDERGRADUATES IN SCIENCE.

FIRST PAPER.—DECEMBER, 1881.

1. Great divisions or "Sub-Kingdoms" of the Animal Kingdom.

2. Protozoa, define them. What is sarcode?

3. Gregarinidæ, define them. Describe the process of encystation.

4. Rhizopoda. Define the five orders.

SECOND PAPER.—APRIL 21, 1881.

1. Give a definition of the term? Animal Sub-kingdom "Annulosa." Compare its two divisions Arthropoda ("Articulata"), and Anarthropoda, and give illustrative examples of each.

2. Point out the most important differences—anatomical and physiological—between the four great classes of Arthropoda, viz.: 1. Crustacea. 2. Arachnida. 3. Myriapoda. 4. Insecta.

3. Give an account of the general method of classification of Insecta.

4. Refer to their proper orders the specimens labelled A B C D.

5. Define the Mollusca Proper, and give brief characters for the following classes: 1. Lamellibranchiata. 2. Gasteropoda. 3. Pteropoda. 4. Cephalopoda.

GEOLOGY, PALÆONTOLOGY AND MINERALOGY.

Examiner ...... REV. PROF. HONEYMAN D.C.L., F.S.A., &c.

PART I.—TIME : 2½ HOURS.

1. The Archæan formation—what is it ?

2. Name typical localities and characteristic rocks.

3. What is the supposed life of the period—its zoological character and relations ?

4. What are essential minerals in these rocks, and what accidental ?

PART II.—TIME AS ABOVE.

1. The great Auriferous formation of Nova Scotia—what is its age ?

2. What are its rocks ?

3. What are its minerals ?

4. How does gold occur, and with what minerals is it sometimes associated ?

5. How is the relative age of rocks ascertained ?

6. In the history of Halifax what formation is found associated with the auriferous formation, and what inference in reference to the age of the latter might be deduced from this association ?

7. What are troughs in mountains ? Give an example in nature and tell up the trend.

8. What are the strike and dip of rocks and how are they observed ?

9. How is the thickness of a series of strata ascertained ? Give the formula for finding the thickness of an inclined series.

PART III.—TIME AS ABOVE.

1. What Palæozoic formations occur between the Archæan and Upper Silurian ?

2. Give typical localities and the characteristic fauna of each.

3. State particulars regarding the Trilobite and Graptolites, especially the range in time and space of particular forms.

4. Give the morphology of a Trilobite and of a Graptolite.

5. When did Cephalopods appear, and what was the primitive genus ?

GERMAN

Examiner .... PROF. JAMES LIECHTI, M. A.

THIRD YEAR.—JUNIOR.

TIME : THREE HOURS.

Translate : I Schiller : *"Der Taucher."*

Und da läng ich, und war's mir mit Grausen bewusst,
Vor der menschlichen Hülfe so weit,
Unter Larven die einzige fühlende Brust,
Allein in der grässlichen Einsamkeit,
Tief unter dem Schall der menschlichen Rede,
Bei den Ungeheuern der traurigen Oede.
Und schaudernd dacht ich's, da kroch's heran,
Regte hundert Gelenke zugleich,
Will schnappen nach mir ; in des Schreckens Wahn
Lass ich los der Koralle umklammernden Zweig ;
Gleich fasst mich der Strudel mit rasendem Toben,
Doch es war mir zum Heil, er riss mich nach oben.

II. Richter's *"Neujahrsnacht eines Unglücklichen."*— Ein alter Mensch stand in der Neujahrsmitternacht am Fenster und schauete mit dem Blick einer langen Verzweiflung auf zum unbeweglichen, ewig blühenden Himmel und auf die stille, reine, weisse Erde, worauf jetzt Niemand so freuden- und schlaflos war als er. Denn sein Grab stand nahe an ihm ; es war blos von den Schnee des Alters, nicht von dem Grün der Jugend verdeckt, und er brachte aus dem ganzen reichen Leben nichts mit als Irrthümer, Sünden und Krankheit, einen verwüsteten Körper, eine verödete Seele, die Brust voll Gift und ein Alter voll Reue.

III. Goethe : *"Falsche Fuchs."*—

Reineke hatte die Worte gehört, doch fürchtet' er kläglich,
Andere möchten noch neben dem Boten an Hintenhalt liegen.
Als er sich aber resolvirt, das Glas so etwa(s) gekommen,
Ging er fürder hinein und sagte : *"Waeichmee ehd(er),
Seht willkommen ! Vornehm mir ; ist habe Vesper gesehen
Darum lasst ich euch warten. Ich dank euch, das ihr gekommen,
Dass zu mich mir geruhte Rohler, Halt, so dass ish es so lleben,
Seid zu heplicher Staude, mein Oheim willkommen ! Indessen
Bleibt der Tadt für die, des euch die Reise befestnen :
Dann sie im stch und machreuirsh(s). O Reineis, wie dir erkbtan wild !
Eure Kaas sind mise, und aur Oh(m)en(en) häckomm(en).*

GERMAN

Examiner .... PROF. JAMES LIECHTI, M. A.

THIRD YEAR.—JUNIOR.

TIME : THREE HOURS.

IV. Schiller : *Wallenstein's Absterben.*"—Wallenstein wusste Bangst den ganzen Inhalt ihrer Sendung, als die Abgesandten des Kaisers ihm vor die Augen traten. Er hatte Zweh gehabt, sich zu unterreden, und sich fruchtlosen Urthels nur wenig, um entscheidende Gelassenheit selbst zu zeigen, während dem Schmerz und Wuth in seinem Busen stürmten. Aber er hatte beschlossen zu gehorchen. Diesen Urtheilsspruch überraschte ihn als den meisten kühnen Schritte der Ent(...)ng. Seine weltbürgende Götze wusste in seinem sicheren Ankers ausstiegen ; durch Einziehung dürftlem konnte er Kaiser ihm den Zorn seiner Macht verschmähten. Von der Zukunft ne(...)mmm er Gesinnungsa, und in dem Hoffnung berliebten die die Freydhoberngen ciase italienischen Astrologen, der diesen ungewöhnlichen Lauf, gleich einem Raubes, am Glaspinante hlette.

Translate into German : Skylack, the Jew, lived at Venice ; he was an usurer, who had amassed an immense fortune by lending money at great interest to Christian merchants. The better men are the happier they are. There were no railroads sixty years ago. What is the author's name, whose work you are reading. There are two kinds of books ; good

E

FOURTH YEAR.—SENIOR.

TIME: THREE HOURS.

Translate: I.   Bürger's Ballade "*Der wilde Jäger.*"

Enchrecken blickt der Graf umher;
Er wähnt im Horn, er thaut nicht;
Er ruft und blet sich selbst nicht mehr,
Der Schwung der Peitsche saust nicht;
Er sprengt mit Ross in beide Seiten
Und kann nicht vor- und rückwärts reiten.

Drauf wird es düster um ihn her,
Und immer düster wie ein Grab.
Dumpf rauscht es wie ein fernes Meer,
Hoch über seinem Haupt herab;
Ruft fürchterlich, mit Zwietrachtswuchte,
Dies Urtheil eine Donnerstimme:

"Du Wütherich, tollkecker Nater,
Frech gegen Gott zugleich und Thier
Das Ach und Weh der Kreatur
Und deine Missethat erklang zu mir!
Flieh, Unhold, flieh! und werde jach
Von nun an bis in Ewigkeit,
Von Höll' und Teufel selbst gehetzt!
Zum Schreck' der Fürsten jeder Zeit,
Die, um verruchter Lust zu frönen,
Nicht Schöpfer noch Geschöpf verschonen!"

II. Humboldt: *"Des Kosmos des Sichtbares."*—Seit wir in die letzen
Zone eingetreten waren konnten wir jede Nacht die Schönheit des süd-
lichen Himmels mehr geniessen bewundern, welcher in dem Maasse, als
wir nach Süden vorrückten, neue Sternbilder unsern Augen enthüllten.
Man kat ein wunderbar bekanntes Gefühl, wenn man bei der Annäherung
gegen den Aequator und besonders, wenn man von dem einen Hemisphäre
in die andere übergeht, allmählich die Sterne niedriger werden und zuletzt
verschwinden sieht, welche man von seiner ersten Kindheit an kannte.
Nichts erinnert einen Reisenden lebhafter an die ausserordentliche Entfernung
seines Vaterlandes als der Anblick eines neuen Himmels.

III. Schiller: *"Maria Stuart."* I Act.

Enzlisch.—Die Bichter! Wie, Mylady? Sind es etwa
Vom Pöbel aufgegriffene Verworfene,
Schamlose Zungenmeister, denen Recht
Und Wahrheit feil ist, die sich zum Organ
Der Unterdrückung willig dingen lassen?
Sind's nicht die ersten Männer dieses Landes,
Selbstständig gnug, um wahrhaft sein zu dürfen,
Um über Furcht und Niedrigkeit erhaben?
Berechtung weil erlaubten sich es redlich
Sind's nicht dieselben, die ein edles Volk
Frei und gewicht regieren, deren Namen
Man nur zu nennen braucht, um jeden Zweifel,
Und jeden Argwohn schleunig zu machen?
An ihrer Spitze steht der Völkerlieben,
Der fromme Primas meines Königreichs,
Der weise Talbot, der des Siegels wahr't,
Und Howard, der des Reiches Flotten führt.

Merit.—Gereizt und, ist ein irrer Wort—drum ist
Bereitwillig mit der Vater getäner Zeit,
Dass vor Gericht; hela Belôa gegen den Schotten,
Hela Schotte gegen jenes zeugen darf.
Die Noth gab diesen schlimmen Contra:
Ein ieder Sinn wollet in den alten Reischen;
Man mana sie aber, Mylord—die Natur
Warf ihne beiden Kurzjan Völkerschaften
Auf diesen Boeil in Osman; machtet.
Verliesshe sich aus diese Erbarmungs-Dämpfen.
Der Thronfn arbeitsin Jesus innen allein
Den heftigen Geister; nit ihren arme sich
Den Hut der Königstochter in den Viehen;
Die Hand am Ballanos schmiess die sich fodernd
Von beiden Tihron en mit fainenel Jahren
Ihrs Feind beteiligen Engelland; dem nicht
Der Schotte noch zum Feel'er angestellt;
Hela Erbarcheng meiskühn Schottlands Seilon,
Zu dem der Hritte nicht den Zulenst trug.
Und nicht erfinden wird der Sina, die endlich
Ein Parleament sie beidekleich verimm,
Ein Scepter nicht durch zwei die gauss land.

Translate into German : Tales from Shakspeare "Taming of the Shrew."

9. What is the leading feature in all of Schiller's dramas, and in which one is it most beautifully developed. Classify his dramatic works, and write a few notes on Schiller and his labor. Which are his finest ballads; when were they composed?

Translate: 1. Le Siège «Ci Hier» Pascontal la proposition du censeur. Il ne serait dans lui myrideellanap pour n'ivitailler dans l'entrelite cet pa destinati; et cet orgulit constituit à caviter la joie si la demarche constituilte out l'inpovadent cherchât prudent évil établir en lido. Il y avait pour ce effet un regle un regarde dans lequel une vieille servante managit les adresses ; mais cette servante si lui était gère in servait au dehors à plusiour moitiés, ce domcotilo ne vunait point à lui ; le dernier ent mouillé en été.

II. Madame de Sévigné.—Il faut que je veus coute ma petite idea surtoute qui est trés-seute et qui vous diverta. Le vai ne calle le par les défaus de Ste-Alignan : il l'emprure but appremirit centenent l'Intat prevatre. Et Harlere lone manolégne que n'animbont ce travau pen you joli ; ce ne sont que morceaux de vani, le Marichal, aprés avoir lui, dit en riri : "Voci, Mite Majesté pays éteireament vous Ionger. Les Marichal, apras avoir ou petit ridicule cettigu du quel vous ine Isper."

III. Scribe : *Les professeurs.*—*Indro:* (parlant à la comtesse) Ivon, je suis ressavio, je n'ai point de malin ; si de culur ; je m'aime point à sol chargre en voure . . . (*Sout*) Allons, me la matière, celui de jour que me m'inpiret plus ; car le presitoue restour ; je penste, ly voire à jour par l'esce antnor de jolie, boucoup. Jl est trop marti inducurablé pour un bonne antonor de vois coure, et qui ne qu'il n'est Jamais qu'à l'anciour profereur du college, vois me tartes pas au proforeur ; le ne me tiz ja jai pos, mais, ruasonuable, ce que vous au nore ; je ans pos rainon ; Gonno tiaten : c'est la faute du patrus de la loguement, et qui pour le tois jentis, sujet quérous mitiar avec le lui. Le vous prie, le pour mes pour Ionger.

Translate into French : To spout a meet feal neil evil, in the talent of the wit ; to mock little and well is the character of the wan [man] ; to speak a great deal and badly is the defect of the coxcomb ; to speak little and badly, is the fault of the fool.—Elizabeth, Queen of England, was tall.

and well made; but she had a masculine shape; she possessed many accomplishments, and was very learned.—The sciences, to the study of which the French devote themselves most, are: Mathematics and Physics. Do not waste your time, for life is made of it, and employ it well, if you wish to be happy.

Questions: 1. Parse the following verbs, and write down their primitive tenses: (I.) *possède, était;* (II.) *fixé, fait, perdu;* (III.) *fut, soyez, perdiez.* Mention when and how *fut, amour,* and *employ* their tenses; write an example for each.

2. Distinguish between the words: *a* and *à; des* and *dé; des* and *dès; ou* and *où;* and account for the circumflex accent in *plus, goût, dîner.* Name the three persons of every verb, that occur therein.

3. Illustrate, giving rules, the agreement of the adjective in the sentences: *We read good books. He wants the Emperor of Germany to be ... the beautiful ... of the captive Germaine (Germaine). The men and women are old.*

4. Write the comparative and superlative degrees of: *bon, bien, mauvais, mal, peu, beaucoup.* Translate: *The better the laws [are] the happier [is] the country.* Illustrate the exceptional case in which "more than" is succeeded by *plus de* instead of *plus que.*

5. Which are the words forming correspond with objects preceded by the preposition *à* and *de?* Take for examples: *Have you answered (répondre à) the question? I am not afraid (avoir peur de) of him. Are you thinking of the weather (parler de).* Translate: *Whose painting is this?* Where were the keys? Write short sentences on them.

6. *Lequel; quel le quel; à qui* and *de qui; où* and *dont.* Write short sentences on these words.

7. Which verbs are used to form certain idiomatic terms. Translate: *Every man should do his duty (devoir). A distinguished statesman has just arrived. He ought to have been wounded. I am going to write a letter.*

8. By what forms do you render "it is" in French, when used: to denote time; for speaking of phenomena; when reference to a preceding remark. Write in French: *It just gave you seven hours ... It is one o'clock ....*

10. Mention, giving one example, which is a negative sentence, reject the object. *What was the verb? How many persons? How old is he? I he is seventeen years old. Most people. The Kings of April, 1791 (letters).*

THIRD YEAR.—ADVANCED.

FIRST THIRD HOUR.

Translate: 1. Voltaire « *Mort de Coligny.* »

> Le brave malheureux, sans armes, sans défense,
> Voyant qu'il faut périr, et périr sans vengeance,
> Voulut mourir du moins en maître comme il meurt,
> Leur montre d'un visage et tranquille et serein
> Déjà des ... la poignante cohorte
> Du salon qui l'enferme allait battre la porte;

> Il leur paraît lui-même, et se montre à leurs yeux,
> Avec cet œil serein, ce front majestueux,
> Tel qu'on, dans les combats, maître de son courage,
> Tranquille, il arrêtait ou poussait le carnage.
> À cet air vénérable, à cet auguste aspect,
> ... se tait, ... son respect,
> ... inconnue a respecté leur rage.
> « Compagnons, » leur dit-il, « achevez votre ouvrage,
> Et de mon sang glacé souillez ces cheveux blancs
> Que la mort des combats respecte depuis tans.
> Frappez, ne craignez rien : Coligny vous pardonne;
> Ma vie est prés de ... je vous l'abandonne;
> ... votre bras, et la perte en est vaine. »
> ... comme lui, ils percent de mille coups,
> Ils ...

11. *Le Loup « ... Jean. »*—... déduisé par un signal qui avait une ... ... Nourri comme elles d'un laitage à qui la pointe faisait pousser de grandes ... Je ne mangeai pas plus son ... que celui de mon étranger, et je ne dévorais point le hameau ... On reçoit d'autres chiens avec l'usage prémédité, que je vis dans cette maison; ma corde se tient ...

12. *Les prépositions—Lorsqu'on—Ne parlons point de temps* et remplaçons ... Mon maître aurait accepté de M. Robespierre la place de gouverneur de ses enfants, quelques petits ... qu'on informe un vendu d'une ... qu'il est le plus bel objet, et utile aux vendanges. ... dévore d'ennui. Mon maître tombe malade, ... ses conseils lui suggérèrent; ... Je sens qu'il est de ma servitude même— Il me semble déjà que mon cœur et ... ce que je vais être, ce que je ...

Questions: 1. Parse and write the primitive tenses of: *voyant, voulut, meurt;* ... ... write an example for each.

2. Voyant ... *Déjà.* Account for the negation in this sentence. ...

3. Explain the word *de* in the sentence *de grande cité.* (II.) when would you use *de la?* Distinguish *de la* and *du.*

4. Qu'il va falloir (II.) Account for the negation in this sentence. In what case may there be ellipsis of *pas* in a negative sentence? Write an example. When must the negative be completed ?

5. What difference is there between *plus* and *davantage*? Translate: The more one loves some one, the less he ought (*doit*) to flatter him. Alexander was powerful; Augustus was still more so. The better a man is, the less he believes others bad.

6. Illustrate by an example the position of the *reflective* pronoun in the imperative mood, affirmative and negative. Write in French: Let them go out. Recommend me to them.

7. *Whose* is expressed by *duquel* and corresponding forms, in a certain case (write an example). Translate: The person on whose knees I have lived for more than 10 years, has just died. Tell me whose voice is that which we hear.

8. Write short examples on *qui qui*, *quoique*, *tant ce que*, *qui est ce que*? Since *tant que* are easy to confuse and unreliable.

9. Can faire *que j'ai fait rendu*, he knows even *auraient*? Les enfants *n'ont eu ont eu* raison beaucoup. Can *l'annonce pas seulement* ... Que de plus de plus il a *fait fait*? Sous vous-mêmes serviez longtemps. Explain, giving rules, the agreement of these participles, correcting mistakes.

10. Mary Stuart was compelled to appear before the judges whom Elizabeth had appointed (*nommer*). The lady whom I have heard sing, is English. The song that I heard sung, is the National Hymn (*l'hymne*) of England. What is the agreement of the *participles* in these sentences?

FOURTH YEAR.

Term: Three Hours.

Traduisez. I. Racine: "*Iphigénie*." Acti III, Scène VI.

Iphigénie—C'est mon père, seigneur, je vous le dis encore,
Mais un père que j'aime, un père que j'honore,
Qui me chérit lui-même, et dont, jusqu'à ce jour,
Je n'ai reçu que des marques d'amour.
Mon cœur, dans ce respect élevé dès l'enfance,
Ne peut que s'affliger de tout ce qu'il l'offense;
Et loin d'oser ici par quelque violence,
Faire à l'excès d'amour succéder les fureurs,
Il lui répondrait même en lui perçant le cœur.
Quel père de son sang voit couler ces périls?
Du sang de votre fils une main est prépare?
Quel père de son sang serait le père?
Pourquoi me perdez-vous? Et que vous ai-je fait?
J'ai vu, mes doux destins, prise la splendeur,
Faut-il le condamner avant que de l'entendre?
Hélas! de tant d'horreur son cœur était-il?
Doit-il votre haine être encore accablé?

III. Racine: "*Iphigénie*." Acti IV, Scène V.

Clytemnestre—Et ce doux fruit péri? Ah! toute ma raison
Cède à la cruauté de cette trahison.
Un prêtre, environné d'une foule cruelle,
Portera sur ma fille une main criminelle,
Déchirera son sein, et, d'un œil curieux,
Dans son cœur palpitant consultera les dieux!
Et moi, qui l'amenai triomphante, adorée,
Je m'en retournerai seule et désespérée!
Je verrai les chemins encore tout parsemés
Des fleurs dont sous ses pas on les avait semés!
Non, je ne l'aurai point amenée au supplice,
Ou vous ferez aux Grecs un double sacrifice.
Ni crainte ni respect ne m'en peut détacher:
De mes bras tout sanglants il faudra l'arracher.
Aussi barbare époux qu'impitoyable père,
Venez, si vous l'osez, la ravir à sa mère.
Et vous, rentrez, ma fille, et du moins à vos lois
Obéissez encor pour la dernière fois.

Traduisez en Français: I. *Chesterfield to his son*—It is not only reasonable, but natural, too, that your cravings should be formed to amusement and pleasures; and therefore I not only allow, but recommend, that they should be employed at something; and, in the best companies, with this restriction only, that the consequences of the evening's diversions may not break in upon the morning's studies, by breakfastings, visits, and idle parties into the country.

II. I do not think I need speak to you of the great joy with which we failed, my husband and I, the return to Paris of our legitimate king. You will receive still less than we were delighted to hear of the important position you now occupy at the court of Louis XVIII. I do not deny that we have consulted the influential to inform you of our friends at home taking the return of a very Hundred men! You cannot imagine the effect which that news produced in our small town.

Questions: 1. Le pronom *le* emploie? *Mécontentement*, est tenant invariable, tantôt variable. *Expliquez-le*. En lumière donnée. Ar-riv-er le pronom *le* peut être plusieurs fois vos cela s'applique.

2. Quand faut-il traduire *any* par *quelque* ou par *aucun*?

3. *Whatever* variable ... *partout tant que n'est pas plus dans un* corps ...

4. *Whatever* variable, on traduit par *quel que* ou par *quelque*. Eclaire ces formes en donnant quelques exs. Traduisez: *Whatever* to ser? *tout* and ser? ...

5. *S'il posait* ... au féminin coex attention. Dans quel cas l'inversion du sujet peut-elle avoir lieu dans les phrases ... *Mentionnes d'autres cas, en citant des exs. à l'appui.*

6. Corriges les phrases *suivantes*, et citez quelques uns des incorrects: *Toi en tant en regarde le beaucoup lent*, *ce sera une ... tu pourras ...*

7. La préposition *between* comment deux commande d'autres ... est ... que celle que comment t-il ... parce que ... qu'il avait ... le ... quit ... cho ... tant de personnes en suit ... mais ... de la reconnaître, de la comprendre, et de se mieux?

y

" Expliquez l'accord des part. passés dans les phrases qui suivent. The little gratitude you have shown him, gave him the greatest pleasure. I have obtained thither them to come into my room. Les règles qu'on leur a fait étudier. La version à été plus facile que je ne l'ai crue. Faites les dites mi ny mes; les longos ont été mi ny mes.

2. All were saved except the captain and two sailors. Dites ce qui vous sert à l'accord des part. p. employé, et nommez-nous les autres mots où le même change.

3. Rendkeen la difficulté entre le part. passé et l'adjectif verbal, et citez des exemples. Donnez quelques verbes qui n'ont point d'adj. verbal. Qu'est-ce que la Géraudé? Traduisez: He was laughing while looking at us.

10. Écrivez une courte notice sur Racine, et faites une analyse critique de sa tragédie " Esprit/une." Quelle espèce de vers les classiques français emploient-ils pour la tragédie et la comédie? Qu'y a-t-il à dire par rapport à la rime?

EXAMINATIONS FOR HONOURS IN MATHEMATICS AND PHYSICS.

MATHEMATICS.

Examiner .... C. McDONALD, M A.

I.

TRIGONOMETRY AND ANALYTICAL GEOMETRY.

APRIL 19, 10 A.M. TO 1 P.M.

1. From the top of a rock A feet above the level of the lake, an eagle was observed soaring at elevation sixty ..., and the depression angle of his reflection was at the same time ... Show that his height over the lake was $\frac{d(d+d)}{d-d}$ ...

2. The multiplication of factors of the form $(\cos\theta + \sqrt{-1}\sin\theta)$ yields a function of the same form as one of the single factors.

3. The expression $\left| \cos(2\pi x + \theta) - \sqrt{-1}\sin(2\pi x - \theta) \right|$ has a different value one for each. Find the values of x ...

4. Prove
$$\cos n\theta = \cos^n\theta\left(1 - \frac{n(n-1)}{\lfloor 2}\tan^2\theta + \frac{n(n-1)(n-2)(n-3)}{\lfloor 4}\tan^4\theta - \&c\right) ...$$

and $\cos n\theta$ in a similar series.

5. If C be an angle of a triangle so small that the higher powers of T, its circular measure, may be neglected after the square, prove
$$\cos(A-B)\left(1 + \frac{ab}{q(a-ab)}\right)\sec\tfrac{1}{2}C.$$

6. Prove $\cos 2\varphi + \tfrac{1}{?}\cos 4\varphi + \tfrac{1}{?}\cos 6\varphi + \&c = \log(\cos\varphi)$.

7. Express $\sin\varphi$ into a product of quadratic factors, viz. —
$$\varphi = \left(1 - \frac{\theta^2}{\pi^2}\right)\left(1 - \frac{\theta^2}{2^2\pi^2}\right)\left(1 - \frac{\theta^2}{3^2\pi^2}\right) \&c.$$

and prove $\frac{\pi^2}{?} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \&c.$

8. If $\tan\theta$ in $\tan\varphi$, prove
$$\theta = \varphi + \frac{m}{m+1}\sin 2\varphi + \frac{1}{2}\left(\frac{m-1}{m+1}\right)^2\sin 4\varphi + \&c.$$

9. Two planes A and B in same latitude θ, have difference of longitude, θ. Find the advantage, in distance, of travelling from one to the other on a " great circle," rather than on the parallel of latitude.

10. If $r(x, y)$ as x represent any lever, the change of the origin and turning round its axes does not affect the values of the equation.

11. What kind of locus is represented by the equation
$$ax^2 + bxy + cy^2 + \&c = 0 \quad\text{and}\quad ax^2 + ay^2 + bx^2 + cy^2 + \&c = 0.$$
Determine the former completely.

12. Given $S = 0$ and $R = 0$; equations of the second degree. Interpret $S - \lambda R = 0$. Represents also the equations to represent circles, and $(= 1$; explain the equation prescribed).

II.

ANALYTICAL GEOMETRY AND DIFFERENTIAL CALCULUS.

APRIL 23, 10 A.M. TO 1 P.M.

1. If $a - \lambda$, ... as z be the equations to the sides of a triangle, interpret the equation —
$$\lambda a + b - ... = ..., \quad \text{and} \quad ... = ..., \text{ as } a - ..., \text{ as } z = \text{ as } c.$$
Show also that the lines joining the poles of the sides of a triangle, inscribed in a conic section, with the opposite angles pass through a point.

2. Find the equations to the tangent and normal in an ellipse, origin being the centre. Prove the latter deduce that the normal bisects the angle between the focal distances.

3. Indicate the steps by which the general equation of the second degree, $ax^2 + axy + y^2 + ... + ... + ...,$ is reduced to the form $A x^2 + ... y^2 = 1$, when $A = ... ac$ is not zero.

4. Lines drawn from an external point touch an ellipse. ... If the sum of the tangents of the angles they make with the axis of X be constant, the locus of the points is ... If the product of these tangents be constant, describe the different curves.

5. Tangents to a parabola meet at T, touching the curve at P and Q. If TABC meet the curve in A and C and the chord PQ in B; then is TC divided harmonically.

6. Prove that $\sin\frac{1}{2}(x-a) = \frac{1}{?}\frac{12-x}{?} + \frac{1}{?}\frac{12-x}{?} \&c.$

7. Prove that if $a\sin^2(x)$ be a maximum or a minimum, the first differential coefficient that does not vanish must be of an even degree.

8. Find the greatest triangle (isosceles) that can be inscribed in an ellipse, vertex at the extremity of the major axis. Find also the cylinder of least surface that can be cut out of a given sphere.

9. Discuss the curve $y = \dfrac{x^2}{x^2 - a^2}$ (1) with reference to position in the different quadrants; (4) angle or angles at which it cuts the axis of X; (3) asymptotes; (4) points, if any, of inflexion.

10. If $y = x \sin x + \frac{1}{2} \sin^2 x$; then $\dfrac{d^4 y}{dx^4} + \dfrac{d^2 y}{dx^2} + 4y = 0$.

III.

DIFFERENTIAL AND INTEGRAL CALCULUS.

APRIL 22, 10 A. M. TO 1 P. M.

1. A parabola has its axis vertical. Prove that the focal chord drawn which the time of descent is a minimum is inclined to the perpendicular at angle $\theta = \tan \ldots \sqrt{3} \ldots$

2. Two curves $y = rf(x)$ and $y = \phi f(x)$, have a contact of the nth order. Apply your remarks to the "circle of curvature."

3. By the use of an elementary triangle, &c., prove the following relations in spirals, (according to the usual notation) viz. :—

$$\rho = \frac{r^2}{\sqrt{r^2 + \frac{dr^2}{d\theta^2}}} \ldots \quad \text{rad. of Curv.} = r\frac{dr}{d\psi}$$

4. Change the above formula into others where u is the variable instead of r, r being $= \dfrac{1}{u}$.

5. Consider the equation to the equiangular spiral, $r = ae^{\theta}$ shewing (1) that an angle between the radius vector and the tangent at the point to which it is drawn is constant; (2) that the radius of curvature is proportional to the radius vector; (3) that the locus of the intersections of the perpendicular on the tangent with the tangent is a similar spiral.

6. Find $\int \cos^n \theta \sin^m \theta \, d\theta$ and $\int x \sin^{-1} \frac{x}{a}$ ... What do you consider the eldest general method in Integration? Integrate $\dfrac{dx}{\sqrt{ax^2 + bx + c}}$.

7. Find the area of the curve $y = a \cos^{-1} \frac{x}{a}$ between the limits x and d. Find also the volume and centre of gravity of the solid procured by the complete revolution of the quadrant of an ellipse round the semiminor-axis.

8. The attraction of a material film of indefinite length on a particle at distance, a, is $\propto \frac{1}{a}$ if the law of force be the inverse square of the distance; and is independent of a if the law is that of the inverse distance.

9. The velocity at any point in a central orbit is independent of the path described.

10. Find the law of force tending to the pole under which a body would describe the spiral in Quest. 5, and prove that the velocity at any point is inversely proportional to the radius vector at that point.

PHYSICS.

Examiner .... J. G. MacGregor, D.Sc.

TIME: THREE HOURS.

1. A point moves in a plane curve. Find expressions for the component velocities and accelerations at any instant in directions along and perpendicular to the radius vector drawn from a fixed point in the plane of the curve.

2. Prove that the path of a point which has two component simple harmonic motions of equal period and with directions at right angles to one another, is an ellipse. Investigate the special cases in which the phases of the component simple harmonic motions (a) are the same, (b) differ by one half period, (c) differ by one quarter period.

3. Determine the force line which a sphere is distorted by a simple strain.—The result of the superposition of two pure strains is not in general a pure strain.

4. Find the velocity at which a body would reach the earth after being fallen from an infinite distance.

5. Two bodies find together are projected in a horizontal plane in which they are perfectly free to move. Determine the motions to which they are subjected. Prove that the two axes of rotation... position.

6. Determine the relation of the potential.

11. Apply Poisson's extension of La Place's equation to shew that the electrical force near a charged conductor is $2\pi S$, (S being the density of the charge).

12. Find the resultant attraction inside a cylinder.

13. Enunciate and prove Green's theorem. Prove that the surface integral of normal attraction is equal to 4π times the mass enclosed by the surface. Give this equation the form applicable to tubes of force.

14. If a charged conductor is wholly enclosed by another conductor, the induced charge on the latter is equal to the inducing charge on the former.

15. Shew that if two waves, which are caused by disturbances such that the particles of the medium vibrate in simple harmonic motions at right angles to its common direction of the waves, which are of the same wave-length and amplitude, and which differ in phase by one half-period, interfere, they destroy one another.