## CALENDAR

## DALHOUSIE COLLEGE

UNIVERSITY,

HALIFAX, NOVA SCOTIA.
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SESSION 1873-74.

HALIFAX:
Printed for the University, by the Nora Scotia Printing C'O. 1873.


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## SESSION 1873-r4.

## HALIFAX:

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##  $1873-74$.

1873. 

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Mo.
Tu.
Meeting of Governors. Examinations in Greek. Honour Examina-
W
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> Fr.

Mo.
Tu. William Young" Elocution Prize.
Meeting of Senate, at 10 o'clock, A.M.
Results of Sessional Examinations declared.
Meeting of Convocation at 3 o' clock, P.M.

## Summer Session, 1874.

Summer Session opens. Registration at 10 o'clock, A.M. Meeting of Senate, at 11 o'clock, A.M.

## Lectures begin.

Foundation Stone of College laid, 1820.
Queen's Birthday.
Meeting of Senate, at 1 o'clock, P.M.
Accession of Queen Victoria.
Halifax settled, 1749. No Lectures.
Lectures close.
Examinations.
Fr. Examinations. Session ends.

#  

## BOARD OF GOVERNORS:

Hon. Sir William Young, Knight, Chief Justice of Nova Scotia, Chairmana Hon. Charles Tupper, C. B., M. D., M. P., Minister of Inland Revenue.
Hon. J. W. Ritchie, Judge of Supreme Court of Nova Scotia.
Hon. S. L. Shannon, Q. C.
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Alexander Forrest, Esq., M. I).
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John Johnson, M. A., Professor of Classics.
George Lawson, Ph. D., LL. D., Professor of Chemistry and Mineralogy. James DeMill, M, A., Professor of History and Rhetoric.
James Liechit, Esq., Tutor in Modern Languages.

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George H. Sinclatr, M.D., Professor of Anatomy.
J. R. DeWolf, M.D., Ed., L.R.C.S., Ed., Professor of Medical Jurisprudence.
Dr. A. P. Reid, Dean of Faculty.
Dr. H. A. Gordon, Secretary.
W. Y. Fullerton, M.D., and E. S. Blanchard, M.D., Demonstrators of Anatomy.

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## § I.-WINTER SESSION.

The Winter Session of 1873-74 will commence on Wednesday, Oct. 29th, 1873, and end on Friday, April 24th, 1874.

## § II.-ADMISSION OF STUDENTS.

Students may enter the College,

1. As Undergraduates, with the intention of applying for a University Degree at the end of their course; or
2. As General Students, who do not look forward to a University Degree.

Undergraduates may take either of two courses ; (1) The Curriculum for the Degree of Bachelor of Arts (B. A.); or (2) that for the Degree of Bachelor of Science (B. Sc.). (See § IV.)

The usual Course extends over Four Winter Sessions. Students taking this Course are required to pass the Matriculation Examination of the First Year (See § III.), and take the classes prescribed for their respective courses.

But Students may shorten their attendance by one year, by passing the Matriculation Examination of the Second year (See § III.), and taking the usual Undergraduate Course for the Second, Third, and Fourth Years, with the classes of the intervening Summer Sessions, as prescribed by the Senate.

Instead of attendance at the Summer Sessions, prescribed courses of study, with Examinations at the commencement of the following Winter Sessions, will be accepted.

The Matriculation Examinations this year will be held on Oct. 29th, at 10 o'clock A. M. Candidates are expected to bring their own writing materials, except paper.

General Students are not required to pass any preliminary 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.

## § III-MATRICULATION EXAMINATION.

for the first year. (Four Years' Course.)
The Subjects of Examination for entrance into the First Year of the B. A. Course are :-
I. In Classics. - Latin Grammar, Greek Grammar, one Latin, and one Greek Author.
Latin.-Cæsar, one book; Virgil, one book; Cicero, two Orations; Horace, one book of Odes.
Greek.-Xenophon, one book; Homer, one book; Lucian's Select Dialogues ; New Testament, one Gospel.
II. In Mathematics.-Arithmetic ; Euclid's Elements of Geometry, Book I. ; Algebra, to the end of Fractions.
III.-In English.-Grammar; History of England; Geography; Composition.
Special stress will be laid upon accuracy in Latin and Greek Grammar.

The Subjects of Examination for entrance into the First Year of the B. Sc. Course are the same as the foregoing, except Greek, which is not required.

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for the second year. (Three Years' Course.)
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In order to Matriculate for the Three Years' B. A. Course, a Student must pass an Examination,-

1. In the Classics of the first year, as specified in § XIV., or their equivalents.
2. In the Mathematics of the first year, as specified in § XIV.
3. In English Grammar, English History, Geography and Composition.
4. In Roman History and Ancient Geography, as specified in § XIV.

The Subjects of Examination for entrance into the B. Sc. Course are the same as the foregoing, with the addition of French; but Greek is not required.

# § IV.-COURSE OF STUDY. <br> COURSE FOR DEGREE OF B. A. 

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

For First or Second Class in Classics extra work is required, and special stress is laid upon accuracy in Grammar. (See § XIV.)

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

For First or Second Class in Classics extra work is prescribed, and for First or Second Class in Mathematics an additional hour a week is required. (See § XIV.)

At the beginning of the Second Year, Undergraduates are required to pass an Examination in Roman History and Ancient Geography. (See § XIV.)

Third Year.-(1) Latin. (2) Mathematical Physics. (3) Experimental Physics. (4) Metaphysics. (5) French or German. (6) Greek or Chemistry.

For First or Second Class in Latin or Greek, extra work is preseribed. At the beginning of the Third Year, Undergraduates are required to pass an Examination in Grecian History and Ancient Geography.

Fourth Year.-(1) Latin. (2) Ethics and Political Economy. (3) History. (4) French or German. (5) Mathematical Physics or Greek.

A Student must take the same Modern Language as part of his Undergraduate Course in the Third and Fourth Years.

For First or Second Class in History, extra work is required.

## COURSE FOR DEGREE OF B. Sc.

First Year.-(1) Latin.
(2) Mathematics.
(3) Rhetoric.
(4) French (or Spanish). (5) Experimental Physics.

Second Year.-(1) Latin. (2) Mathematics. (3) Chemistry.
(4) Logic and Psychology. (5) French (or Spanish).

Third Year.-(1) Mathematical Physics. (2) Chemistry.
(3) German. (4) Natural History.

A Student who has entered for the Three Years' Course, must take the Class in Experimental Physies during his third year.

Fourth Year.-(1) Ethics and Political Economy, or History,
(2) Mixed Mathematics. (3) Natural History. (4) German.
(5) Analytical Chemistry. (6) Either Physiology or Human Anatomy (Lectures by Professors in Medical Faculty.)

## § V.-HONOUR COURSES.

Honour Courses are intended for those Students whose tastes and ability lead them to prosecute special subjects of the Curriculum, and remissions of classes are granted to Students studying such Course or Courses.

Honour Courses are provided in the following groups of subjects:-(1) Classics; (2) Mathematies and Physics; (3) Mental and Moral Philosophy; (4) History, Political Economy, and English Literature and Language. Instruction of an advanced kind is provided in these subjects during the third and fourth years of the Curriculum.

Examinations in the Courses are held at the final Examinations for the Degree of B. A. ; and a Student passing First or Second Class in any of the above groups of subjects, obtains the Degree of B. A. with Honours in such subjects.

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

A Student of the Third Year, for Honours, (see § XV,)
In Classics, may omit the Mathematisal Physies of the year;

In Mathematics and Physics, in Mental and Moral Philosophy, in History, Political Economy, \&c., may omit the sixth subject of the ordinary Course, (see § IV).

A student of the Fourth Year studying for Honours,
In Classics, may omit Mathematical and Experimental Physies, and either Ethics and Political Economy or History;

In Mental and Moral Philosophy, or in History, English Language, \&cc., may omit Latin and the sixth (selective) subject of the ordinary Course.

## § VI.-SUMMER SESSION.

The Summer Session will commence on Monday, 4th May, 1873 , and close at the end of June.

Classes will be opened for instruction in the following subjects :

Classics.
Theory of Equations. Applied Logic.

Optics.
Chemistry.
History of English Literature.

## Modern Languages.

Undergraduates in the Three Years' Course are required to take a selection of these Classes, as prescribed by the Senate; see also § II.

## § VII.-FEES.

The Fee to each Professor, whose class or classes a Student enters, is six dollars for the Session, except the following classes, the fee for each of which is $\$ 4.00$ :-Spanish and Hebrew. The Fees for Anatomy and Physiology are $\$ 6.00$ each; but Students paying these limited fees are not qualified to present themselves for Examination in the Medical Department.

An Undergraduate who has completed two years of his course, may attend the Classics and Mathematics during the remainder of his Undergraduate Course without the payment of additional Fees.

Mixed Mathematics and Experimental Physics constitute a separate class.

General Students pay a fee for every class they attend.
Practical Chemistry, three months' course (optional), fee, six dollars. Students taking this class are required to provide their own materials. The use of the larger articles of apparatus will be given in the Laboratory free of expense.

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

Both Undergraduates and General Students are required, at the beginning of each Session, to pay a Library Fee of one dollar, which entitles to the use of the Library for the year.

Matriculation or Registration Tickets and Class Tickets must
be taken out on the first day of Lectures, no Student being allowed to attend a Class without them.

The total fees of Undergraduates who take the ordinary B. A. Course in Arts, are as follows :-

Classes of First Year, with Library and Matriculation Fee....\$21.00
" Second Year, with Library Fee............................. 25. 250
" Third 66 "6 ..................................... 13.00
(or more, according to Classes selected.)
Fourth "
13.00

The fess of Undergraduates who take the B. Sc. Course, are as follows:-

Classes of First Year, with Library and Matriculation Fee.... $\$ 30.00$


## § VIII.-GRADUATION.

DEGREES OF B. A. and B. Sc.
The Degree of B. A. or of B. Sc. may be obtained by passing the proper Matriculation Examination, attending the prescribed Courses of Lectures, and passing the Sessional Examinations at the close of the several years.

Undergraduates in the B. A. Course, have also to pass entrance examinations, as set forth in § IV.

The Fee for Diploma, payable before the final Sessional Examinations, is five dollars. Fee returned in case of failure at the Examinations.

## DEGREE OF M. A.

Bachelors of Arts, of at least three year's standing, maintaining meanwhile a good reputation, shall be entitled to the Degree of M. A., on producing an approved Thesis on a literary or professional subject.

Fee for diploma, which must accompany the Thesis, twenty dollars, except in case of those who entered as Undergraduates prior to 1869, who pay five dollars. Theses to be handed in before the end of March.

## § IX-REGULATIONS FOR EXAMINATIONS.

1. If an Undergraduate absent himself from any University Examination, except for such cause as may be held good by the Senate, he will lose his year.
2. If an Undergraduate fail to pass in any subject, he will be allowed a Supplementary Examination on the first Thursday of the following Winter Session, on giving notice to the Secretary of the Senate at or before the opening of the Winter Session; but. failure in more than two subjects at the Sessional Examinations
will involve the loss of the year. N. B.-In the application of this Rule, Mathematics will be reckoned as two subjects, and Latin and Greek each as one subject.
3. In all cases, a Student who presents himself for Supplementary Examination on any day except that mentioned in Rule 2nd, will be required to pay an extra fee of two dollars.
4. Students are forbidden to bring any books or manuscripts into the Examination Hall, unless by direction of the Examiner, or to give or receive assistance, or to hold any communication at the Examinations. If a Student violat this rule, he will lose his Sessional Examinations for the year; and it shall be at the discretion of the Senate whether he be allowed Supplementary Examinations.
5. Students who pass the Examinations in the several subjects of their respective years, are arrranged in three classes, according to the merit of their answers in these subjects.

## § $\mathbf{X}$.-PROFESSORS' SCHOLARSHIPS.

Two Scholarships, entitling to free attendance on all the classes of the Undergraduate course as long as the holders, maintain a first or second rank at the Sessional Examinations, are offered by the Professors for competition this year ; the competition to take place at the Matriculation Examination.

## § XI-PRIZES AND CERTIFICATES OF MERIT.

The Class Prizes, as usual.
These are awarded to those Students who stand first in the several subjects at the Sessional Examinations.

The St. Andrew's Prize,
To be awarded this year to the Student who stands first in Mathematics at the Sessional Examinations of the Second Year.

## The Sir William Young Prize.

An annual Elocution Prize of $\$ 20$ is offered by the Hon. Sir Wm. Young, Knt., Chief Justice of Nova Seotia, and is open for competition to all Arts Students. This prize will be competed for at the close of the Session; it cannot be held twice by the same Student.

## The Alumni Assoctation Prizes.

The Alumni Association of this University, with judicious liberality, have this year provided Two Prizes of $\$ 20$ each for Students of the First Year. These Prizes will be awarded to the two Students of that year who obtain the highest total of marks
at the Sessional Examinations; Classics being peckoned as $\mathbf{1 5 0}$; Mathematics, 150; Rhetoric, 100.

## The Colonel Laurie Prize.

A Prize of $\$ 20$ is offered by Colonel Laurie, Oakfield, for the best Essay on "Public Roads in Nova Scotia; on what system can they be best made and maintained in the public interest?"

Essays to be sent in not later than 15 th March, 1874, each signed with a motto, and accompanied with a sealed envelope, bearing the motto and containing the name of the writer.

## North Brttish Society's Bursary.

A Bursary, of the annual value of $\$ 60$, 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 Year's course, and held by the successful competitor for two years, namely, during the Third and Fourth Years of the Undergraduate Course. 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, 1874, at the Sessional Examinations. In awarding this Prize, all the subjects of the Second Year's Course are reckoned of equal value.

## Waverly Prize.

This Prize, of the value of $\$ 60$, has been founded by an unknown Benefactor, whose object in so doing is to encourage the studies of the Curriculum, especially Mathematics.

This Prize will be awarded to the Student of the Third Year who passes all the Examinations of the year, and takes the highest place in the Mixed Mathematics of that year and the Mathematics of the previous course.

## 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 their year.

## § XII.-ATTENDANCE AND CONDUCT.

1. All Undergraduates and General Students attending more classes than one, are required to provide themselves with caps and gowns, and wear them in going to and from College. Gowns are to be worn at Lectures, 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. A Class Book will be kept by each Professor, in which the presence or absence of Students will be carefully noted.
4. 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.
5. Absence without snfficient excuse, or tardiness, or inattention, or disorder in the Class Room, if persisted in after due admonition by the Professor, or the discipline proper to the class, will be reported to the Senate.
6. The amount of absence or tardiness which shall disqualify for the keeping of a Session will be determined by the Senate.
7. 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.
8. While in the College, or going to or from it, Students must conduct themselves in an orderly manner. Any Professor observing any improper conduct in a Student will admonish him, and, if necessary, report to the Principal.
9. When a Student is brought before the Senate and convicted of a violation of any of these rules, the Senate may reprimand privately, or in the presence of the Students, or report to the parents or guardians, or disqualify for competing for Prizes or Certificates of Merit, or report to the Governors for suspension or expulsion.
10. Students not residing with parents or guardians must report to the Prinsipal their places of residence within 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.
11. It is expected that every Student will attend Divine worship regularly, in one of the city churches or chapels.

## § XIII.-THE LIBRARY.

Through the liberality of a number of the friends of the College, a Library has been formed, which consists of a careful selection of the most useful works 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 1200 volumes. All Students are entitled to the use of the Books, on payment of the annual fee of one dollar.

## § XIV.-ORDINARY COURSE FOR B. A.

## - LATIN AND GREEK.

## FIRST YEAR.

Latin.-Cicero : Fourth Oration against Catiline.
*First Oration against Catiline.
Virgil: Aneid, Book XI.
Greek.-Lucian: Timon.
*Demosthenes: First Olynthiac.
Composition.-Principia Latina, Part IV.

## SECOND YEAR.

Latin.-Livy: Book I, chaps. 1-30. *Book I, chaps. 30-60.
Horace: Odes, Book III.
Greek.-Herodotus: Book I, secs. 95-141. *Book II, secs. 1-34.
Homer: Odyssey, Book IX.
Composimon.-Principia Latina, Part V. Initia Græca, Part III.

THIRD AND FOURTH YEARS.
Latin.-Tacitus: Annals, Book I. Juvenal : Satires, III, X, XIII.
Greek.-Demosthenes : Philippics, I, II, III. Plato: Apologia Socratis. Composition.-Principia Latina, Part V. Initia Græca, Part III.
Philology-Outlines of Comparative Philology.

## + ANCIENT HISTORY AND GEOGRAPHY.

Second Year.-History of Rome, to B. C. 31. Geography of Italia, Sicilia, Gallia, Britannia.
Third Year.-History of Greece to the Roman Conquest. Geography of Greece, Africa, Asia. Books recommended: Liddell's History of Rome ; Smith's History of Greece ; Pillans' Classical Geography.

## MATHEMATICS AND PHYSICS.

## 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 Degrees, Series, Proportion, Inequalitles, Variation, Progressions.

Geometry.-First Book of Euclid revised ; Second, Third, and Fourth Books ; Definitions of Fifth, and Sixth Book to the Eighth 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.

Algebra.-Simple Indeterminate Equations; Binomial Theorem; Properties of Logarithms; Compound Interest; Annuities.

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## EXTRA.

Geometry.-21 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, Higher Equations with Horner's Method of Solution.

EXPERIMENTAL PHYSICS.
(Third Year.) -Text Book: Lardner's Handbook. (Fourth Year.) -Text Book: Lardner's Handbook.
mathematical physics.
(Third Year.)-Text Book: Galbraith and Haughton's Manual of Mechanics;
(Fourth Year.) -Text Books: Galbraith and Haughton's Manuals of Astronomy and Optics ; Phear's Hydrostatics (or Galbraith and Haughton's.)

## ETHICS.

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

POLITICAL ECONOMY.
(Fourth Year.)-Text Books : 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 ESTHETICS.

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

## CHEMISTRY.

(Second Year.)-Text Book: Fownes' Manual of Chemistry, the whole of the Inorganic part (excepting Physics), and a portion of the Organic.
(Third Year.)-Same Text Book, including whole of the Organic Chemistry.

ANALYTICAL CHEMISTRY.
Macadam's Practical Chemistry ; Fresenius's Qualitative and Quantitative Analysis.

## RHETORIC, ENGLISH LANGUAGE, ETC.

FIRST YEAR.
Rhetoric.-Text Books: Whately's Elements of Rhetoric. Campbell's Philosophy of Rhetoric.

English Language.-Text Books: Students' English Language. Angus's Handbook of the English Language.

Anglo Saxon. - Text Book: March's Anglo Saxon Reader.
Elocution.-Books recommended: Porter's Analysis of the Principles of Rhetorical Delivery. Russell's Elocution.

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## HISTORY.

(Fourth Year.)-Text Books: Gibbon's Decline and Fall of the Roman Empire. Hume's History of England. History of France. Sismondi's Italian Republics. Hallam's Middle Ages. Taylor's Modern History. Extra.-Hallam's Constitutional History.

## MODERN LANGUAGES.

## ordinary courses.

French. - (Third Year:) - Pujol's Grammar, (first part.)-Scribe's "Valérie."

German.- (Third Year.) Otto's German Conversation Grammar.Adler's Reader.-Schiller's "Wilhelm Tell."

French.-(Fourth Year:)-Pujol's Grammar (fourth part)-Molière's "La Bourgeois Gentilhomme."

German.-(Fourth Year.)-Otto's German Conversation Grammar.Adler's Reader.-Schiller's " Wilhelm Tell" continued.

## § XV.-HONOUR COURSES.

CLASSICS.
[The following Course, in addition to the Ordinary, is prescribed for Classical Honours in the fourth year.]
Latin.-Plautus: Miles Gloriosus.
Terence: Heautontimorumenos.
Virgil: Georgics, Books I., IV.
Horace: Epistles, Books I., IV., Ars Poetica.
Juvenal: Satires.
Cicero: Tusculan Questions, Book I.
Tacitus: Agricola, Germania.
Grefk. -Homer: Iliad, XVIII., XXIV.
Eschylus: Prometheus Vinctus.
Sophocles: Gdipus Rex.
Thucydides: Book II.
Plato: Phædo.
Demosthenes: De Corona.
Composition. - Latin Prose.
History and Literature.-Arnold's History of Rome ; Mommsen's History of Rome, Vol. I.; Merivale's History of the Romans, Vols. I., II., III.; Grote's History of Greece, Vols. IV., V., XI., XII.; Müller and Donaldson's History of Ancient Greek Literaature ; Roman Classical Literatare (Brown's) ; Theatre of the Greeks (Donaldson's.)
Philology. - Müller's Science of Language, Vols. I., II.; Clark's Comparative Philology; Donaldson's Varronianus, chaps. VI., VII., VIII., IX., XI., XIV.; Donaldson's Cratylus, Book I., chap. 5 , Book III. chap. 2, Book IV., chap. 4; Lewis's Essay on the Romance Languages.

## MATHEMATICS AND MATHEMATICAL PHYSICS.

THIRD YEAR
Spherical Trigonometry, with application to Astronomy: DeMoivre's Theorem and Angular Analysis.

Analytical Geometry, -The Circle, the Straight Line, the Parabola, the Ellipse, the Hyperbola.

Differential Calculus-Differentiation ; Theorems of Leibnitz, Maclaurin, and Taylor ; Maxima and Minima of Functions of One Variable. Theory of Equations-Theorems respecting the roots of Equations; Sturm's Theorem with Horner's Method of solving the Higher Equations.

FOURTH YEAR.
Analytical Geometry-The Locus of the Equation of the Second Degree between two Variables; Plane Loci.

Differential Calculus: Maxima and Minima of Functions ef two Variables ; change of the Independent Variable; Radius of Curvature; Osculating Circle ; Envelopes : the tracing of Curves from their Equations.

Integral Calculus-Integration of Simple Forms: Integration by Parts, and Formulæ of Reduction : Applications to Surfaces, Volumes, \&c. : Differential Equations, selected course.

## EXTENSION OF THE ORDINARY COURSE IN MATHEMATICAL PHYSICS.

Prescribed Sections of Parkinson's Elementary Mechanics, Parkinson's Optics, and Hymer's Astronomy. Selections from Walton's Mechanical Problems.

> bOoks recommended-(In order of Preference.)

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

## EXPERIMENTAL PHYSICS.

Ganot's Physics, by Atkinson.
Heat a Mode of Motion, by Tyndal.
Optics, by Sir David Brewster.
The Student's Text Book of Electricity (Noad.)
Nichol's Physical Science (Article Magnetism.)

## MENTAL AND MORAL PHILOSOPHY.

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

## METAPHYSICS AND ESTHETICS.

Descarte's Principles of Philosophy. Reid's Essay's, VI. Sir Wm. Hamilton's Lectures on Metaphysics. Sir Wm. Hamilton's Philosophy of Perception and Philosophy of the Unconditioned. Mill's Examination of Sir Wm. Hamilton's Philosophy. Lewis' Biographical History of Philosophy. Cousin's Philosophy of the Beautiful. Alison's Essay's 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.
Thompson's Christian Theism.
Aristotle's Ethics, Books I., III., VI., X., (in English.)

## GISTORY, POLITICAL ECONOMY, AND ENGLISH LANGUAGE AND LITERATURE,

ENGLI 4 NGUAGE.
Corson's Selections from Saxon anc "inglish Literature.
Lectures on the English Language, (Geo. P. Marsh.)
Study of the English Language (F. A. Marsh.)
Latham's English Language.
Trench's English, Past and Present.

## HISTORY.

Bede's Eicclesiastical History of England.
Freeman's History of Norman Conquest of England.
Macaulay's History of England.
Hallam's Constitutionai History.
Bryce's Holy Roman Empire.
Stephen's Lectures on the History of France.
Menzel's History of Germany.
Mallet's Northern Antiquities.
Guizot's History of Civilization.
POLITICAL ECONOMY.
Smith's Wealth of Nations, by MacCulloch.
Science of Wealth, by Walker.
Plato's Republic, Books I., IV., (in English.)

## TIME TABLE.



## 刃egrres Confexted, April, 1873.

## BACHELOR OF ARTS.

John Munn Allan. Charles Bryden. Wm. Cameron. John Hunter. Charles D. McDonald. James A. McKeen.

David F. Crbelman. Kenneth Doff. Melville Logan. alex. H. McKay. Jobeph Millen Robinson. Wm. Ross.

## HONOURS.

B. A. HONOURS IN MATHEMATIOS AND PHYSICS.

Of the Second Rank-Alex. H. McKay.

## 

## CLASS PRIZES.

FOURTH YEAR.


Mathematics.... ...... ...... 1. Wm. Beairsto.
2. Wm. B. Ross.

Psychology. ...... ............1. Wm. B. Ross.


## CERTIFICATES OF GENERAL MERIT.

Of the Finst Class:-Fourth Year-Alex. H. McKay, D. F. Creelman:Third Year-James C. Herdman. Second Year-William B. Ross. First Year-Francis H. Bell, John W. McLeod, James M. Stewart. Of the Second Class :-Fourth Year-Charles D. MeDonald. Second Year-William Beairsto.

## SPECIAL PRIZES.

The Young Prize of $\$ 20$ for Elocution, open for Competition to Students. of the First and Second Years, was won by Fred. W. Archibald.

The Prize of $\$ 20$ offered by Col. Laurie, for the best Essay on "Immigration as adapted to the Requirements of Nova Scotia," was awarded to David F. Creelman.

The Waverly Prize of $\$ 60$, founded by an unknown Benefactor, whose object is to encourage the studies of the Curriculum, especially Mathematics, was equally divided this year between Wm. Beairsto and Wm. B. Ross.

The Alumni Prize of $\$ 20$, offered by the Alumni Association to the Student of the First Year who makes the highest average at the Sessional Examinations, was won by Jas. M. Stewart.

The St. Andrew's Prize, offered this year for proficiency in Classics, was won by John W. McLeod.

## C゚xminations, 1872--3.

## SCHOLARSHIP EXAMINATION, OCT. 1873.

The Professors' Scholarships, offered for competion to Students entering as Undergraduates, were gained by

Francis H. Bell, Private Study.
Frederick W. O'Brien, Pictou Academy.

## UNIVERSITY EXAMINATIONS.

The following Undergraduates have passed the University Examinations in their several years:-

## SUPPLEMENTARY EXAMINATIONS, OCT., 1872.

Third Year. - Kenneth Duff, J. Millen Robinson.
Second Year.-Walter S. Doull.
ENTRANCE EXAMINATIONS IN ANCIENT HISTORY, OCT., 1872.
Second Year.-History of Rome-George McMillan, Wm. H. Brownrigg, Isaac McDowall, Wm. A. Mills, Alex. McLeod.
The following Students of the Second Year passed an equivalent Examination in previous years:-

William Beairsto, Louis H. Jordan, Alex. C. Patterson, John T. Ross, William B. Ross.

## SUPPLEMENTARY EXAMINATION IN ANCIENT HISTORY, JANUARY, 1873.

Second Year.-J. R. Coffin, Andrew Gray, Arch. Gunn, Alex. McLean, John McLean.

## SESSIONAL EXAMINATIONS, APRIL, 1873.

Fourth Year.--Final Examination for Degree of B. A.-John M. Allan, Charles W. Bryden, David F. Creelman, William Cameron, Kenneth Duff, John Hunter, Melville Logan, Charles D. Macdonald, Alex. H. McKay, James A. McKeen, William Ross, J. M. Robinson.
Third Year.- Daniel S. Fraser, William C. Herdman, James C. Herdman, Daniel McGregor, Donald McLeod, R. G. Sinclair, Hector Stramberg, James M. Oxley.
Second Year. - William Beairsto, James R. Coffin, Arch. Gunn, Louis H. Jordan. Isaac McDowall, John McLean, Alex, McLeod, George McMillan, Wm. A. Mills, John T. Ross, Wm. B. Ross.
First Year.-Francis H. Bell, George H. Fulton, Richmond Logan, Burgess McKittrick, James McLean, John W. McLeod, Joseph S. Morton, Fred. W. O'Brien, John Munro, Benjamin Pearson, Arch. Purves, James M. Stewart, James C. Sutherland.

## CLASS LISTS.

The names of the Students are arranged in the order of merit.

## LATIN.

Fourth Year.-(Final Examination for Degree of B. A.) Class 1-Chas. McDonald, David F. Creelman. Class 2-None. Class 3-Wm. Cameron, James A. McKeen, (Charles W. Bryden, Kenneth Duff, Wm. Ross,) equal, (John Hunter, Melville Logan,) equal, J. M. Robinson.
Third Year.-Class 1-J. C. Herdman. Class 2-None. Class 3-D. S. Fraser, Donald McLeod, J. M. Oxley, W. C. Herdman, R. G. Sinclair, Danl. McGregor, Hector Stramberg.
Second Year. - Class 1-Wm. B. Ross, George McMillan. Class 2-None. Class 3-Wm. Beairsto, Wm. A. Mills, Isaac McDowall, John T. Ross, J. R. Coffin, A. C. Patterson, L. H. Jordan, Arch. Gunn, John McLean, Alex. McLeod.
First Year. -Class 1-F. H. Bell, J. W. McLeod. Class 2-F. W. O'Brien, J. M. Stewart, Arch. Purves. Class 3-B. McKittrick, J. N. Shannon, J. C. Sutherland, J. S. Morton, B. F. Pearson, R. Logan, John Munro, F. W. Archibald, G. H. Fulton, James A. McLean, Colin Pitblado.

## GREEK.

Fourth Year.-(Final Examination for Degree of B. A.) Class 1-Charles D. McDonald.

Third Year.-Class 1-J. C. Herdman. Class 2-None. Class 3-D. S. Fraser, Hector Stramberg, W. C. Herdman, Dan. McGregor.
Second Year. Class 1-George McMillan, Wm. B. Ross. Class 2-None. Class 3-Wm. Beairsto, Alex. McLeod, Wm. A. Mills, J. R. Coffin, L. H. Jordan, John McLean, A. C. Patterson, Arch. Gunn, I. McDowall. J. T. Ross.
First Year.-Class 1-J. W. McLeod, F. H. Bell. Class 2-F. W. O'Brien, J. M. Stewart, Arch. Purves. Class 3-B. McKittrick, R. Logan, J. O. Sutherland, John Munro, Colin Pitblado, J. A. McLean, B. F. Pearson, J. N. Shannon, G. H. Fulton, J. S. Morton.

## MATHEMATICS.

Second Year.-Class 1-William Beairsto, William B. Ross. Class $2-$ Archibald Gunn, William A. Mills, Louis H. Jordan. Class 3-James R. Coffin, John T. Ross, George McMillan, Isaac McDowall, Alex. McLeod, John McLean.
Finst Year. -Class 1 -George H. Fulton, James M. Stewart, Burgess McKittrick. Class 2-Francis H. Bell, Fredk. W. Archibald. Class 3James A. McLean. Richmond Logan, Frederick O'Brien, Benjamin F. Pearson, John S. Murray, James C. Sutherland, Archibald Purves, Isaac Archibald, James G. Morton, Andrew Jack, John Munro.

## NATURAL PHILOSOPHY.

Third Year.-Class 1-Daniel S. Fraser. Class 2-Robert G. Sinclair, James C. Herdman, James M. Oxley. Class 3-William C. Herdman, Donald McLeod, Hector Stramberg, Daniel McGregor, Walter S. Doull.
Fourth Year.-Class 1 -Alex. H. McKay, David H. Creelman. Class 2J. Millen Robinson, William Cameron, James A. McKeen. Class 3William Ross, Kenneth Duff, Melville Logan, John Hunter, John A. Logan, Charles W. Bryden.

## METAPHYSICS AND ESTHETICS.

Class 1-James McD. Oxley, Donald McLeod, Hector M. Stramber¢, Jomes C. Herdman, Daniel McGregor, Daniel S. Fraser, Robert G. Sinclair.
Class 2-William C. Herdman, Walter S. Doull.

## LOGIC AND PSYCHOLOGY.

Class 1-William Ross, George McMillan, William Beairsto.
Class 2-Archibald Gunn, J. R. Coffin, Isaac McDowall, Alexander McLeod, W. A. Mills.
Class 3-Lewis H. Jordan, John McLean, A. C. Patterson, John T. Ross.
CHEMISTRY--SENIOR.
Class 1-Walter S. Doull. Class 2-Donald McLeod, Robert G. Sinclair.

## CHEMISTRY-JUNIOR.

Class 1-William Beairsto, James Robert Coffin. Class 2-W. A. Mills, A. C. Patterson. Class 3-Archibald Gunn, Louis H. Jordan, John: T. Ross, George McMillan, Isaac McDowall, Alex. McLeod, Wm. B. Ross, John McLean, Alexander McLean.

## SPECIAL EXAMINATION FOR DEGREE OF B. A.

Class 3-John M. Allan.

## PRACTICAL CHEMISTRY.

Class 1-Walter S. Doull, Donald McLeod.

## ETHICS AND POLITICAL ECONOMY.

Class 1-D. F. Creelman, A. H. MeKay, C. W. Bryden, J. M. Robinson, C. D. McDonald, K. Duff, J. H. Hunter, J. A. Logan, Melville Logan. Class 2-J. A. McKeen, W. Cameron, W. Ross.

## HISTORY.

Class $1-\mathrm{A} . \mathrm{H}$. Mackay, D. F. Creelman. Class 2 -J. Millen Robinson, Melville Logan. Class $3-\mathrm{Wm}$. Ross, Wm. Cameron, C. W. Bryden, J. A. McKeen, John Hunter, C. D. Macdonald, Kenneth Duff, John A. Logan.

## MODERN LANGUAGES.

## FRENCH.

Fourth Year.-Class 1-David F. Creelman, Charles D. Macdonald, Alex. H. MacKay. Class 2-Charles W. Bryden, John A. Logan, James A. McKeen, J. Millen Robinson, Melville Logan, William Cameron. Class 3-John Hunter, William Ross. GERMAN.
Fourth Year.-Class 1-Kenneth Duff, Charles D. Maedonald.
FRENCH.
Third Year.-Class 1-James McD. Oxley, James C. Herdman. Class 2 Donal McLeod, Daniel S. Fraser, Walter S. Doull. Class 3-Robert G. Sinclair, H. M. Stramberg, Daniel McGregor, Wra. C. Herdman.

## GERMAN.

Third Year.-Class 1-James C. Herdman. Class 2-Robert G. Sinclair.

## RHETORIC.

Class 1-James McG. Stewart, Francis H. Bell. Class 2-Richmond Logan, J. M. McLeod, A. R. Purves, Burgess McKittrick, F. W. Archibald. Class 3-F. W. O'Brien, G. H. Fulton, Jas. A. McLean, Thos. Corbett, I. L. Archibald, B. F. Pearson, J. C. Sutherland, John Munro, J. S. Morton, Colin Pitblado, John S. Murray, James Shannon.

# C゚raduates and slndergraduates of the fotniversity,  

## GRADUATES.

MASTERS OF ARTS.


BACHELORS OF ARTS.
1866.



## UNDERGRADUATES, 1872-73.



| Gunn, Archibald | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | Pictou. |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MeDowall, Isaac $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ Tatamagouche. |  |
| McLean, Alexander... | $\ldots$ | $\ldots$ | $\ldots$ | Belfast, P. E. I. |  |
| McLeod, Alexander | $\ldots$ | $\ldots$ | $\ldots$ | ...Onslow, Colchester. |  |
| McMillan, George | $\ldots$ | $\ldots$ | $\ldots$ | Scoteh Hill, Pictou. |  |
| Mills, William Addison... | $\ldots$ | $\ldots$ | $\ldots$ Bay Fortune, P. E. I. |  |  |



## GENERAL STUDENTS.

| NAME. | RESIDENCE. | Classes attended. |
| :---: | :---: | :---: |
| Boak, Hy. W. C. | Halifax. | Mathematics, French. |
| Brookfield, Walter S. |  | Latin, Math. French. |
| Cameron, John Hy. | Antigonishe Co. | Classics, Math., Rhetoric. |
| Cornelius, Herman F. | Halifax. | Chemistry, Pract. Chem. |
| Cunningham, N.F.K. | Antigonishe. | Classics, Math., Rhetoric. |
| Jack, Andrew McK. | Halifax. | Latin, Math, Rhetoric. |
| Gordon, George L. | Sutherlandshire, G. B. | Classics, Math., Rhetoric. |
| Hill, Philip C. | Halifax | Latin, Math., French. |
| Kennedy, Evan | Port Philip. | Latin, Math., Rhetoric. |
| Lawson, Bruce | Halifax. | Classics, Mathematics. |
| McBean, James Wm. | Pictou. | Classics, Math., Rhetoric. |
| *MeDonald, John S. | Antigonishe. |  |
| MeElmon, Bev. K. | Londonderry. | Classics, Chemistry, Math. |
| McLean, Charles | High Bank, P. E. I. | Mathematics, German |
| McKenzie, Duncan | Loch Lomond. | Classics, Math., Rheto |
| McKnight, Sam. Jno. | Dartmouth. | Classics. |
| Murray, Thomas | Bedeque, P. E. I. | Classics, Ethics. |
| Pitblado, Colin | Truro. | Classics, Rhetoric. |
| Read, Burton S. | Minudie. | Math., Rhetoric, Chemistry. |
| Smith, James C. | Halifax. | Classics, Mathematics. |
| Smith, Wm. A. |  | Classics, Mathematics. |
| Stairs, George | " | Rhetoric, French. |
| Sutherland, Daniel | Cumberland | Classics, Math., Rhetoric. |
| Twining, Russel | Halifax. | Math., Rhetoric, French. |
| West, Franklin |  | Lat., Math., Rhet., French. |
| $\begin{array}{llllllll}\text { Undergraduates in Arts } & & & & & & \\ \text { General Students in Arts... } & \text {... } & \text {... } & \text {... } & & \text {... } & 24\end{array}$ |  |  |
|  |  |  |
| Total in Arts <br>  |  |  |
|  |  |  |
| Total number of Students in the University |  |  |

[^1]
## Facrity of Medicime.

Very Rev. James Ross, D.D., Principal (ex-offieio.)<br>WILLIAM J. ALMON, M.D.,<br>Emeritus Professor of Obstetrics and the Diseases of Women and Children, and President of the Faculty.

ALEXANDER P. REID, M.D., L.R.C.S., EDin., L.C.P. \& S. Canada, \&C。 HUGH A. GORDON, M.D., M.R.C.S., Edin., L.C.P. \& S. Canada, Professors of the Principles and Practice of Medicine and Clinical Medicine.

WILLIAM B. SLAYTER, M.D., M.R.C.S.L., L.R.C.P., Eng., \&C. Professor of Obstetrics and the Diseases of Women and Children and Clinical Surgery.

EDWARD FARRELL, M.D., ARCHibald Lawson, M.D., L.R.C.S., England, Professors of Principles and Practice of Surgery and Clinical Surgery.

GEORGE LAWSON, PH. D., LL. D., Professor of Chemistry, Chemical Toxicology and Botany.

ALFRED H. WOODILL, M.D., Professor of Materia Medica and Therapeutics. JOHN SOMMERS, M.D., Professor of Physiology.

GEORGE L. SINCLAIR, M.D., Professsr of Anatomy. J, R. DeWolf, M.D., Edin., L.R.C.S., Edin., Professor of Medical Jurisprudence.

DR. A. P. REID, Dean of Faculty.
DR. H. A. GORDON, Secretary.
W. Y. FULLERTON, M.D., E. S. BLANCHARD, M.D.,

## Demonstators of Anatomy.

Jantror-JOHN WILSON.

## fixtulty of datedirint.



The Seventh Session of the Medical Faculty of Dalhousie College and University will be opened on Tuesday, the 21st of October, 1873, with a general introductory lecture. The regular lectures will commence on Wednesday the 22nd of October, and will be continued during the six months following.

The class tickets for the various courses are accepted as qualifying candidates for examination before the Royal College of Surgeons, London, the Universities of Edinburgh, McGill, Montreal, Harvard, Boston, and the New York Schools of Medicine.

Registration is necessary every Session-it is required upon entrance, or as soon afterwards as possible, and always before any class tickets are procured. The time fixed for closing the Register is annually on the thirtieth of November. Class tickets are payable in advance and will not be issued after the Register is closed.

In order to meet the requirements of the recent Medical Act of Nova Scotia, and the General Council of Medical Education and Registration of Great Britain, and also those of the Royal Colleges of Surgeons of England and Edinburgh, the Student must pass his Matriculation examination prior to the commencement of his Medical studies. Students wishing to pass this examination may do so at any time by giving two weeks notice to the Secretary of the Provincial Medical Board, Dr. T. R. Almon, or to the Secretary of the Medical Faculty.

While the University regulations permit a student to graduate after three years attendance upon Lectures, provided he furnish proof that he has studied one year before attending Lectures, with a private practitioner, yet he is recoommended to devote four years to systematic instruction, as less time is scarcely sufficient in which to acquire a fair knowledge of the many subjects which compose the curriculum.

With regard to the examination, students are requested to turn to section 10, Article 4, of the "Qualifications and Studies of Students and Graduates for the Medical Degree," in a succeeding part of this announcement.

The division of the examination into primary and final adopted by the McGill University, Montreal, and found to be most advantageous to students, will be adopted by this Faculty also; and it is hoped that the greater number of third year students will avail themselves of this arrangement.

Students of Dentistry will find it of advantage to attend the lectures on Chemistry, Anatomy, and Practical Anatomy.

To intending Druggists' Assistants, the lectures on Chemistry and Materia Medica will be of great practical assistance.

Students of Law will find that it is desirable to attend the lectures on Medical Jurisprudence by Dr. DeWolf and Dr. Lawson-the subjects of Insanity, Law as related to Medicine, and Toxicology, being fully explained.

For additional information apply to the Dean of the Faculty of Medicine, A. P. Reid, M.D,, 98 Argyle Street, Halifax, N. S.

## Course of dustuction in the fatuly of gatdicius.

(The Lectures will be delivered in the University Building.)

## I-MEDICINE.

Profs. Rerd and Gordon. Physicians to City Hospital and City Dispensary.
Divided into Principles and Practice. This course will be illustrated by coloured plates and morbid preparations,special attention will be directed to diseases of the heart and lungs, and to their physical diagnosis, which will be illustrated by the numerous cases in the City Hospital, under the immediate instruction of the Professor, and to which cases every student may have direct access, thus enabling him to obtain a practical knowledge of this part of the profession.
Class Books-Tanner, Flint, Watson, Barlow, Reynolds, Niemeyer.

II-SURGERY.
Profs. Farrell and Lawson, Surgeons to City Hospital \& City Dispensary.
Divided into Principles and Practice, including Surgical Anatomy and Operative Surgery, exhibited on the subject. The various surgical instruments and apparatus will be shown, and their uses and applications illustrated.
Class Books - Druitt, Erichsen, Gross, Holmes.

## III-OBSTETRICS. <br> Prof. Slayter, Surgeon to City Hospital.

Including Diseases of Women and Children, illustrated by plates, manikins, etc. Every facility will be given to senior students for attending midwifery cases at the Almshouse and Dispensary, under the direction of the medical officers.
The Emeritus Professor, Dr. Almon, will also give a number of practical lectures.
Class Books-Bedford, Tyler Smith, Cazeau, Scanzoni on Disseases of Women, West on Children.

## IV-CHEMISTRY.

## Prof. Lawson.

This course will be illustrated by diagrams, tables, apparatus, preparations, and demonstrations on the the black-board.Experiments daily.
Class Book-Fownes' Manual.

## PRACTICAL CHEMISTRY.

There will be a separate class for Practical Chemistry specially suited to the requirements of Medical Students.
Laboratory Books-Fresenius's Qualitative, Bowman's Med. Ch.

## V-INSTITUTES OF MEDICINE.

Prof. Sommers, Physician to City Dispensary.
This course will embrace the principles of Human Physiology, Histology, and the use of the Microscope.
Class Books-Dalton, Carpenter, Todd and Bowman, Kirk and Paget, and Flint.

## VI-MATERIA MEDICA.

## Prof. Woodill, Physician to City Dispensary.

This course will be illustrated by specimens of medicinal plants and samples of the various drugs, chemicals, etc.
Class Books-Pareira by Farre, Stille, Neligan, Dispensatories.

> VII-ANATOMY.

Prof. Sinclair, Surgeon to City Dispensary.
This course will be illustrated by the fresh subjects-dried pre-parations-including skeletons, etc., and life-size coloured plates. Every facility will be afforded to students to become practically acquainted with Anatomy under the Professor and Demonstrators.

## PRACTICAL ANATOMY.

> W. Y. Fullerton, M.D.
> E. S. Blanchard, M.D.

Rooms open from 4 to 6 , and from 8 to $10, \mathrm{p} . \mathrm{m}$.
Class Books-Gray, Wilson, Sharpey \& Quain, Ellis's Dissector.

## VIII-MEDICAL JURISPRUDENCE.

Prof. DeWolf, Superintendent of the Hospital for Insane Prof. George Lawson.

This course includes Toxicology, the method of testing for poisons, Insanity, and public Hygiene.
Prof. DeWolf will have ample opportunities for instructing his class in the important subject of Psychological Medicine.

Prof. Lawson will lecture on the subject of Chemical Toxicology.
Class Books-Taylor's Jurisprudence, Guy's Forensic Medicine.

# IX-CLINICAL MEDICINE. 

Prof. Reid.
X-CLINICAL SURGERY.
Prof. Farrell.
Taught by lectures and tutorially at the bed-side by the Physicians and Surgeons at the Provincial and City Hospital, and City Dispensary, at which institutions ample material is afforded for both classes. The students being individually trained at the bed-side, both in Diagnosis and Treatment.

XI-BOTANY.
Prof. Lawson.
Students are required to attend one course of three months on this subject. The national Orders containing Medicinal and Poisonous Plants, will be illustrated as fully as possible.

## zerises.

THE DR. AVERY PRIZES.
These are offered by James F. Avery, M. D., to encourage the study of Anatomy. There are two prizes of $\$ 10$ each. Particulars given at the commencement of the Session.

THE W. H. NEAL PRIZE.
A Prize of $\$ 20$ is offered by W. H. Neal, Esq., to the student passing the best primary or final examination for the Degree of M. D.

## 

The Provincial and City Hospital is visited daily at 12 M., by the Medical Officers ; and the City Aums House containing from 200 to 400 inmates, many of whom are in the Hospital Wards, will be available to students without fee. The best opportunities are here presented for clinical instruction, midwifery practice and treatment of diseases, likewise for the observation of pathological appearances, which will be demonstrated by post-mortem examinations. There is a Hospital fee of $\$ 1$ for certificate of attendance.

The Halffax Dispensary is carried on after the model of the DeMilt Dispensary, New York, being divided into three departments, viz:: (1) Surgical, including the Eye and Ear. (2) Medical, including the Heart and Lungs. (3) Diseases of Women and Children. Here the student can have the advantage of becoming practically acquainted with the less severe forms of disease, and will have the privilege likewise of seeing patients with the visiting physicians, and have opportunities for Obstetric practice.

## 

PRIZES.
Mr. W. H. Neal's Prize for best primary examination for the degree M. D., C. M.:-Donald A. Campbell, Truro.

Senior Class-Donald Chisholm, Long Point, 1st prize. Robinson Cox, Stewiacke 2nd prize.
Junior Class-John Stewart, Whycocomah, 1st prize.
Robt. J. Blanchard, Truro, 2nd prize.
Dr. J. F. Avery-Prizes for Clinical Reports of Cases :Clinical Medicine-W. S. Muir. Clinical Medicine-D. R. C. McKay.

Prof. Slayter's Prizes in Obstetrics :-A. W. H. Lindsay Halifax ; James A. Meek, Cornwallis.

## (extracts from the efortations.

## COURSES OF LECTURES, FEES, \&C.

1st.-Each Professor shall deliver at least five lectures during the week, except in the classes of Clinical Medicine and Clinical Surgery, in each of which only two Lectures shall be required; and in that of Medical Jurisprudence, if extended through six. months, in which case three lectures a week will suffice.

2nd.-Each Lecture shall be of one hour's duration.
3rd.-Every Professor shall occasionally examine his class upon the subjects treated of in his preceding Lectures; and avery such examination shall be considered a Lecture.

4th. - A roll of the names of the Students attending each class shall be called from time to time.

5th.-All tickets which have not a Certificate of attendance attached, shall be rejected when presented as testimonials previous to examination, unless the omissions shall be satisfactorily accounted for.

6th.-The fee for each class shall be $\$ 12$, with the following exceptions: For each of those of Medical Jurisprudence, Practical Anatomy, Practical Chemistry, and Botany, $\$ 6$; for Clinical Medicine and Clinical Surgery, each $\$ 6$. The class fees are payable in advance, to the Registrar, who will furnish all tickets.

7 th. -Any student, after having paid the fees, and attended two courses of any class, shall be entitled to a perpetual ticket for that class.

8th. -The courses of all the Classes, except Practical Chemistry, Botany and Medical Jurisprudence, shall be of six months' duration ; the Classes of Practical Chemistry and Botany, of three months' duration ; and that of Medical Jurisprudence, either of three months' duration, in which case Five Lectures a week shall be given, or of six months' duration, in which case only three Lectures a week shall be required.

9th.-The courses shall commence on the third Tuesday in October, and with the exception of a vacation at Christmas, shall continue till the 21st. of April.

10th.-The Matriculation or Preliminary Examination is similar to that required by McGill University, Montreal : the Medical Act of Nova Scotia ; adopted under the Medical Act for Ontario, and recommended by the "Council of Medical Education and Registration" of Great Britain. The requirements are : Compulsory-English Language, including Grammar and Composition; Arithmetic, including Vulgar and Decimal Fractions ; Algebra, including Simple Equations ; Geometry, first two books of Euclid; Latin, Translation and Grammar ; and one of the following Optional Subjects-Greek, French, German, Natural.

Philosophy, including Mechanics, Hydrostatics, and Pnuematics. Students may attend the classes without passing this examination.

Graduates in arts of recognized Universities are not required to submit to the matriculation examination.

## Qualifications and Studies of Students and Candidates for the Medical Degree.

1st.-All Students desirous of attending the Medical Lectures shall, at the commencement of each Session, enrol their names and residences in the Register of the Medical Faculty, and procure from the Registrar a ticket of Matriculation, for which each Student will pay a fee of $\$ 2$.

2nd.-The said Register shall be closed on the 30th day of November in each year, and no tickets obtained from any of the Professors shall be received without previous enregistration.

3rd. -No one shall be admitted to the Degree of Doctor of Medicine and Master of Surgery, who shall not have attended Lectures for a period of at least four years subsequently to the date of passing his Matriculation examination in this University, or some other University, College, or School of Medicine, approved by this University; (a certificate from his tutor or tutors that the applicant has been one year studying Medicine in the office of one or more registered Medical Practitioners, will be received in lieu of one of the four years of study-but in any case three years additional study either in this or some other approved school of Medicine will be required.)

4th.-Candidates for the final Examination shall furnish Testimonials of attendance on the following branches of Medical Education, viz. :
Anatomy,
Chemistry,
Materia Medica and Pharmacy,
Physiology.
Principles and Practice of Surgery,
Obstetrics and Diseases of Women and
Children,
Principles and Practice of Medicine,
Practical Anatomy,
Clinical Medicine,
Clinical Surgery,

Of which two courses will be required, each of six months' duration.

> Medical Jurisprudence. Of which one course will be reBotany, Practical Chemistry quired, each of three months' du-

Provided, however, that Testimonials equivalent to, though not precisely the same as those above stated, may be presented. and accepted.

5th.-The Candidate must also give proof by ticket of having attended during twelve months the practice of the Provincial and City Hospital, or that of some other Hospital, approved by this University ; and also a certificate of having six months practice in dispensing drugs.

6th.-He must also give proof by ticket of having attended for at least six months the practice of a Lying-in-Hospital, approved of by the University, or of having attended at least six cases of accouchment ; also a certificate from a registered Medical Practitioner, of " Proficiency in the Practice of Vaccination."

7th.-No one shall be permitted to become a Candidate for examination, or shall receive a degree, who shall not have attended at least One Session of this University, and have obtained from it the tickets for one full Course of all the branches included in its curriculum.

8th.-Courses of less length than the above will only be received for the time over which they have extended.

9th.-Every Candidate for the degree must on or before the 15 th day of March, present to the Dean of the Medical Faculty testimonials of his qualifications entitling him to examination, and also a Thesis or inaugural dissertation, written by himself, on some subject connected with Medical or Surgical Science. He must at the same time deliver to the Dean of the Faculty the following Certificate:

$$
\text { Halifax, }-18
$$

I, the undersigned, being desirous of obtaining the Degree of Doctor of Medicine and Master of Surgery, do hereby declare that I have attained the age of twenty-one years, (or if the case be otherwise, that I shall have attained the age of twenty-one years before the next graduation day. [Signed,] A. B.

10th. -The trials to be undergone by the Candidate shall be :
(1.) The private examination of his Thesis as evidence both of Medical and general acquirement, followed [if approved] by its public defence.
(2.) A general written and oral examination on all the branches of Medical and Surgical Science.
(3.) The Clinical Professors shall conduct the examinations of their classes at the bedside, submitting to them cases for diagnosis and treatment in the wards of the Hospital ; they shall also, in estimating the standard of members of their classes and the number of marks to be awarded, take into account the regularity of their attendance and the diligence and care they have evinced in reporting cases.

These examinations will be divided into primary and final, the former comprehending the branches of General Anatomy, Chemistry, Materia Medica, Physiology, and Botany or Zoology ; the latter, those of Practice of Medicine, Surgery, Surgical

Anatomy, Obstetrics and Medical Jurisprudence. It will be optional with the student to present himself for the primary examination at the end of the third session or the third year.

11th. -The following Oath or affirmation, will be exacted from the Candidate before receiving his Degree :

## SPONSIO ACADEMICA.

In Facultate Medicinæ Universitatis Dalhousianæ-
Ego, A- B- ; Doctoratus in Arte Medica titulo jam donandus, Sancto coram Deo cordium scrutatore, spondeo, me in omnibus grati animi officiis, erga hanc Universitatem ad extremum vite halitum, perseveraturum, tum porro artem medicam, caute, caste et probe exercitaturum ; et, quoad in me est, omnia ad ægrotorum corporum salutem conducentia, cum fide procuraturum ; quæ denique, inter medendum, visa vel audita silere conveniat, non sine gravi causa vulgaturum. Ita presens mihi spondenti adsit Numen.

12th.-The Fee for the Degree of Doctor of Medicine and Master of Surgery shall be twenty dollars, to be paid by the candidate before examination, together with a Registration Fee of one dollar.
N. B.-Board may be obtained at from $\$ 12$ to $\$ 15$ per month.

## Graduates and students.

## GRADUATES OF 1871 AND 1872.

## Name.

Roderic Suthrrland, Geo. H. H. DeWorf, Chas. W. Hiltz, Wh. McRae, Finlay McMillan,

## Residence.

River John, Pictou Cy. Dartmouth, N. S., Bridgetown, An'polis, Richmond, C. B., N. S Pictou Cy., N. S.

## Thesis.

The Pus Crassis. Surgical Aneurism.
N. S. Amenorrhøe.

Ovarian Dropsy.
Alcohol.

The following gentleman passed the primary examination, which includes Anatomy, Chemistry, Materia Medica, Institutes of Medicine and Botany :

A. W. H. Lindsay, Halifax. Duncan R. McKay, Truro. William S. Muir, Truro.<br>Donald Chisholm, Long Point.<br>Donald A. Campbell, T̂ruro.

## STUDENTS OF 1872-73.



# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Wednesday, April 16, 9 a.m. to 1 p.m.

LATIN.-FIRST YEAR.

CICERO: FIRST ORATION AGAINST CATILINE. VIRGIL: AENEID, BOOK X.
Professor Johnson, M.A........ ............Examener.

1. Translate:
a. Quamdiu mihi consuli designato, Catilina, insidiatus es, non publico me praesidio sed privata diligentia defendi. Quum proximis comitiis consularibus me consulem in campo et competitores tuos interficere voluisti, compressi tuos nefarios conatus amicorum praesidio et copiis, nullo tumultu publice concitato ; denique, quotiescunque me petisti, per me tibi obstiti, quamquam videbam perniciem meam cum magna calamitate reipublicae esse conjunctam. Nunc jam aperte rempublicam universam petis : templa deorum immortalium, tecta urbis, vitam omnium civium, Italiam denique totam ad exitium et vastiatem vocas. Quare quoniam id, quod est primum et quod hujus imperii disciplinaeque majorum proprium est, facere nondum audeo, faciam id quod est ad severitatem lenius et ad communem salutem utilius. Nam si te interfici jussero, residebit in republica reliqua conjuratorum manus. Sin tu, quod te jamdudum hortor, exieris, exhaurietur ex urbe tuorum comitum magna et perniciosa sentina reipublicae.
b. Tum breviter supera adspectans convexa precatur:

Alma parens Idaea deum, cui Dindyma cordi
Turrigeraeque urbes bijugique ad frena leones,
Tu miki nunc pugnae princeps, tu rite propinques
Augurium, Phygibusque adsis pede, diva, secundo.
Tantum effatus. Et interea revoluta ruebat
Matura jam luce dies, noctemque fugarat :
Principio sociis edicit, signa sequantur,
Atque animos aptent armis, pugnaeque parent se.
Jamque in conspectu Teucros habet et sua castra,
Stans celsa in puppi, clipeum cum deinde sinistra Extulit ardentem.
c. Haec ubi dicta dedit, caelo se protinus alto Misit, agens hiemen nimbo succincta per auras, Iliacemque aciem et Laurentia castra petivit. Tum dea nube cava tenuem sine viribus umbram In faciem Aeneae-visu mirabile monstrumDardaniis ornat telis, clipeumque jubasque Divini adsimulat capitis, dat inania verba, Dat sine mente sonum, gressumque effingit euntis : Morte obita quales fama est volitare figuras,
Aut quae sopitos deludunt somnia sensus.

## GRAMMAR.

(N. B.-Questions marked thus * are intended only for Students seeking a First or Second Class.)

1. Write down the Acc. and Abl. of these words and mark the quantity of all the syllables in the Abl. : palus, mare, inguen, turbo, vir, praeceps, dedecus, aliquis, ambo, umbo, cinis, pecus, ǒs, infelix, aether.

* 2. Decline: Alecto, dicione, Pallas (m.), verberibus, Achilli, scalis, Idus.

3. Compare: Ocins, pulcher, vetus, dives, deterior, primum, dexter, frugi, alacer, magnificus.

* 4. Some adjectives are compared by magis and maxime, and some do not admit of comparison ; give them.

5. Write in classical Latin : $111,111, \frac{5}{6}, 10,000$ th, March 17 th.
6. a. Name the Voice, Mood and Tense of the following verbal forms and give their principal parts : pepigit, patiare, morere, mavis, juvit, stridentem, taedet, bacchata, scindes, pārent, părent, aufert, fidite.
b. Give the 2nd Sing. Present in all Tenses and Voices of these verbs, (marking quantities) : conjicio, seco, fio, audeo, adeo.
*7. Write down the parts of the following verbs that are found : aio, inquam, infit, effatus, cědo, salvere.
7. Scan the first five lines of the first passages from Virgil, and give the rules for the quantities of syllables in the second and third lines.
8. Of what rules of syntax are these sentences examples:
a. (Mezentius) Aere caput fulgens.
b. Ditssimus agri Qui fuit Ausonidum.
c. Lecti juvenes . . . ibant Subsidio Trojae.
d. Sociis edicit, signa sequantur.
e. Tacitis regnavit Amyclis.
$f$. Nos aliquid Rutulos contra juvisse nefandum est?

* 10 Translate these sentences and explain some peculiar grammatical constructions therein:
a. Multi principes civitatis Roma non tam sui conservandi quam tuorum consiliorum reprimendorum causa profugerunt.
b. Dixi . . . caedem te optimatium contulisse in a. d. V. Ka?. Nov.
c. Unum hoc, per, si qua est victis venia hostibus, oro,

11. Write a short account of Catiline's conspiracy, with dates; or, give a sketch of Virgil's life and works.
12. Translate into Latin: By a right of my own, I ask of you this kindness.-All things which are the property of a woman become the property of her husband.-It is foolish to remember those things, on account of which you forget yourself.-Tarquinins Superbus was the seventh and last of the Roman kings.-He is to be considered free who is the slave of no baseness.-The towers are higher by ten feet each than the walls.-Augustus was born in the consulship of Cicero, and in the same consulship the conspiracy of Catiline broke out.


# DALHOUSIE COLLEGE AND UNIVERSITY, <br> HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.

Wednesday, April 16, 3 P. M. то $5_{\text {P. M. }}$

LATIN AND GREEK.-FIRST YEAR.
ADDITIONAL PAPER FOR FIRST AND SECOND CLASS.
CICERO: DE AMICITIA.-DEMOSTHENES: FIRST OLYNTHIAC.

> Professor Johnson, M. A......................... . Examiner.

1. Translate the following passages :
a. Nam quibusdam, quos audio sapientes habitos in Græcia, placuisse opinor mirabilia quædam: (sed nihil est, quod illi non persequantur suis argutiis:) partim fugiendas esse nimias amicitias, ne necesse sit unum sollicitum esse pro pluribus; satis superque esse suarum cuique rerum ; alienis nimis implicari molestum esse : commodissimum esse, quam laxissimas habenas habere amicitiæ: quas vel adducas, quum velis, vel remittas. Caput enim esse ad beate vivendum securitatem; qua frui non possit animus, si tamquam parturiat unus pro pluribus. Alios autem dicere aiunt multo etiam inhumanius, (quem locum breviter perstrinxi paullo ante:) presidii adjumentique causa, non benevolentiæ neque caritatis, amicitias esse expetendas. Itaque, ut quisque minimum firmitatis habeat minimumque virium, ita amicitias appetere maxime. Ex eo fieri, ut mulierculæ magis amicitarum præsidia quærant, quam viri, et inopes, quam opulenti, et calamitosi, quam beati.
b. Sed maximum est in amicitia, superiorem parem esse inferiori: sæpe enim excellentiæ quædam sunt, qualis erat Scipionis in nostro, ut ita dicam, grege. Numquam se ille Philo, numquam Rupilio, numquam Mummio anteposuit, numquam inferioris ordinis amicis. Q. vero Maximum fratrem, egregium virum, omnino sibi nequaquam parem, quod is anteibat ætate, tamquam superiorem colebat suosque omnes per se essse ampliores volebat. Quod faciendum imitandumque est omnibus: ut, si quam præstantiam virtutis, ingenii, fortunæ consecuti sunt, impertiant ea suis communicentque cum proximis ; ut, si parentibus nati sint humilibus, si propinquos habeant imbecilliores vel animo vel fortuna, eorum augeant opes, eisque honori sint et dignitati: ut in fabulis, qui aliquamdiu propter ignorationem stirpis et generis in famulatu fuerint, quam cogniti sunt, et aut deorum aut regum filii inventi, retinent tamen caritatem in pastores, quos patres multos annos esse duxerunt. Quod multo profecto magis in veris patribus certisque faciendum. Fructus enim ingenii et virtutis omnisque prestantiæ tum maximus capitur, quam in proximum quemque confertur.
2. Account for the moods and cases of the following words:
persquatur, cuique, rerum, adducas, habeat,-
omnibus, communicent, animo, honori.
3. Translate the following passages in the First Olynthiac:
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a. § § \(2,3\).
b. § 26, 27. (Ed. Teubner.)
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4. Parse the verbs in § 27 .

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.

Friday, April 18 th:- 9 a.m. to 1 f.m.<br>GREEK-FIRST YEAR.

Lucian: Charon.

1. Translate:











 éqé́dovto ăv.









2. In what part of the verb are the following forms found, and what


3. Give some account of Lucian's life and works.

## GRAMMAR.

1. What forms do the following combinations assume, $(a)$ in nouns :




2. Give the Acc. Sing. and Nom. Pl. of $\pi o \lambda i ́ s, a ̉ \lambda \eta \theta \dot{\eta} s$, oviroç, ös (2), ov̉, $\mu \varepsilon i \zeta \zeta \nu$, ö $\sigma \tau \iota \varsigma, \sigma \tau \alpha ́ \varsigma, \tau \varepsilon \tau v \phi \omega \varrho s$.
3. Compare these Adjectives and Adverbs: $\sigma \hat{\omega} \phi \rho \omega \nu, \mu \varepsilon ́ \lambda \alpha a \varsigma, ~ \dot{\rho} a \delta i \omega \omega \varsigma_{,}$

4. Write down any augmented form you know of each of the follow-
 рїтт.
5. Form the Perf. Infin. Act. of $\pi \nu \varepsilon ́ \omega, \kappa \rho i \nu \omega, \zeta \eta \lambda \sigma \bar{\omega}, \sigma \pi \varepsilon \iota \rho \omega, \lambda \alpha \mu \beta a ́ v \omega$, $\lambda \hat{\varepsilon} \gamma \omega, \tau i \theta \eta \mu \iota$, iбт $\eta \mu \iota$.
6. Give one example of Attic Reduplication, Attic Future, Aolic Aorist Optative, Ionic III Pl. Perfect Indic. Passive.
7. Write down Indic. III Sing. of the Fut. and Perf. Act., I Aorist and Perf. Passive of $\pi \varepsilon i \theta \omega$, кт $\varepsilon i v \omega$, $\tau \rho \varepsilon \phi \omega, \pi \varepsilon \varepsilon \mu \pi \omega$, фаiv,$\delta i \delta \omega \mu \iota$, кад $\lambda \omega$, $\gamma \varepsilon \lambda a ́ \omega$, סoк $\varepsilon$. $\omega$.
8. Form the II Aor. Infin. Act. of $\lambda \varepsilon i \pi \omega, \tau \rho \varepsilon ́ \pi \omega, a ̆ \gamma \omega, \beta a i \nu \omega$, aipé $\omega$

9. What are the roots of $\gamma \iota \gamma \nu \omega \sigma \kappa \omega, \lambda a \mu \beta a ́ \nu \omega$, z̀ $\lambda \lambda \nu \mu$, , $\varepsilon i \mu i, \varepsilon i \mu \tau, i \eta \mu l_{9}$ $i \sigma \tau \eta \mu \tau, \mu \iota \mu \nu \eta \sigma \kappa \omega$ ? Mention Latin words derived from some of these roots.

# DALHOUSIE COLLEGE AND UNIVERSITY, 

 HALIFAX.SESSIONAL EXAMINATIONS, 1873.<br>Tursday, April 22, 9 A. m. to 1 р. M.

MATHEMATICS, —FIRST YEAR。

GEOMETRX.
Professor C. Macdonald, M.A...............Eraminer.

1. If a straight line fall upon two parallels, it makes the alternate angles equal, the exterior angle equal to the interior opposite angle on the same side, and the two interior angles on the same side together equal to two right angles.

Give a form of the axiom respecting parallel lines different from that which you have employed.
2. Describe a parallelogram equal to a given triangle and having one of its angles equal to a given rectilineal angle.
3. If a straight line be divided into two parts, the reetangles comtained by the whole and each of the parts are together equal to the square of the whole line. (By the division of the straight line only, if you can.)
4. From C the vertex of a triangle $\mathrm{ABC}, \mathrm{CD}$ is drawn perpendieular to the base $A B$ : prove that $\mathrm{AC}^{2}$ is less than $\mathrm{AB}^{2}+\mathrm{BC}^{2}$ by $2 \mathrm{AB} . \mathrm{BD}$.
5. Prove the 6th and 10th Propositions of the Second Book by algebra, and show how each is related to the Proposition that precedes it.
6. One circumference of a circle cannot cut another in more than two points.
7. The straight line drawn at right angles to the diameter of a circle from its extremity, falls without the circle; and no straight line can lie drawn from the extremity between that line and the diameter so as not to cut the circle.
8. The angle in a semicircle is a right angle : tho angle in a segment greater than a semicircle is less than a right angle, and, in a segment less than a semicircle, greater than a right angle.
9. If AB , the side of a regular Hexagon inscribed in a circle, be divided in $C$, so that $\mathrm{AB} . \mathrm{BC}=\mathrm{AC}^{2}, \mathrm{AC}$ is the side of the regular Decagon inscribed in the same cirele.
10. Make a triangle equal in area to any given four-sided figure. Apply generally the result of this Problem.
11. The sum of the squares of the sides of a trapezium is equal to the sum of the squares of its diagonals with 4 times the square of the line joining their middle points.
12. $Q$ is the centre of a circle, and $Q B$ part of the radius : find that point in the circumference at which QB subtends the greatest angle.
13. The regular Hexagon is double the equilateral triangle inscribed in the same circle.
14. Show how to describe a regular polygon of $n$ sides upon a given straight line; it being granted that an angle of $\frac{360^{\circ}}{n}$ can be accurately found.

## DALHOUSIE COLLEGE AND UNIVERSITY,

## HALIFAX.

SESSIONAL EXAMINATIONS, 1873 ,<br>Tuesday, April 22,3 p. m. to 5.30 p. m.<br>MATHEMATICS.—FIRST YEAR.<br>ALGEBRA.<br>\section*{Professor C. Macdonald, M.A... ..........Examiner.}

1. If the numerator and denominator of a Vulgar Fraction have a common measure, the Fraction may be reduced to lower terms, e. g. $\frac{10}{1} \frac{0}{5}$; prove this. Prove also the rule for the Multiplication of Fractions by operating on an example, e.g. $\frac{3}{4} \times \frac{5}{6}$.
2. Multiply $\{2 x+y-(x+2 y)\}$ by $\{3 x-2 y-(2 x-3 y)\}$, and divide $a^{2} y^{3}-b\left(a^{2}+b\right) y+a b^{2}$ by $a y-b$.
3. Find the greatest common measure of $6 x^{3}+11 x^{2}-31 x+14$ and $4 x^{3}-47 x+7$ : and shew that if $p$ measures $a$ and $b$, it measures also $m a \pm n b$.
4. Find the cube of $\frac{2}{3} a b^{-1} c^{\frac{2}{2}} d^{\frac{n}{b m}}$, and then write the result with positive exponents. Also write down from your knowledge of factors the equivalent of $\frac{a^{2}-b^{2}}{a^{\frac{1}{2}}-b^{\frac{1}{2}}}$.
5. Rationalize the denominator of $\frac{11}{3 \sqrt{2}-\sqrt{7}}$, and find the square root
of $22-4 \sqrt{10}$.
6. Solve the equations $7 x-2 y=14+\frac{x}{2}$, and $7 y-2 x=32+\frac{y}{3}$.
7. Solve, by inspection of coefficients, the equation $x^{2}+9 x+20=0$ : and, by completing the square, $x^{2}+3 x-6=\overline{1 x^{2}+3} x$.
8. Given $x+y=7$, and $x^{3}+y^{3}=91$ : to find $x$ and $y$.
9. If $a$ and $b$ be the roots of the equation, $x^{2}+p x+q=0$, prove

$$
\left(1+\frac{b}{a}\right)+\left(1+\frac{a}{b}\right)=\frac{p^{2}}{q}
$$

10. A certain boat's crew pulls 9 strokes to 8 of another boat's crew ; but 79 strokes of the latter are equal to 30 of the former. Which of the $t w o$ crews is the faster, and what start could they give the other in a mile race, so as to come in equal?
11. Taking the usual notation, find the sum of $n$ terms of a Geometrical series, $r<1$ : if the series be infinite, deduce the limit of its sum : and apply the result to the interminate decimal, $\stackrel{3}{6}$.
12. If any term of an infinite Geometric series, $r<1$, is $\frac{m}{n}$ times the sum of all that follow, $r=\frac{n}{m+n}$.
13. Prove, by algebra, that the Geometric mean is greater than the Harmonic mean between $a$ and $b$, and that, if of the quantities $a, b, c$, any two are greater than the third, then $2(a b+a c+b c)>a^{2}+b^{2}+c^{2}$.
14. Three times a certain number increased by 7 is not less than 34; also, 4 times the same number diminished by 5 is not less than 31. Find she number.

# DALHOUSIE COLLEGE AND UNIVERSITY, halifax. 

SESSIONAL EXAMINATIONS, 1873.<br>Monday, April 21,9 A. m. to 1 ғ. m.<br>RHETORIC.

Professor DeMill; M. A................................ Examiner.

1. Enumerate the chief writers on the subject of Rhetoric, and state the characteristics of each. Define Rhetoric and state the general divisions of the subject.
2. Give examples of good and faulty use of new words. What is meant by Provincialisms? Define Unity, and show how it is most frequently violated.
3. Define Rhetorical Harmony. What are the most frequent violations of Elegance in words? Give examples of resemblance between sound and sense.
4. Define Antithesis and Parallel, and point out their respective importance in literature. Define and illustrate Irony, Sarcasm. Explain Allegory, Fable, Parable.
5. Explain the province of Rhetoric in reference to Argument. Explain Argument from Cause to Effect. Define and illustrate Verisimilitude. In Argument from Testimony what things are to be considered?
6. Mention the chief sources of the objective Sublime. Explain what is meant by the Classical and the Romantic in Literature
7. There are various kinds of Description. Explain Concurrent Streams, Retrospect, and Summary, in Narrative. In Discussion explain Example, Illustration, Definition. Define Debate. Give brief outline of the arguments used by Wischines and Demosthenes.
8. What \&re the earliest notices of the Tentonic race in Britain? Give examples of Greek words and terminations in the English language.' Give Professor Marsh's estimate of the proportion of Saxon to Latin words in English writings.
9. There were two classes of declensions in Anglo Saxon, of which traces remain in English. Account for the forms He, His, Him, Her, It. Write out inflections of se seo that. Explain the articse a - an.
10. Account for the various forms which enier into the conjugation of the English verb 'Io Be. Explain the force of the suffixes in the following words:-Soatiern, wistiom, stemfast, "hildinoorl, dronkard, knowledge, womau, kindıed.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONALEXAMINATIONS, 1873.

WEDNESDAY, APRIL 16, 9 A.m. TO 1 p. M.

LATIN.-SECOND YEAR.

LIVY: BOOK I. CHtPS. 1-30.-HORACE: ODES, BOOK I.
Professor Johnson, M. A.................Examiner.

1. Translate:
a. Ad haec audienda quum, circumfusa paulatim multitudine, permixtum senatui esset populi concilium, repente primores secessione facta, priusquam responsum daretur, argentum aurumque omne ex publico privatoque in forum collatum in ignem ad id raptim factum conjicientes, eodem plerique semet ipsi praecipitaverunt. Quum ex eo pavor ac trepidatio totam urbem pervasisset, alins insuper tumultus ex arce auditur. Turris diu quassata prociderat: perque ruinam ejus cohors Pœenorum impetu facto quam signum imperatori dedisset nudatam stationibus custodiisque solitis hostium esse urbem, non cunctandum in tali occasione ratus Hannibal totis viribus aggressus urbem momento cepit, signo dato, ut omnes puberes interficerentur. Quod imperium crudele, ceterum prope necessarium cognitum ipso eventu est. Cui enim parci potuit ex iis, qui aut inclusi cum conjugibus ac liberis domos super se ipsos concremaverunt, aut armati nullum ante finem pugnae, quam morientes fecerunt.
b. Solvitur acris hiems grata vice et Favoni, Trahuntque siccas machinae carinas.
Ac neque jam stabulis gaudet pecus, aut arator igni ; Nec prata canis albicant pruinis.
Jam Cytherea choros ducit Venus, imminente Luna: Junctaeque Nymphis Gratiae decentes
Alterno terram quatiunt pede; dum graves Cyclopum Vulcanus ardens urit officinas.
Nunc decet aut viridi nitidum caput impedire myrto, Aut flore, terrae quem ferunt solutae:
Nunc et in umbrosis Fauno decet immolare lucis, Sen poscat agna, sive malit haedo.
Pallida mors aequo pulsat pede pauperum tabernas Regumque turres. O beate Sexti,
Vitae summa brevis spem nos vetat inchoare longam. Jam te premet nox fabulaeque Manes,
Et domus exilis Plutonia ; quo simul mearis, Nec regna vini sortiere talis
Nec tenerum Lycidam mirabere, quo calet juventus Nunc omnis et mox virgines tepebunt.

## 2. Translate into Latin:-

When P. Scipio had thus spoken, he sent Jugurtha away with a letter which he was to give Micipsa. Its contents were as folows: "The bravery of your Jugurtha in the war with Numantia was by far the greatest; which I well know is a pleasure to you. He is dear to us on account of his merits: we will strive to the utmost of our power, that he may be so also to the Senate and the Roman people. I congratulate you indeed by reason of our friendship: you have a man worthy of yourself and his grandfather Masinissa.
3. Point out the principal and subordinate clauses in the sentence beginning "perque ruinam," and explain why different constructions are
found after "signum dedisset" and "signo dato." Give the rules for the construction of "cui enim parci potuit."
4. Explain the allusions in the following passages :
a. Quid latet, ut marinae Filium dicunt Thetidis sub lacrimosa Trojae Funera.
b. Nec regna vini sortiere talis.
c. Maeonii carminis alite.
d. Vix illigatum te triformi

Pegasus expediet Chimaera.
5. Write short notes on the situation of Syrtes, Daunias, Tempe, Cyclades, Corinthus, Acroceraunia, Hydaspes. What epithets are applied to them by Horace ?
6. Scan the first four lines of the second extract: and give a scheme of the Alcaic stanza.
7. How is the date of Horace's birth fixed? Describe briefly the chief incidents in his life.
8. (a). Write down the Acc. and Abl. Sing., and Gen. Pl. (if these cases are used) of:-primores, viribus, liberis, semet, puberes, vice, nox, Manes, domus. (b). Decline: heros, Ulysses, Tempe, Anio, pelagus, Prometheus.
9. Give the principal parts of: quatiunt, urit, decet, poscat, sortiere, ambit, mordet, pascat, pectes, fidit, micat, amictus, recinet, deterget, densentur, plectantur.
10. What particles are used in asking direct and indirect questions? Distinguish their use. When is ut followed by the Indic. and when by the Subj.? Translate into Latin in all possible ways: The Ambassadors came to beg for peace.
11. Turn into oratio recta: Fingerent (Alpes) altiores Pyrenaei jugis. Nullas profecto terras coelum contingere, nec insuperabiles humano generi esse. Alpes quidem habitari, coli, gignere, alere animantes pervias paucis esse, exercitibus invias? eos ipsos, quos cernant, legatos non pennis sublime elatos Alpes transgressos.

## DALHOUSIE COLLEGE AND UNIVERSITY, halifax.

SESSIONAL EXAMINATIONS, 1873.

Friday, April 18 th : -9 a.m. to 1 p.m.<br>GREEK-SECOND YEAR.

Herodotes : B. I., §§ 95́-130. Homer, Iliad, B. X.

## 1. Translate:-

































3. Write down the Attic and Epic forms of the Gen. Sing. and Dat.


5. Form the Iterative Imp. of $\dot{\varepsilon} \kappa \pi \varepsilon \mu \pi \omega$ : the Ionic II S. Imp. Ind.
 áүвipa: the Epic Inf. of $\varepsilon \dot{i} \mu$, ві $\mu$ í.
6. Parse, giving their principal tenses: $\mu \varepsilon \tau \varepsilon i \theta \emptyset \eta$, $\dot{\eta} \sigma \varepsilon \varepsilon i \eta, ~ \beta \varepsilon ß \rho \emptyset ́ к о \iota$,

7. What is the force of the Article in Homer? What is its use in Attic Greek? When is it employed with names of individuals?


8. What relations does the Accusative express in Greek? Give one example of each. What verbs are regularly followed by two Accusatives?
9. What adjectives and adverbs are followed by the Genitive? Distinguish the meanings of the cases employed to express relations of time.
10. Translate into Greek:-

The barbarians ravaged Attica, and after this laid siege to many cities of Greece.

They came straight towards the city without the knowledge of their parents.

Homer is justly named the king of poets.
The king having no confidence in his numbers did not remain there many days.

Neither good nor bad men escape the notice of the Gods.
When Phraortes died, Cyaxares, the son of Phraortes who was the son of Deioces, received the kingdom.

## DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX.

SESSIONALEXAMINATIONS, 1873.<br>TURSDAT, APRIL $22 \mathrm{ND}, 9 \mathrm{~A} . \mathrm{M}$. To $1 \mathrm{p} . \mathrm{m}$.<br>$\qquad$<br>MATHEMATICS.-SECOND YEAR.<br>GEOMETRY AND MENSURATION.

Professor C. Macdonald, M.A.............. Examiner.

1. If the vertical angle of a triangle be bisected by a straight line which meets the base, the segments of the base shall have to one another the same ratio that the sides of the triangle have ; and conversely.
2. Find a third proportional to two given straight lines.
3. Similar polygons may be divided into the same number of similar triangles, haring the same ratio to one another that the polygons have: and the polygons have to one another the duplieate ratio of their homologous sides.
4. From $C$, the vertex of the triangle $\mathrm{A} B \mathrm{C}, \mathrm{C} D$ is drawn perpendicular to the base : prove $\mathrm{AB}: \mathrm{BC}+\mathrm{CA}:: \mathrm{BC}-\mathrm{CA}: \mathrm{BD}-\mathrm{DA}$.
5. From P , a given point, a line PQ is drawn cutting a line XY , given in position, in the point R , so that $\mathrm{RQ}=m \mathrm{PR}$ : find the locus of Q .
6. Construct a triangle equiangular to a given triangle, and having the sum of its sides equal to given line.
7. The diagonals of a parallelogram, intersecting at angle $60^{\circ}$, are 15 and 18 feet respectively. Find the area.
8. What will it cost to cover a hemispherical dome of 20 feet radins with sheet lead at $15 d$ per yard?
9. Find the surface, not including the base, of a square pyramid, each side of base being 12 ft , and altitude 8 ft .
10. In Books of Mensuration there are usually given Tables of the Areas of Regular Polygons. Give and prove the Rule for the use of such Tables.
11. The Moon's apparent semidiameter being $15 \frac{1}{2}$ ' and her distance being about 60 times the Earth's radius: find her diameter.
12. A cylinder weighs twice as much as a cone of the same material, and the radius of its base $=\frac{1}{2}$ that of the cone. Shew that the height of the cone $=\frac{3}{4}$ that of the cylinder.

## DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX.

SESSIONAL EXAMINATIONS, 1873.<br>Turbday, April $22 \mathrm{nd}, 3$ p. m. to 5.30 p . m.<br>MATIEMATICS.-SECONDTEAR.<br>TRIGOXOMETRY AND ALGEBRA.

Professor C. Macdonald, M.A...............Examiner.

1. Find the arithmetical values of sin., cos., \&c., of $45^{\circ}$.
2. Write down the values of the six circular functions of the following angles; $0^{\circ}, 90^{\circ}, 180^{\circ}$.
3. Prove $\sin \left(180^{\circ}-\mathbf{A}\right)=\sin \mathrm{A}, \cos \left(180^{\circ}-\mathrm{A}\right)=-\cos \mathrm{A} ;$ prove also $\sin \left(90^{\circ}+A\right)=\cos A, \cos \left(90^{\circ}+A\right)=-\sin A$.
4. Assuming the values of $\sin 2 \mathrm{~A}$ and $\cos 2 \mathrm{~A}$ in terms of A , find the values of $\sin 3 \mathrm{~A}$, and $\cos 3 \mathrm{~A}$.
5. Given the two sides, $a$ and $\dot{b}$, of a triangle ABC , right angled at C : shew how the angles and hypothenuse are found.
6. Explain the use and derivation of the formula
$\log \tan \frac{1}{2} \mathrm{~A}=\frac{1}{2}\{20+\log (s-b)+\log (s-c)-(\log s+\log (s-a))\}$
7. Prove the formula, $r=\frac{S}{S}$ and $\mathrm{R}=\frac{a b c}{4 S}$, explaining the symbols used.
8. Given "Lat: and Long: from," the ship's course, and the distance run: find "Lat: and Long: in:" by the method of mid-latitude.
9. Expand $(1-x)^{\frac{1}{22}}$ by the Binomial Theorem: and hence find the eube root of 62 , approximately.
10. The number 3256 is in the septenary scale $(r=7)$ : find the equivalent number in the duodenary scale $(x=12)$. Shew also that any number can be expressed by the sum of a series of integer powers of the number 2.
11. Prove the formula in Compound Interest, $\mathbf{A}$ (the amount) $=\mathrm{PR}^{\mathrm{t}}$, and adapt it to the case of half-yearly payments, writing the logarithmic equation in each case.
12. The number of combinations of $2 n$ things, 3 together, is 24 times as great as that of the combination of $n$ things, 4 together : find $n$.
13. Some persons have thought that, in playing games of chance for money stakes, "Martingale" is a sure method to win. Exhibit the deIusion of this opinion.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Saturday, April 26, 3 p. M. to 6 p. M.

SECOND YEAR.-EXTRA.

Professor C. Macdonald, M.A... .......... Examiner.

1. If a solid angle be contained by three plane angles, any two of these together shall be greater than the third.
2. Through a given line which meets a given plane, to draw a plane making the least possible angle with that plane.
3. Find in Circular measure the dip of the horizon for an elevation of 40 feet above the level of the sea; shew how this can be reduced to Gradual measure. In what way does the dip of the horizon affect the apparent altitude of a heavenly body observed at sea?
4. If $x=m$ and $y=n$, are simultaneous integer values of $x$ and $y$ in the equation, $a x+b y=c$; then all the integer values of $x$ and $y$ are expressed by the formula $x=m-b t, y=n+a t$, where $t$ is any integer whatever.
5. Shew that
$2 \log x=\log (x+1)+\log (x-1)+2 M\left(\frac{1}{2 x^{2}-1}+\frac{1}{3\left(2 x^{2}-1\right)}+\& c.\right)$ to any base, if $M$ be the modulus for that base.
6. $O$ is the centre of the circle described about the triangle $A B C$, and $O A$ meets $B C$ in $D$ : prove $D O \cos (B-C)=A O \cos A$.
7. If two circles, radii $a$ and $b$, touch each other externally, and $x$ be the angle between the two common tangents, prove

$$
\sin x=\frac{4(a-b) \sqrt{a b}}{(a+b)^{2}}
$$

8. The area of a regular polygon of $2 n$ sides inscribed in a circle is a mean proportional between the areas of the regular polygons of $n$ sides, inscribed in, and circumscribed about, the same circle.
9. Show how to find the present value of an annuity, payable so long as either of two persons, aged $m$ and $n$ years respective!y, shall live.
10. Four cards are drawn by chance from a pack of cards (52, of which 16 are court cards). Show that the odds are nearly $4: 1$ that one at least is a court card,

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONALEXAMINATIONS, 1873.

JUNIOR CHEMISTRY CLASS.-SECOND YEAR OF ARTS COURSE. Friday, April 25th, 1873, 9 a. m. to 1 p. M.

Professor Lawson
Examiner.

1. One atum of Bismuth is said to be equivalent to three atoms of Sodium, and one atom of Calcium to two atoms of Sodium. Explain the meaning of these statements.
2. Describe how you would prepare Iodine from Potassic Iodide, and explain your process by means of symbols. Describe properties of Iodine by which you could distinguish this element from Bromine.
3. Why is our atmosphere considered to be a mechanical mixture of Oxygen and Nitrogen, and not a chemical compound of these two gases? Describe experiments which you would make in order to show the presence of Oxygen and Carbonic Acid, respectively, in Common Air.
4. Describe how you would prepare Nitrate of Silver. Why is Silver called a Monovalent metal? How would you detect Silver in an aqueous solution.
5. How would you ascertain whether a white crystalline substance is Boracic Acid?
6. What evidence is there tending to show that the salts of Ammonia contain the radical Ammonium?
7. Explain the chemical analogies subsisting between Phosphoretted Hydrogen Gas and Ammonia.
8. A piece of bread is suspected to contain Sulphate of Copper. How wonld you test the bread for this impurity ${ }^{2}$
9. How would you prepare Chlorine? and how do you explain your process? If one bottle contained Chlorine gas and another Bromine vapour, how could you distinguish the two substances from each other? Why can Chlorine not exist free in nature ?
10. Explain, by means of symbols, the formation of Nitric Acid from Saltpetre and common Sulphuric Acid. You prepare Hydrogen by the action of Zinc upon dilute Sulphuric Acid: why cannot Hydrogen be procured by the action of Zinc upon dilute Nitric Acid? Explain what happens when Concentrated Nitric Acid is placed in contact with a solution of Potassic Hydrate.
11. Explain what is meant by the term "Molecular weight." One molecule of Ammonia consisting of one atom of Nitrogen and three atoms of Hydrogen, what is the molecular weight of Ammonia?

# DALHOUSIE COLLEGE AND UNIVERSITY, <br> haLIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Wednesday, April 16, 9 A.m. to 1 p.m.<br>LATIN-THIRD YEAR.

HORACE: SATIRES, BOOK I., 3, 4, 5, 6, 9.-TERENCE: ANDRIA.
Professor Johnson, M.A........ . ............ Examiner.

1. Translate:
a. Primum ego me illorum, dederim quibus esse poetis, Excerpam numero. Neque enim concludere versum Dixeris esse satis, neque si quis scribat, uti nos Sermoni propiora, putes hunc esse poetam. Ingenium cui sit, cui mens divinior, atque os Magna sonaturum, des nominis hujus honorem.
Idcirco quidam, comoedia neene poema Esset, quaesivere ; quod acer spiritus ac vis Nec verbis, nec rebus inest; nisi quod pede certo Differt sermoni, sermo merus.-"At pater ardens Saevit, quod meretrice nepos insanus amica Filius uxorem grandi cum dote recuset, Ebrius et, magnum quod dedecus, ambulet ante Noctem cum facibus." Numquid Pomponius istis Audiret leviora, pater si viveret? Ergo Non satis est puris versum perscribere verbis, Quem si dissolvas, quivis stomacheter eodem Quo personatus pacto pater. His, ego quae nunc, Olim quae scripsit Lucilius, eripias si
Tempora certa modosque, et quod prius ordine verbum est Posterius facias, praeponens ultima primis, Non, ut si solvas, ' Postquam discordia tetra .
Belli ferratos postes portasque refregit,"
Invenias etiam disjecti membra poetae.
l. My. Nihilne esse proprium cuiquam? Di, vestram fidem :

Summum bonum esse herae putavi hunc Pamphilum,
Amicum, amatorem, virum in quovis loco
Paratum : verum ex eo nunc misera quem capit
Dolorem! facile hic plus mali est, quam illic boni.
Sed Davus exit. Mi homo quid istuc obsecro est ?
Quo portas puerum? Da. Mysis nunc opus est tua
Mihi ad hanc rem exprompta memoria atque astutia.
My. Quidnam incepturus? Da. Accipe a me hunc ocius,
Atque ante nostram januam appone. My. Obsecro
Humine? Da. Ex ara hinc sume verbenas tibi
Atque eas substerne. My. Quamobrem id tute non facis?
Da. Quia si forte opus sit ad herum jurandum mihi
Non apposuisse ut liquido possim. My. Intelligo :
Nova nunc religio in te istaec incessit cedo?
Da. Move"ocius te, ut quid agam porro intelligas.
Pro' Jupiter. My. Quid est? Da. Sponsae pater intervenit.
Repudio quod consilium primum intenderam.
My. Nescio quid narres. Da. Ego quoque hinc ab dextera
Venire me assimulabo: tu ut subservias
Orationi utcunque opus sit verbis vide.
My. Ego quid agas nihil intelligo : sed si quid est Quod mea opera opus sit vobis, aut tu plus vides, Manebo, ne quod vestrum remorer commodum.

## 2. Translate into Latin :-

When Cæsar after landing his army and choosing a proper position for his camp learned from the prisoners in what places the enemy's forces had encamped, leaving two cohorts at the sea-side and three hundred cavalry to protect the vessels, he set out against the enemy in the third watch. Having marched by night about twelve miles, he came in sight of the enemy's forces. They advanced to the river with their horsemen and chariots, and from the higher ground began to check our soldiers and to engage in battle.
3. a. Fill up the ellipses in the sentence beginning "His, ego quæ nunc" (1. a.), and point out the principal and subordinate clauses.
b. When is the construction "Nihilne esse proprium " (1.b.) employed, and how may the same idea be otherwise expressed.
c. Explain the construction of "fidem," "mali," "humine," "si forte opus sit ad herum jurandum mihi Non apposuisse:" what other reading has been suggested in this clause?
4. a. Decline: Chrysis, Chremes, illic, cujum, astu, verberibus.
b. Name the following verbal forms and give their principal parts:perpeti, reperi, arcessi, excessis, rētulit, rescissem, pariundo, opperire, nactus, enicas.
5. a. Derive : repudio, comoedia, nihil, cĕdo, personatus, imo, ecastor, sycophanta, sobrinus, nego, non, sedulo, integer.
b. What words in Greek are cognate with these:-natus, ingenium, nomen, vide, pacto, animus, fui, substerne.
c. Give the corresponding Greek for:-hic, iste, ille, is, idem, ipse, semanibus pedibus - pultare fores, fores crepare.
6. Distinguish natural from metrical accent, and give the rules for the former in Latin. What difficulty may we conceive Terence to have laboured under in his verse? What metres are employed in the Andria? Scan the first five lines of the second extract.
7. What testimony have we from ancient writers to shew that Latin was not pronounced as spelt? How does the verse of Terence confirm that testimony? Prove that nouns in French are derived from the Accusative case in Latin.
8. How do the Prologues of Terence differ from those of Plautus? Name his plays and their originals, and give their dates. Write a short sketch of his life.

## DALHOUSIE COLLEGE AND UNIVERSITY,

## HALIFAX.

SESSIONAL EXAMINATIONS, 1873.<br>Friday, April 18th:-9 a.m. то 1 p.m.<br>GREEK-THIRD YEAR.

## Euripides: Medea.

1. Translate:



 тivos $\mu^{\prime}$ हैкать $\gamma \tilde{\eta} s a \dot{\alpha} \pi о \sigma \tau \varepsilon ́ \lambda \lambda \varepsilon \iota \varsigma, ~ К р \varepsilon ́ o v ; ~$

 $\xi v \mu \beta \dot{\lambda} \lambda \varepsilon \tau \sigma \iota ~ \delta \varepsilon ̀ ~ \pi o \lambda \lambda a ̀ ~ \tau о и ̃ \delta \varepsilon ~ \delta \varepsilon i ́ \mu a \tau о \varsigma . ~$ бофŋ̀ $\pi \varepsilon ์ ф ข к а \varsigma ~ к а і ̀ ~ к а к \omega ̃ \nu ~ \pi о \lambda \lambda \omega ̃ \nu ~ i \delta \rho \iota \varsigma, ~$ $\lambda v \pi \varepsilon \ddot{\iota} ~ \delta \varepsilon ̀ ~ \lambda \varepsilon ́ \kappa \tau р \omega \nu ~ a ̉ \nu \delta \rho o ̀ s ~ \varepsilon ̇ \sigma \tau \varepsilon \rho \eta \mu \varepsilon ́ v \eta$.











 тà $\delta \varepsilon \iota \nu a ̀ ~ \kappa a ́ v a \gamma \kappa n i ̃ a ~ \mu \eta ̀ ~ \pi \rho a ́ \sigma \sigma \varepsilon l \nu ~ к а к র ́ ~ ; ~$







$\sigma \varepsilon \mu \nu o \nu ̀ s ~ \gamma \varepsilon \gamma \tilde{\omega} \tau a \varsigma$. тоข̀s $\mu \varepsilon े \nu$ ó $\mu \mu a ́ \tau \omega \nu$ ă $\pi 0$,
2. What various explanations have been given of $\tau o \grave{c} \mu^{\mu} \dot{\varepsilon} \nu \dot{\partial} \mu \mu a ́ \tau \omega \nu$ ä $\pi о$, к.т. $\lambda$. ?
3. Explain the grammatical construction of these nouns and verbs:


 $\Theta_{\varepsilon}^{\varepsilon} \mu \iota \varsigma, \delta \delta \rho v, \kappa \alpha ́ \lambda \omega \nu, \varepsilon ้ \varepsilon \kappa \omega, \gamma^{\prime} \lambda \omega \nu$.
4. Name the following verbal forms and give their chief tenses:
 iఠөl, é $\varnothing$ eíns, ảvoígavтa.
5. Give a schome shewing the licenses admissible in Iambic Trimeter verse. Scan the last five lines of the second extract.
6. Trace briefly the progress of Tragedy to its highest state of development at Athens, and shew why two dialects were used in it.
7. Suppose yourself present at the performance of Medea in Athens: describe the building, the audience, the actors, the chorus, and the stage arrangements.
8. What verbs are generally followed by two Accusatives? What relations are expressed by the Dative? How may the Latin Gerundive
 and explain clearly the use of $\varepsilon$ हैбє.

## 10. Translate into Greek :

It was proper for me to take part in these plans. Gold is more powerful than ten thousand arguments with men. No one loves his neighbour better than himself. I know that man is mortal. The young man having won the prizes had already tasted honour. When they heard this, they went down to the Piræus with all speed.

# DALHOUSIE COLLEGE AND UNIVERSITY, 

 HALIFAX.SESSIONALEXAMINATIONS, 1873.

Tuesday, Aprif $22 \mathrm{nd}, 9$ A. m. to 12 noon.

MATHEMATICAL PHYSICS.-THIRD YEAR.

## Professor C. Macdonald, M.A...............Examiner.

1. Assuming the usual notation, prove $\mathrm{R}^{2}=\mathrm{P}^{2}+\mathrm{Q}^{2}+2 P \mathrm{P} \cos (\mathrm{P}, \mathrm{Q})$.
2. Show how to resolve a force into components at right angles to each other : and hence shew that a force has no efficacy in a direction at right angles to itself.
3. A B CD is a parallelogram, $O$ the intersection of the diagonals. Cut out the triangle AOB , and find the centre of gravity of the remainder. What is its perpendicular distance from CD ?
4. Given a lever 12 inches long, 11 lbs . weight ; and at its ends weights of 10 and 4 lbs . Place a knife-edge fulcrum so that there may be equilibrium.
5. What must be the initial velocity of a body that it may ascend, in vacuo, 200 ft ., and what its velocity when it has risen 100 ft . ?
6. Given an inclined plane of length $l$, height $h$ : find the time a body takes from rest to slide from top to bottom ; (1) neglecting friction, (2) the co-efficient of relative friction being $m$.
7. Prove that in a circular orbit, centrifugal force $=\frac{v^{2}}{r}=\frac{4 \pi^{2}}{\mathrm{~T}^{2}} r . \quad \mathrm{A}$ body, weight $W$, is supported against the inside of a rough cylindrical shell, which is then set rapidly spinning on its axis, and the support being withdrawn it does not fall. Find the least velocity.
8. Prove that, for the simple pendulum, the square of the number of oscillations in a given time is inversely proportional to its length.
9. A body, dropped on a plane rebounds, and falls again, \&c. Given the co-efficient of relative elasticity $=e$, find the whole space described.
10. In oblique impact, prove $v^{2}=\mathrm{V}^{2}\left(\sin ^{2} i+e^{2} \cos ^{2} i\right)$ and shew that $\tan i=e \tan r$.
11. The content of the receiver of an air-pump is 100 inches, of the barrel 20 inches. When the barometer stands 30 inches, find the height of the mercurial gauge in the pump after 4 strokes of the piston.
12. Define metacentre, and consider the equilibrium of a floating body
13. A body projected from a point in a horizontal plane, when it reaches itc greatest height, strikes and coheres with an equal body that has been at rest but is free to move. Find the horizontal range.
14. Prove Legendre's Theorem: If forces in equilibrium acting at a point be represented in magnitude and direction by lines drawn from that point, the point is the centre of gravity of a system of equal particles placed at the extremities of these lines.
15. The velocity with which a body should be projected down an inclined plane so as to run down the whole plane in the time it would fall down its height $=\sqrt{\frac{g}{2 h}} \frac{l}{}^{2}-h^{2}, ~ ; ~ l l=$ length, $h=$ height of plane $)$.
16. The centre of pressure of a triangular floodgate, apex downwards and water reaching the upper cdge, is at half the depth of the apex.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Monday, April 21, 10 A.m. to 1 p.m.

EXPERIMENTAL PHYSICS.-THIRD YEAR.

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

1. What is the meaning of the term Law in Physical Science?
2. What advantages accrue from an acquaintance with Physical laws? By what methods can the investigation of these laws be most successfully prosecuted?
3. Explain the difference between proximate ard ultimate causes, Give examples.
4. Enumerate the essential properties of Matter.
5. Define Inertia. Describe the apparatus by which this property of matter may be experimentally illustrated.
6. What is Force? Explain the phrases "Composition of Forces" and "Resolution of Forces."
7. For what purposes are levers of the third kind especially adapted? Give examples.
8. What circumstances affect the sensibility of a balance?
9. Describe the Gyroscope. Account for its rotation round the point of support. Why does not the unsupported end fall?
10. Illustrate by a diagram the length of a wave, its depth and height, and its phase of elevation and depression.
11. How can we ascertain the specific gravity of a body which floats on water?
12. Describe the apparatus and explain the experiment by which the upward pressure of atmospheric air is exhibited.
13. What is a Barometer? Explain the principle on which it acts. How does it indicate approaching changes of weather?

## FOURTH YEAR.

1. What is Magnetism? Describe a bar magnet. What are consequent points? How is the intensity of the magnetic force measured?
2. Explain the action of the dipping needle. What is its direction on the magnetic pole? On the magnetic equator ?
3. What is magnetic variation? State the changes which this variation undergoes.
4. Explain the object and eonstruction of the Astatic needle.
5. Describe Oersted's fundamental experiment in Voltaic Electricity.
6. Give Volta's contact hypothesis, and the hypothesis by which it has been very generally superseded.
7. Explain the construction of the zinc and copper battery. What are its defects? Describe Daniel's battery. What are its advantages?
8. What is an electrical current? An indefinite current? An open current?
9. How is the intensity of the electromotive force determined ?
10. Explain the nature of external and internal resistance. Under what circumstances may the former be considered as nil?
11. Describe the Galvanometer,-the Multiplier. What is a rheotrope?
12. What is Induction? Under what circumstauces is it developed?
13. Describe a simple magneto-electric machine.
14. To what department of Voltaic electricity has Matteucci devoted special attention? State the general results.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Thursday, April 24, 9 a. m., to 1 p. m.<br>METAPHYSICS AND ESTHETICS.<br>Professor William Lyall, LL. D............. Examiner.

1. To what principle of our nature may be owing the first promptings of philosophic speculation?
2. To what issues may the first question of philosophy-viz., that regarding the origin of things, be legitimately prosecuted?
3. In what way did Hindoo philosophy, and Greek speculation, respectively, transgress the boundaries of legitimate thought ?
4. When led up to a first principle of existence, are we called upon to determine its nature, as regards existence; and yet can we refuse to concede to it the attributes of intelligence and activity?
5. What philosopher first recognized, and articulately announced, the principle of a Divine Intelligence?
6. How does the element of unity come in, and affect the question regarding the primal arché?
7. How did the Eleatics divide upon the matter of unity, and what psychological question was raised in this connection? How did the Eleatæ thus provide the problems, and lay down the conditions, of future speculation?
8. Show how modern speculation is reverting to the position of Eleatic thought, and how modern savans, reviving the very questions raised by the Eleatics, and in virtue of these very questions, yet take rank with the Ionics rather than the Eleatics.
9. How may Philosophic Scepticism be shewn to be the result of attempting to determine the nature of being as such, and, since we know nothing beyond the attributes of being, denying all being? Illustrate this in the history of the Ancient Sophists, the New Academicians, and Modern Scepticism.
10. What are attributes, divorced from a substratum, and have we not to renew the very question with respect to them, which the Sceptic repudiates regarding being as such ?
11. Show the importance of determinate principles on such subjects, especially with a view to modern opinion.
12. Regarding the nature of what Being, especially, are such questions discussed; but what other issues as well are involved in the discussion?
13. Show how the question of Perception is essentially an Ontological one, or involves an Ontological element. Give some account of this question.
14. Point out the Ontological element involved also in the question of Realism and Nominalism, or Conceptualism. What is the aspect of this question at the present day?
15. Classify the Emotions. Give the analysis of the elevated States, showing how Wonder, Astonishment, Admiration, and the Esthetic feeling, belong to these States.
16. Give Alison's theory of the Beautiful and Sublime, and show its accord with the theories of Burke and Cousin.
17. Classify the Desires, and show what regulative principle may be recognized among the desires themselves.
18. Besides this regulative principle, what higher principle of our nature do we recognize? What is the grand peculiarity of Conscience? In what respects is Butler's account of this principle defective?
19. What is pre-eminently the Active Power? Distinguish it from the Pathological States.
20. Is the Will free, and how free?

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Friday, April 25,9 А. m. то 1 р. м.<br>SENIOR CHEmistry class.- third year of arts course.<br>Professor Lawson................................. . Examiner.

1. Describe and explain the preparation of Prussic Acid and of Potassic Cyanide, respectively, from Potassic Ferrocyanide. How would you detect the Iron of the last named compound?
2. Explain the conditions under which Vinous Fermentation takes place, and describe briefly the chief non-gaseous products formed in the process.
3. Sodium introduced into the flame of a Bunsen burner produces the well-known yellow line in the spectrum of the flame. If, however, the yellow light is made to pass through Sodium vapour before it can reach the prism, no yellow line is seen. Explain fully the cause of this result, and apply your explanation to other similar examples.
4. A liquid contains Potassic Chloride, Bromide, and Iodide, in solution. Explain how you would recognize these substances and effect their separation.
5. A piece of Iron Pyrites contains Iron, Sulphur, Arsenic, Antimony, and Gold. Describe how you would detect these several elements, and determine them quantitatively.
6. Describe and explain the preparation of Sodic Carbonate from Cryolite [or from Sea Salt].
7. How do you account for the presence of Sulphuretted Hydrogen in spring water which percolates a soil rich in organic remains and sulphates, such as is found on the western coast of Norway?
8. What would happen if a mixture of Calcic Carbonate and Felspar was exposed to a white heat ?
9. Cannel coal is considered to be the product of decomposition of vegetable matter. Contrast the composition of coal with that of cellulose; and explain how you consider that the former has been produced from the latter. Support your view by the description of suitable experiments.
10. Describe the preparation and explain the constitution of Chloral. Express in symbols the decomposition of the Hydrate of Chloral under the influence of caustic alkalies.
11. Give a statement of the principle or principles of Classification of Organic Compounds.

7

# DALHOUSIE COLLEGE AND UNIVERSITY, 

 halifax.SESSIONALEXAMINATIONS, 1873.<br>Wednesday, April 23.<br>FRENCH.-THIRD YEAR.<br>$\qquad$

Translate I "L'usurier," by Balzac.
Ses actions depuis l'heure de son lever jusqu'ā ses accès de toux le soir, étaient soumises à la régularité d'une pendule. C'était, en quelque sorte, un homme modèle que le sommeil remontait. Si vous touchez une cloporte chominant sur un papier, il s'arrête et fait le mort; de même cet homme s'interrompait au miliea de son discours et se taisait au passage d'une voiture, afin de ne pas forcer sa voix. A l'imitation de Fontenelle, il économisait le mouvement vital, et concentrait tons les sentiments humains dans le moi.
II. "Le Suicide," by Rousseau.

Tu comptes les maux de l'humanité et tu dis: La vie est un mal. Mais regarde, cherche dans l'ordre des choses si tu y trouves quelques biens qui ne soient point mélés de maux. Est-ce done a dire qu'il n'y ait aucun bien dans l'univers? et peux-tu confondre ce qui est mal par sa nature avec ce qui ne souffre le mal que par accident? La vie passive de l'homme n'est rien et ne regarde qu'un corps dont il sera bientôt délivré; mais sa vie active et morale, qui doit influer sur tout son être, consiste dans l'exercice de sa volonté.
III. "Les précepteurs," by Scribe.

Ledru (parlant à la cantonade).-Non ; je vous remercie, je n'ai point de malle ni de valise, je n'aime point à me charger en voyage . (seul) Allons Ledru, de l'effronterie! j'ai fait de tout dans ma vie, je ferai bien le savant. . . D'ailleurs, j'ai les premières notions; je possède je puis le dire, une certaine littératuse d'antichambre, quand ce ne serait que les romans que je lisais autour du poéle lorsque j'étais laquais ; . . j’ai une excellente poitrine et en fait de dissertation crier fort et long-temps, voilà tout ce qu'il faut.

1. Soumises. (I) Explain fully, giving exs., the agreement of past part. of transitive and intransitive verbs. There is a class of verbs the past part. of which are always invariable; illustrate. Mention a peculiarity of intrans. verbs. Translate: We are thought of by our friends. The ship-wreck is commented upon.
2. "I have just read an account of it." There are certain idiomatical tenses; mention them with an ex. for each. Explain the use of the Infinitive.
3. Il me faut le croire. Il faut me le croire. Do you find any difference between these two sentences? Explain the position of the prons., and state the exception.
4. Show by exs. the difference between qui est-ce qui and qu'est-ce qui, qui est-ce que and qu'est-ce que. In what cases is est-ce que to be used ?
5. How do you express whose when at the beginning of a sentence, when followed by a noun, when preceded by a preposition. Write an ex. for each form.
6. 6. Should, would, could are differently expressed in French. Give illustrations.
1. Si, aussi ; tant, autant. Mention the parts of speech with which the first two, and those, with which the last two are connected. In what case
can aussi and autant alone be used ? If the verb separates the adv. from the adj., si is substituted by what? Ex: So prompt is death in filling these places.
2. The conjunction whether is differently expressed in the following sentences: He does not know whether he will go to England or not. Whether I read or write. I doubt whether all will be successful. As . . so has two forms. Give examples.
3. Name the principal conjuncts.; mention some requiring the Infinitive, and some others governing the Subjunctive. Write exs. on: de crainte que, de crainte de, à moins que (with the verb in the Infin.)
4. When is the reflective form to be used? Another form might be substituted for the reflective.
5. Write correctly the following sentences, and state wherein consist the mistakes: On ne cesse pas de parler du désastre. La femme du prince qui vient de mourir était trēs beaucoup respecté. Il faut tôt on tard le faire. Que ne le disez-vous pas. Bien de personnes ont peris en l'eau. Qui me l'aurait hier dit! Quoi que vous faites vou serez moqué.

Translate into French: "Enigma: I was, but I am no longer, and I shall never more return. Thousands of beings have had me in their power but without taking advantage of it. To some I was a friend, to others an enemy; some I have exalted, others I have humbled; to some I have given unalloyed happiness, to others remediless misery. If thou dost remember who is the one thou hast met and left within a short space of time, thou wilt know also of whom thou hast taken leave for ever.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.

Wednesdax, April 23.<br>GERMAN.-THIRD YEAR.

James Liechti, Esq............................. Examiner.
Translate : I. From "Schillers," Kampf mit dem Drachen.
Doch strenge blickt der Fürst ihn an
Und spricht: "Du hast als Held gethan
Der Muth ist's, der den Ritter ehret,
Dii hast den kühnen Geist bewähret ;
Doch sprich! Was ist die erste Pflicht
Des Ritters, der für Christum ficht, Sich schmücket mit des Kreuzes Zeichen? Und Alle rings herum erbleichen. Doch er, mit edlem Anstand, spricht, Indem er sich erröthend neiget : Gehorsam ist die erste Pflicht, Die ihn des Schmuckes würdig zeiget.'
II. From Gastfreundschaft, by "Jakobs."

Ich wurde auf das Freundlichste begrüsst, in das Haus geführt, mit Speis' und Trank reichlich bewirthet und endlich in ein Bett gebracht, hoch wie ein Berg und geräumig genug, um noch drei Andere, wär' es nöthig gewesen, aufzunehmen. Da war' es mir fürwahr, als wär' ich in die Zeit entrückt, wo die Hausväter an der Strasse sassen, und wenn ein Wanderer vorüberzog, oft wetteifernd mit einander ihn unter ihr Dach einluden und an ihrem Herde bewirtheten, ohne auch nur zu fragen, wo er herkäme, was er für Geschäfte treibe und wie lange er zu weilen gedenke.

1. Explain in full the Syntax of the word an (I. 1st line). Give two examples in illustration of other forms of its construction. Write the past part and the first pers. Indic. Pres. of : abschreiben, studiren, verkaufeu, essen, thun, herbringen. The Captain was condemned to pay a tine.
2. What part of speech is die? (I, last line.) How does it affect the verb? Mention other words which have a similar influence upon the verb. It was after three o'clock when the steamer struck, (strauden, R.) Invert the proposs. of this sentence and explain construction.
3. Auf das freundlichste (I). Account for this form. Mention a few superlatives in st. Give the Posit. and Superl. of : der üussere; der untere ; der vordere. Illustrate the use of: der stärleste and am stärksten. Compare : hoch, blass, viel, viele, bald, gern, nahe.
4. Decline in full, (Sing. and Plur.) : berühmter Mann ; jede berühmte Fran, (for the Plur. of this sent. prefix alle), Kein einziges Kind, such a celebrated master. (Meister).
5. Wär' es nöthig gewesen. Write the same sent. with the Conj. wenn added. What would be its construction in the Condit. Mood? Aufzunchmen: (II). Acconnt for $z u$. When is it not used.
6. I thank you for it. The book in which your are reading. You are mistaken in this. Show how the prons. $i t$, which, what and this, when connected with prepos. are to be rendered.
7. Write the various forms for there is, there are; show by exs. how they are to be applied. He is to learn German. Was soll das? What do you observe in the construction of these sentences?
8. Simplify the following sent. and explain the three infinits. Mehr Leute würden sich haben retten können. Name the auxs. of mood and
the nine regular verbs which change their root-vowel in the impft. and part. past.
9. Form the genit. sing. and the plural, and give the meaning of the following nouns: Hausherr, Seemann, Freundschaft, Papier, Meer, Glück, Apfelbaum. Write the sing. of : Schlafzimmer, Leute, Geheimnisse, Feiertage, Menschen, Nachbarn.
10. Werden is a very important part of speech in German. Explain fully. Translate ; A French telegraph cable will be laid shortly. A house is being built. What has become of the ship ?
11. Mention some prepos. governing the Genit, the Dative, the Accus., and all those requiring two cases, giving one ex, for each of the first three cases, and two exs. for the last.
12. Translate into German : All men are alike before God. This man has lost both his children. Most of these people were saved. Tell him that he is wrong. The more one studies, the more he learns. Goethe was born in 1749. The 23rd of April, 1873. The Atlantic was an English steamer with more than one thousand people on board, the greater part of whom found their death in the water. What a dreadful fate! Not one of over 300 women could be saved. Is there anything more sad than this? Everybody thinks of it and speaks of it, What is to become of the poor people.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONALEXAMINATIONS, 1873.<br>Wednesday, April 15, 9 A.m. to 1 f. m.

FINAL EXAMINATION FOR DEGREE OF B. A.

# LATIN:-TACITUS: ANNALS, B. I.-JUVENAL: SATIRES, III. X. <br> Professor Johnson, M. A. . . . . . . . . . . . . Examiner. 

## 1. Translate:-

a. Aggerebatur nihilo minus cespes, jamque pectori usque accreverat, cum tandem pervicacia victi inceptum omisere. Blaesus multa dicendi arte, non per seditionem et turbas desideria militum ad Caesarem ferenda, ait, neque veteres ab imperatoribus priscis neque ipsos a divo Augusto tam nova petivisse ; et parum in tempore incipientes principis curas onerari. Si tamen tenderent in pace tentare quae ne civilium quidem bellorum victores expostulaverint, cur contra morem obsequii, contra fas disciplinae vim meditentur ? decernerent legatos, seque coram mandata darent. Acclamavere, ut filius Blaesi tribunus legatione ea fungeretur, peteretque militibus missionem $a b$ sedecim annis: cetera mandaturos, ubi prima provenissent. Profecto juvene, modicum otium; sed superbire miles, quod filius legati orator publicae causae satis ostenderet necessitate expressa quae per modestiam non obtinuissent.
b. At Romae, nondum cognito qui fuisset exitus in Illyrico, et legionum Germanicorum motu audito, trepida civitas incusare Tiberium, quod, dum patres et plebem, invalida et inermia, cunctatione ficta ludificetur, dissideat interim miles, neque duorum adolescentium nondum adulta auctoritate comprimi queat. Ire ipsum et opponere majestatem imperatoriam debuisse cessuris, ubi principem longa experintia eundemque severitatis et munificentiae summum vidissent. An Augustum fessa aetate totiens in Germanias commeare potuisse: Tiberium vigentem annis sedere in senatu, verba patrum cavillantem? satis prospectum urbanae servituti: militaribus animis adhibenda fomenta, ut ferre pacem velint.
c. Unus Pallaeo juveni non sufficit orbis :

Aestuat infelix angusto limite mundi,
Ut Gyari clausus scopulis parvaque Seripho :
Quum tamen a figulis munitam intraverit urbem,
Sarcophago contentus erit. Mors sola fatetur
Quantula sint hominum corpuscula. Creditur olim
Velificatus Athos, et quidquid Graecia mendax
Audet in historia: constratum classibus isdem
Suppositumque rotis solidum mare; credimus altos
Defecisse amnes epotaque flumina Medo
Prandente, et madidis cantat quae Sostratus alis.
Ille tamen qualis rediit Salamine relicta,
In Corum atque Eurum solitus saevire flagellis Barbarus, Aeolio nunquam hoc in carcere passos,
Ipsum compedibus qui vinxerat Ennosigaeum?
Mitius id sane quod non et stigmate dignum
Credidit. Huic quisquam vellet servire deorum!
Sed qualis rediit? Nempe una nave cruentis Fluctibus, ac tarda per densa cadavera prora.
Has toties optata exegit gloria poenas.
2. Translate inte Latin: On the taking of Syracuse, which Archimedes had long defended with his wonderful engines, Marcellus, the Roman gen-
eral, gave orders that no one should harm Archimedes. He, however,while with his attention and eyes fixed on the ground he was drawing figures in the dust,-was asked by a Roman soldier, who with drawn sword had forced his way into the house for the sake of making plunder, who he was. The only answer he returned was, "Don't spoil my circles." He was consequently put to death by the soldier, who did not know who he was.
3. Explain the grammatical construction of the words in Italies :
a. Aut Fabratariae domus aut Frusinone paratur Quanti nunc tenebras unum conducis in annum.
b. Postremo eo furoris venere ut tres legiones miscere in unam agitaverint.
c. Ne hostes quidem invident sepultura.
d. Cespes jam pectori usque accreverat.
e. Nondum cognito qui fuisset exitus in Illyrico.
f. Acclamavere, ut filius . . legatione ea fungeretur : cetera mandaturos.
4. Translate the following sentences and write explanatory notes on the words in Italics :
a. Dux olim theatralium operarum.
b. Nisi quod populo et plebi quadringenties tricies quinquies, praetoriarum cohortium militibus singula nummum milia . . dedit.
c. Regimen summae rei penes Germanicum, agendo Galliarum censui tum intentum.
d. Rex Pylius, magno si quidquam credis Homero, Exemplum vitae fuit a cornice secundo.
e. Centum convivae : sequitur sua quemque culina.
5. a. Decline these nouns : porthmea, Lachesis, carcere, supellex, codicillos, genua, proceres, cornicines, vervex.
b. Give the principal parts of these verbal forms: pictae, fultam, libitum, occidit, esuriens, queat, dispertit, fit, porrigat.
6. Write in oratio recta the passages indirectly reported in the first extract.
7. What was the legal title of Augustus, and for what reasons did he choose it? What offices did he combine in his own person and what powers did they confer on him?
8. Write a short account of Tacitus and his works.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Thursday, April 17,9 a. m. to 1 p. m.

ETHICS AND POLITICAL ECONOMY.
Very Rev. Princtpal Ross, D. D................. Examiner.
State precisely what you understand by a principle of action. Give examples.
2. Explain the difference between Will and Desire.
3. Criticise the following statement: "We may will what we do not desire ; nay, what we may have a strong aversion to."
4. Is the Desire of Esteem an original principle? Give your reasons. Illustrate its effects upon human improvement. How far is it commendable? When does it cease to be virtuous?
5. State the opinions of Libertarians and Necessitarians respecting the Freedom of the Will, pointing oat carefully in what they agree and in what they differ. By what arguments do the Necessitarians endeavor to maintain their opinions? What objections are urged against them?
6. Is the belief in the connection between Cause and Effect intuitive, or the result of experience? Assign reasons.
7. How is the rectitude of an act determined? Account for the differences of Moral Judgments. Give a Definition of Conscience.
8. State briefly Smith's Theory of Moral Sentiments. Point out its defects.
9. What Ethical writers place virtue in Relationship. Point out the defects of this theory.
10. Give Whewell's classification of the cardinal virtues.
11. In what does Dr. Chalmers assert that "the soundest and ablest thinkers in Moral Science place the primary fountain head of morality"?
12. Comment on the following maxim of Cicero : "With robbers we have no tie of common faith or obligation."

1. What is Political Economy? In what does it differ from Politics When the principles of these sciences conflict, which must yield ?
2. By what means is Wealth accumulated ?
3. What are the essential requisites of Production?
4. Mention circumstances which limit the extent to which the division of labor can be profitably introduced.
5. When is it profitable to produce an article and when to obtain it by purchase?
6. What service do merchants render to a community ?
7. Why should I pay interest for the use of money?
8. Should the rate of interest be regulated by law ? Assign reasons for your opinion.
9. Mention circumstances which affect the rate of wages.
10. Does utility or difficulty of attainment most extensively and frequently affect prices.
11. What circumstances modify principally the amount of rent paid for land.
12. What do you understand by "Profitable consumption?!
13. Is "Protection" a wise policy ? Assign reasons;

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Tubsday, April 22, A. m. to 12 noon.<br>FOURTH YEAR.-ASTRONOMY AND LIGHT.<br>Professor C. Macdonald, M.A...............Examiner.

1. State Kepler's three laws respecting planetary orbits, and prove that the areas swept over by the radius vector are proportional to the times of describing them.
2. Divide the planets into Interior and Exterior ; and state characteristics common to each class.
3. Make a drawing to represent the celestial sphere in North Lat : so as to shew the daily motion, (1) of stars that never set; (2) of stars that never rise ; (3) of the sun at equinoxes and solstices, with the corresponding lengths of the day ; (4) to shew that the moon, about full, is longer above the horizon in winter than in summer.
4. Explain the phenomenon called the precession of equinoxes, and point out some of its effects.
5. What sources of evidence does Astronomy furnish respecting the velocity of light? Explain.
6. Why is a transit of Venus so important astronomically? Describe the nature of the observations.
7. Mention some methods of finding longitude at sea.
8. Given the horizontal paraliax of sun or moon; find the parallax at any altitude.
9. Explain the sidereal, solar, and lunar day. (Draw a figure.)
10. Give shortly the argument from Spectrum Analysis as to the matter in and around the photosphere of the sun.
11. Give proof why, in Hadley's sextant, half degrees on the graduated limb are reckoned as whole ones.
12. From the formula $\frac{\sin i}{\sin r}=m$, find the limiting angte of emergence of a ray of light from a denser into a rarer medium. Suppose, the eye being under an expanse of still water, you look upwards; give some account of the appearance of things.

# DALHOUSIE COLLEGE AND UNIVERSITY, halifax. 

SESSIONAL EXAMINATIONS, 1873.

Thursday, April 24, 9 A. m. to 1 p. m.
LOGIC AND PSYCHOLOGY.
Professor William Lyall, LL.D.................. Examiner.

1. What is the "Noetic" in Sir William Hamilton's division of "Pure Logic ?" What does it correspond with in our course?
2. In Psvchology, how did we regard mind, and what division did we propose of its phenomenal states?
3. To what modes of conceiving of mind, matter, space, time, power, are we reduced, if we derive all our ideas from experience?
4. What are the laws under which all thought is possible? How do we get the logical laws in these?
5. What are the practical processes of mind, and how do we distinguish them as such? Distinguish between classification and generalization, and give the true theory of reasoning.
6. How is inductive distinguished from deductive reasoning? Is there any true ground for this distinction, or how must all reasoning essentially be deductive? What is the peculiarity in the inductive process which has led to the distinction?
7. To what single principle may the laws of association be rednced ?
8. How is memory to be regarded, and what is the peculiarity in imagination?
9. How is logic divided ?
10. What are concepts?
11. How may the formation of concepts be supposed to take place? What, accordingly, is the comprehension, and what the extension of a concept? What is generification, and what specification, or determination?
12. Which of these allows of the definition of a concept, or is the concept itself? Which allows of the division of a concept, and on what principle, accordingly, do definition and division proceed?
13. What are the "five predicables" of Aristotle? A species, is the genus plus what?
14. Give the "categories" of Aristotle, and show how these may be vindicated as the highest classifications of thought. In what way does Sir Wm . Hamilton virtually include the "five predicables" without particular. ising them, and what is his objection to the eategories?
15. What is the syllogistic process? State the laws of the extensive syllogism, and explain, or give the rationale of the several laws. Show how the laws of the intensive syllogism must be just the reverse of those of the extensive?
16. Into which of these forms of syllogism does a true reasoning process fall? What is the real nature of the intensive syllogism?
17. What are syllogisms in respect of their internal form or character, what of their extrinsic or external form?
18. Show how the fallacies are just a violation in some way of the laws of the syllogism. Show this both as regards the formal and the material tallacies-fallacies "in dictione" and "extra dictionem."
19. What kind of fallacies are more properly extra-logical, and belong rather to the doctrine of method?
20. What is the object of a doctrine of method? How is the perfection of logical thought attained? Give the rules of definition, division, and probation respectively.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Wednesday, April 16, 9 A. m. to 1 p. m.<br>HONOUR MATHEMATICS.<br>TRIGONOMETRY AND CONIC SECTIONS.<br>\section*{Profassor C. Macdonald, M.A................Examiner.}

1. Given the right ascension and declination of two stars : to find their distance, measured on a great circle.
2. Prove the formula for "Spherical Excess;" and shew its practical use in Geographical measurements.
3. Prove $(\cos x+\sqrt{-1} \sin x) \stackrel{m}{=} \cos (-m x)+\sqrt{-} 1 \sin (-m x)$.
4. Assuming Gregory's series for $\tan ^{-1} x$, find Machin's series for calculating the value of $\pi$.
5. Resolve $x^{\mathrm{n}}-1=0$ into Quadratic factors, and find the three values of $(-1)^{\frac{1}{3}}$.
6. Shew that, if $\tan x=m \tan a$, and $n=\frac{m-1}{m+1}$, then

$$
x=a+n \sin 2 a+\frac{1}{3} n^{2} \sin 4 a+\frac{1}{3} n^{3} \sin 6 a+\& c .
$$

7. The coördinates of a point are $a$ and $b$. Find its distance from the line, $y=m x+c$.
8. Find the equation to the tangent to the ellipse (centre, origin). It the tangent intersect the directrix in the axis of $X$, find the coördinates of the point of contact.
9. Refer to its principal axes the curve, $11 x^{2}+84 x y-24 y=0$. Shew that the origin is already at the centre; and that when the origin and axes of a curve are changed, the degree of the curve is unchanged.
10. The area of a parallelogram circumscribing an ellipse is constant.
11. Find what the general equation $a x^{2}+b x y+c y^{2}+d x+e y+f=0$, becomes when the axes of $X$ and $Y$ are tangents to the curve. Find also the equation to the line bisecting all chords parallel to the axis of $Y$.
12. Tangents to two concentric ellipses the direction of whose axes coincide, are drawn from $P$, and the chords of contact intersect in Q. Prove that if the locns of $P$ be a straight line, that of $Q$ will be a rectangular hyperbola.
13. $T P, T Q$ are tangents to a parabola, $P$ and $Q$ being points of contact: a third tangent cuts them in $p$ and $q$ respectively. Prove

$$
\frac{T p}{T P}+\frac{T q}{T Q}=1
$$

14. In any conic section, whose latus rectum is $l$, if $r$ and $r_{1}$ be focal distances at right angles, prove $\left(\frac{1}{r}-\frac{1}{l}\right)^{2}+\left(\frac{1}{r_{1}}-\frac{1}{l}\right)^{2}$ invariable.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Fridat, April 25, 9 A. M. To 1 p. M.

HONOUR MATHEMATICS.

DIFFERENTLAL AND INTEGRAL CALCULUS.
Professor C. Macdonald, M.A.............Examiner.

1. Prove that if $u=\log x, \frac{d u}{d x}=\frac{1}{x}$ : and differentiate $a .^{x \tan x}$
2. Prove, by Maclaurin's Theorem, Gregory's series for $\tan x$ : shew also that ${ }^{\sin x}=+x+\frac{x^{2}}{1.2}-\frac{3 x^{4}}{1.2 .3 .4}-\& c$.
If $u=f(x)$ be a maximum or a minimum, prove $\frac{d u}{d x}=0$; also that generally $\frac{d^{2} u}{d x^{2}}$ is negative in the former case, and positive in the latter. Why do you say "generally"?
3. Inscribe the greatest parallelogram in a given ellipse, and describe the least cone about a given sphere.
4. If $u=f(x, y)$, the variables being independent; shew how the total successive differential coefficients may be found.
5. In $u=f(x)$ which contains $n$ constants, explain the method by which the constants may be eliminated; and find in retangular coördinates, an expression tor the Radius of Curvature.
6. Prove the expressions for an area $\int y d x$; find the equivalent expression in polar coördinates: and find the area of the Cardioid, $r=a$ $(1+\cos x)$, between limits $\pi$ and $o$.
7. Draw the curve, $a^{2} y=x^{3}-3 a x^{2}$, finding the angle or angles at which it cuts the axis of $X$, greatest ordinate asymptotes if any, \&c.
8. Find a formula of reduction for $\int \frac{x^{m} d x}{\sqrt{x^{2}-x^{2}}}$ and $\int \sin m_{x} \cos \boldsymbol{n} x d x$.
9. Let a semi-ellipse spin about the major axis; find the Volume.
10. The moment of Inertir of a body with respect to an axis passing through its centre of gravity is less that with respect to any parallel axis; and if the moment of Inertia of a circular area revolving about a diameter be known $\left(\frac{m a^{2}}{4}\right)$, find the moment when it revolves round a tangent.
11. If a particle move under the force of gravity in a cycloid, its oscillations are isochronons, whatever the length of the path.
12. $\mathbf{A}$ and B are two equal centres of repulsive force varying as the distance directly. A particle is placed at a distance $c$ from the middle of the line $\mathrm{AB}(=2 \boldsymbol{a})$. Prove that the particle oscillates and find the time of an oscillation.
13. Prove that in any central orbit, $v=\frac{h}{p}, p$ being the perpendicular on the tangent; prove also that if the orbit be a parabola, the force being in the focus, and $P Q$ a focal chord, the sum of the squares of the velocities at $P$ and $Q$ is invariable.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>THURSDAY, APRIL 24, 9 A. M. TO 1 p. M.<br>\section*{HISTORY.}

Professor DeMill, M. A........................... Exuminer.

1. Divide History into periods from A. D. 476, and state the leading characteristics of each. Certain important results followed the transfer of power from Rome io Constautinople. Enumerate the chief Mobammedan Empires and the founder of each.
2. Show the increase of the power of the English Parliament at the close of the reign of Edward III. Enumerate the chief constitutional reforms of the reign of William III.
3. Trace the rise of the Carlovingians until A. D. 800. Compare the the royal domains of France with the great feudatories in the early part of the twelfth century. Explain the nature of the French Parlements.
4. Give an outline of German History under the Hohenstaufens. What were the chief results of the Peace of Westphalia? Show the effect of the rise of Prussia upon Germany.
5. Explain the Union of Calmar. Give an outline of the history of Iceland until the Union with Norway. Various expeditions were made to Vinland.
6. Give brief historical sketches of the following:-Poland from its origin to the dethronement of Boleslas 2nd; Russia during the reign of Ivan the Great; Naples under the house of Anjou.
7. Successive stages may be noticed in the growth of the Papacy until Gregory VII. Explain the schism between the Greek and Latin Churches.

8, Explain briefly the rise of the Feudal System. There were two general classes of investiture. Explain the following terms,-Reliefs, Escheats, Aids.
9. Give a brief outline of the history of Scholasticism. Explain the terms trivium and quadrivium. Enumerate the chief philosophical systems of the 18 th century.
10. Enumerate the different schools of painting, and mention the chief representative of each. Describe the condition of literature in the South of Europe in the 15th and 16th centuries. Give brief biographies of Tasso, Lope de Vaga, Camoens.

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Friday, April 25 Th, 1873,9 A. M. To 1 p. M.

FRENCH,-FOURTH YEAR.
James Liechti, Esq.
Examiner.
Traduisez: Extraits du "Misanthrope " (Molièe) et "d'A thalie " (Racine.)
I. Célimène. Et ne fant-il pas bien que monsieur contredise?

A la commune voix veut-on qu'il se réduise,
Et qu'il ne fasse pas éclater en tous lieux L'esprit contrariant qu' il a reçu des cieux? Le sentiment d' autrii n'est jamais pour lui plaire: Il prend toujours en main l'opinion cortraire, Et penserait paraitre un homme du commun. Si l'on voyait qu'il fût de l'avis de quelqu'un. L'honneur de contredire a pour lui tant de charmes. Qu'il prend contre luì-même assez souvent les armes; Et ses vrais sentiments sont combattus par lui,
Aussitôt qu'il les voit dans la bouche d' autrui.

1. Athalie. C'était pendant l'horreur d'une profonde nuit; Ma mère Jézabel devant moi s'est montrée, Comme au jour de sa mort pompeusement parée; Ses malheurs n'avaient point abattu sa fierte; Même elle avait encor cet éclat emprunté Dont elle eut soin de peindre et d'orner son visage.
Pour réparer des ans 1 ' irréparable outrage:
"Tremble," m'a-t-elle dit, 'fille digne de moi; Le cruel Dieu des Jnifs l'emporte aussi sur toi. Je te plains de tomber dans ses mains redoutables, Ma fille." En achevant ces mots épouvantables, Son ombre vers mon lit a paruse baisser; Et moi, je lui tendais les mains pour l'embrasser, Mais je n'ai plus trouvé qn'un horrible mélange D'os et de chair meurtris, et traînés dans la fange, Des lambeaux pleins de sang, et des membres affireux Que des chiens dévorans se disputaient entre eux.
Traduisez en Français : Des "Contes d'un Grand-pēre" par Walter Scott.
Scotland, on the contrary, is tull of hills, and huge moors and wildernesses, which bear no corn, and afford but little food for flocks of sheep or herds of cattle. But the level ground that lies along the great rivers is more fertile, and produces good crops. The natives of Scotland are accustomed to live more hardily in general than those of England. The cities and towns are fewer, smaller, and less full of inhabitants than in England. But as Scotland possesses great quarries of stone, the towns are commonly built of that material, which is more lasting, and has a grander effect to the eye than the bricks used in England.
(1.) Expliquez l'emploi de l'article dans les phrases suivantes: Man was born for society. Lonis IX was a prince endowed with virtue. The Universe is full of the magnificence of the Almighty. Byron says of the Ocean, that it is boundless, endless, and sublime. He is now without the rich friends who assisted him.
(2.). Faites 1/analyse de ces phrases: L'at-on su? Parlait-il, on $l^{\prime}$ 'écoutait arec attention. Les conseils que me donna mon pēre qui $\mathrm{m}^{\prime} \mathrm{a}$ toujours guidé . . . C'est d'Angleterre que vient cette nouvelle. Ton argent, ie ne le veux pas.
(3.) Les fucultés de llesprit sont comme les plantes qui, plus on les cultive, plus elles donnent de fruits. Cette phrase est-elie correcte ou vicieuse? Pourquoi? Donnez en le corrigé.
(4.) "Louis en ce moment, prenant son diadème, Sur le front du vaniqueur il le posa lui-même." (Voltaire.)
De la construction du sujet dans ces vers résulte une fìgure de syntaxe vicieuse. Expliquez; mentionnez la figure et pourquoi elle est vicieuse.
(5.) Que remarquez-vous à l'égard du complêment du verb dans les vers suivants: Ne vous imformez pas ce que je deviendrai. (Racine.) C'est aे vous, mon esprit, à qui je veux parler. (Boileau.) Traduisez: A large number of vessels have entered or have left our port during the last fortnight. I know my advantages and make use of them, I hope to finish my labor soon, and to be able to return home.
(6.) Expliquez par des exemples 1'accord du participe présent.
(7.) Le participe passé es-til variable ou invariable dans ces phrases? Pourquoi? I! est arrivée de grands malheurs. La chose est telle que vous me l'avez annoncée. Quant aux sottes gens, plus j'en ai cormu, moins j'en ai estimés. Ecrivez un ex. avec un participe suivi d'un Infinitif, et un autre où le part. passé est précédé de le peu de.
(8.) Faut-il dire avec "Corneille": Peut-on plus dignement meriter la couronne? La figure de syntaxe renfermée dans cette phrase est-elle régulière ou vicieuse? Le crime fait la honte et non pas lléchafaud. Expliv quez la figure dans cette phrase.
(9.) Qu'est-ce qu'on appelle l'âge d'or de la littérature française? Quelle était l/influence de "Molière" sur la littérature.
(10.) Nommez les principaux ouvrages de "Molière" et de "Racine." Quels sont leurs chefs-d'oeuvre ? Classifiez les tragédies de Racine et dites quel est le genre de poésie créé par lui.
(11.) Mettez en parallèle les deux poëtes mentionnés. Sous quel rapport " Molière mérite-t-il d'être placé att-dessus de "Racine"?
(12.) Quel est le mérite particulier de "Boileau," et quelle est sa doctrine littéraire? Par quels ouvrages s'est-ill mis en réputation? Pourquoi 1 a a-t-on appelé le législateur du Parnasse? Est-ce qu'il mérite entièrement ce titre?

# DALHOUSIE COLLEGE AND UNIVERSITY, HALIFAX. 

SESSIONAL EXAMINATIONS, 1873.<br>Friday, April 25, 9 A. M. to 1 P. M.<br>GERMAN.-FOURTH YEAR.

## James Liechti, Esq <br> Examiner.

Translate: "Wilhelm Tell," Act II., Scene 1, by Schiller.

1. Attinghausen: Verblendeter, vom eiteln Nimm Land su Lehen, werd' ein Fürsten-

Glanz verführt,
Verachte dein Geburtsland! Schäme dich Der uralt frommen Sitte deiner Väter! Mit heissen Thränen wirst du dich dereinst Heim sehnen nach den väterlichen Bergen, Und dieses Herdenreihens Melodie,
Die du in stolzem Ueberdruss versehmähst,
Mit Schmerzenssehnsucht wird sie dich ergreifen,
$W$ enn sie dir anklingt auf der fremden Erde.
O, mächtig ist der Trieb des Vaterlands!
Die fremde falsche Welt ist nicht für dich; Dert an dem stolzen Kaiserhof bleibst du Dir ewig fremd mit deinem treuen Herzen! Die Welt, sie fordert andre Tugenden, Als du in diesen Thälern dir erworben.
-Geh hin, verkaufe deine freie Seele,
knecht,
Da du ein Selbstherr sein kannst und ein Fürst
Auf deinem eignen Erb' und freien Boden. Ach, Uly! Uly! Bleibe bei den Deinen? Geh nicht nach Altdorf.-0, verlass' sie nicht,
Die heil'ge Sache deines Vaterlands !
(1) -Ich bin der Letzte meines Stamms-mein Endet mit mir. Da hängen Helm und Die werden sie mir in das Grab mitgeben Und muss ich denkeu bei dem letzten Hauch Dass du mein brechend' A uge nur erwartest, Um hinzugeh'n vor diesen neuen Lehenhof Und meine edeln Güter, die ich frei
Von Gott empfing, von Oestreich zu empfangen!

Translate into German : . . . I was but too well assured, that Pythias would return ; and that he would be more anxious to keep his promise than to save his life. Would to heaven that his relations and friends had detained him by force! He would then have lived for the comfort and benefit of good men ; and I should then have had the satisfaction of dying for him.

1. What is alluded to in the sentence : Mit Schmerzenssehnsueht. . . . . fremden Erde. Mention the historical event, referred to in: Ich hab'es fechten sehen by Favenz (Faenza).
2. Analyze the sentence : Da hängen. . . . Grab mitgeben. Give rules for construction of nouns, verbs (separable and inseparable), and adverbs of time. Write examples in illustration.
3. Explain the difference between durchreisen and durchreisen. When do such verbs assume the one and when the other form. Name all the words belonging to this class.
4. State, giving an ex. for each case, how adverbial and subordinative conjunctions affect the construction. Illustrate by short exs. the use of wann, wenn and als. Not only men, but women also perished (kamen um). He has not yet arrived, but we expect him every moment. He would like to travel, but he has no money. But has three forms.
5. Give the idioms for: Diamonds, the price of which. The house, from
the windous of which. Men, all of whom. Both of them. No more tears. All night.
6. The infinitive is used in English with an accusative after the verbs, to know, to desire, etc. What is the construction in German? The Captain knew the ship to be near the coast (Küste. f.) God commands (befiehlt) men to love one another.
7. Illustrate the construction of the English present part.: when replacing a relative pron.; when preceded by prep. (on, upon, with, of.) He was drowned without his making any efforts to save himself.

8 Which is the distinguishing feature of German literature? Classify Schiller's Dramas according to the different periods in which they were written. Which of his Dramas represents in a perfect form the fumdamental idea of Schiller's views of life? What is this idea?
9. A certain distinction is made, even by Goethe himself, between the Robbers and Wilhelm Tell. Give the reason why such a distinction eannot be fairly made. What is the particular merit of the Bride of Messina? In what year were his two finest lyric Poems written ; give their names.
10. Mention some of Goethe's works. His "Faust" is a psychological Drama. Explain.


[^0]:    * Only Students competing for a First or Second Class at the Sessional Examinations will be examined in this additional work, which will not be read in Class.
    $\dagger$ The Examination in these subjects will be held at the beginning of the Winter Session.

[^1]:    * Left early in the Session.

