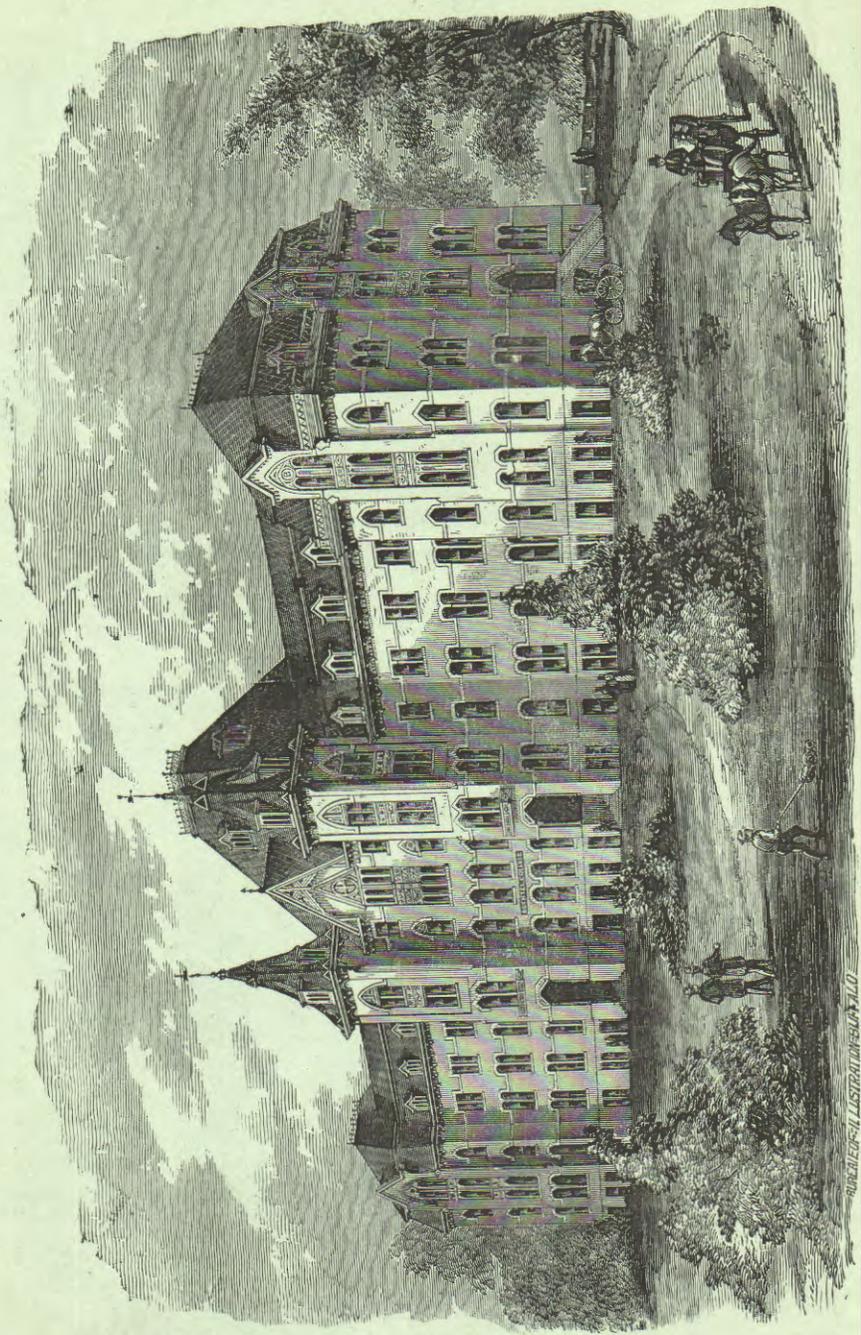


BUCHTEL COLLEGE

1876--77.



W. & A. S. W. & A. S. W. & A. S. W.

CATALOGUE

OF

BUCHTEL COLLEGE

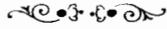
1876--77.

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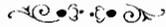
AKRON, OHIO:

BEACON PUBLISHING COMPANY, PRINTERS.

1877



COLLEGE  
INCORPORATED  
1870



# COLLEGE CALENDAR.

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1877.

April 4, Wednesday. Third Term commenced.

June 24, Sunday. Baccalaureate Sermon.

June 25, Monday. Class Day.

June 26, Tuesday. Annual Meeting of the Board of Trustees.

June 26, Tuesday, 10 A. M. Annual Meeting of the Alumni Association.

June 26, Tuesday, 3 P. M. Address before the Alumni Association.

June 26, Tuesday, 8 P. M. Address before the Literary Societies.

June 27, Wednesday, 10 A. M., Commencement Exercises.

June 27, Wednesday, 3 P. M., Address before the College.

June 28, Thursday. Examination of candidates for admission.

## VACATION OF TEN WEEKS.

Sept. 4, Tuesday. Examination of candidates for admission.

Sept. 5, Wednesday. First Term commences.

Dec. 18, Tuesday. First Term closes.

## VACATION OF TWO WEEKS.

1878.

Jan. 2, Wednesday. Second Term commences.

March 26, Tuesday. Second Term closes.

## VACATION OF ONE WEEK.

April 3, Wednesday. Third Term commences.



## BOARD OF TRUSTEES.

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---

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LITERATURE.

\*Endowed by Mrs. L. A. Messenger, in memory of her husband, Rev. GEORGE  
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---

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TEACHER IN LATIN.

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PROFESSOR IN MUSIC.

MRS. S. P. CHOATE,

TEACHER OF ORNAMENTAL BRANCHES.

W. D. SHIPMAN,

LIBRARIAN

# BUCHTEL COLLEGE.

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## NAME AND ORIGIN.

This Institution was named Buchtel College in honor of its founder, Hon. John R. Buchtel, who has consecrated his life and wealth to its support and welfare.

The corner-stone bearing the inscription, "*Centenary of Universalism in America, 1870,*" was laid July 4th, 1871. The College was opened for the reception of students on Wednesday, September 11th, 1872.

## LOCATION.

Its location is desirable and fortunate. The city of Akron is beautifully situated in the midst of hills and valleys, having direct communication by railroad and telegraph with the principal cities and towns of the State and country. It is highly favored with an agreeable and healthful climate.

Its citizens are intelligent and enterprising, hospitable and deeply interested in the educational and moral culture of the young. They have already proved by their active interest and generosity that they will do their utmost to sustain and foster Buchtel College.

## BUILDING AND GROUNDS.

The College Building is two hundred and forty feet long, fifty-four feet wide, and five stories high. Its style of architecture combines the Doric, Gothic and Norman. It is a grand structure of symmetrical and harmonious proportions. Its lecture, reading and students' rooms, its dining hall, cabinet, library, laboratory and gymnasium, are light, airy and ample, furnished with the modern and most improved conveniences.

The building is warmed by steam, lighted by gas, and supplied with good water.

The site of the College is high, affording from its observatory one of the most extensive and delightful prospects in Ohio.

The grounds are spacious, being ornamented with walks, trees and hedges.

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**ITS PURPOSE.**

It is the purpose of the Trustees and friends to make it a *First-Class College*, offering to students of both sexes equal opportunities for a *thorough* and *liberal* education.

They welcome the fact as auspicious, that the leading colleges in our land are endeavoring to raise the standard of liberal learning. It is the aim of Buchtel College to be faithful in this noble work of promoting sound scholarship and refined culture—to become, indeed, an Institution of Art and Letters, where the highest type of mental instruction and moral training will be imparted.

With this purpose in view, the curriculum of studies adopted, embraces:

*First.* A complete Classical Course of four years, equal to that of the best Institutions in the country.

*Second.* A Philosophical Course of four years.

*Third.* A Scientific Course of four years.

*Fourth.* A Ladies' Literary Course of four years.

*Fifth.* A Preparatory and Normal Course, to fit students for college, and for teaching, affording them useful Academic instruction.

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**ELECTIVE STUDIES.**

Students not desiring to pursue any of the regular courses specified, may select such studies as they please from those being pursued by the regular classes, and on leaving college will receive Certificates of rank and advancement made.

**BIERCE LIBRARY.**

By the liberal donation of General L. V. Bierce, of Akron, and other friends of the College, an elegant and spacious room has been fitted up for a Library. It has already been furnished with many volumes of valuable books. It has space for still more.

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**READING ROOMS.**

There are two Reading Rooms, one for the gentlemen, and the other for the ladies, well supplied with newspapers and magazines.

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**APPARATUS AND CABINET.**

The College owns a good Philosophical and Chemical Apparatus, of the latest and most approved kind. It has a Laboratory, open to students, well furnished with apparatus for making chemical experiments and analysis. A valuable Cabinet of Minerals is also being furnished the College.

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**NATURAL HISTORY ROOM.**

This is an attractive room. The specimens are unique, and many of them rare. These are accurately classified and tastefully arranged, exhibiting the useful and beautiful.

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**BOARDING ACCOMMODATIONS.**

The College affords ample and suitable conveniences for boarding one hundred and fifty students. It is desired that students, so far as possible, room and board in the College building. Teachers and students sit at the same table. Special care is exercised over the health, habits and manners of students. Their highest good and constant growth in virtue and wisdom, are sought with earnest solicitude.

### RELIGIOUS OBSERVANCE.

All students are required to attend morning prayer and reading of the Scriptures in the Chapel.

All students are required to attend regularly some place of religious worship on the Sabbath. Students can select their own church for Sabbath worship.

The College is religious, but in no sense *sectarian*. It aims to stand firmly on the basis of sound morality and Christian principle.

### RECORD OF MERIT.

A record is kept of each student's standing in recitation and deportment, and of all absences and irregularities. An average of each term is made at its close, which may be examined by committees, trustees, parents and friends of the College.

### PERPETUAL SCHOLARSHIPS FOUNDED BY INDIVIDUALS.

Twenty-one scholarships of \$1,000 each, have been established by the following donors :

James Pierce.....	<i>Sharpsville, Pa.</i>
Elijah Drury.....	<i>Girard, Pa.</i>
Mrs. Mary C. Roosa.....	<i>Lebanon, O.</i>
James F. Davidson.....	<i>Brimfield, O.</i>
Betsey Thomas.....	<i>Irwin, O.</i>
John Perdue.....	<i>La Fayette, Ind.</i>
Eli M. Kennedy.....	<i>Paris, Ky.</i>
John K. Smith.....	<i>Bainbridge, O.</i>
N. S. Olin.....	<i>Streetsboro, O.</i>
John B. Smith.....	<i>Urbana, O.</i>
Candia Palmer.....	<i>Painesville, O.</i>
George W. Steel.....	<i>Painesville, O.</i>
Mrs. George W. Steel.....	<i>Painesville, O.</i>
Mrs. Betsey Dodge.....	<i>McConnellsville, O.</i>
Brice Hilton.....	<i>Defiance, O.</i>
John Loudenback.....	<i>Millerstown, O.</i>
John Espy.....	<i>Kenton, O.</i>
Joseph Hidy, Sr.....	<i>Jeffersonville, O.</i>
Rev. H. P. and Mrs. D. E. Sage.....	<i>Rochester, N. Y.</i>
Mrs. E. V. Stedman, (deceased).....	
Mrs. Henry Bozzar.....	<i>Brimfield, O.</i>

These Scholarships are appropriated according to the direction of the donors. They are intended to aid only worthy and deserving students.

# COLLEGE DEPARTMENT.

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## REQUISITES FOR ADMISSION.

Applicants for admission to the Freshman Class of the Classical Course, must sustain a satisfactory examination in the following studies :

### GREEK.

First four books of Xenophon's Anabasis ; first three books of Homer's Iliad, or an equivalent; Greek Grammar and Prosody.

### LATIN.

Three books of Cæsar's Commentaries ; Bucolics of Virgil, and six books of the Æneid ; four Orations of Cicero ; Latin Grammar and Prosody ; and twelve lessons in Prose Composition.

### MATHEMATICS.

Arithmetic ; Algebra, to Equations of the Second Degree.

### ENGLISH.

English Grammar ; History of the United States ; Modern and Ancient Geography.

Candidates for admission to the Freshman Class, are offered, as a matter of convenience to them, a partial examination one year previous to matriculation. At this examination the candidates must be prepared in the whole of the following subjects :

**ENGLISH :** Geography, Grammar, History of the United States.

**GREEK :** Xenophon's Anabasis, one book ; Grammar, except prosody.

**LATIN :** Cæsar, four books ; Cicero, three orations ; Grammar, except prosody.

**MATHEMATICS :** Arithmetic ; Algebra, Olney's Elementary, or an equivalent.

In this examination, no conditions will be imposed, but a failure in any study will subject the student to a re-examination in the department to which the study belongs.

Examination on the remaining requisitions, as prescribed above, will take place the following year.

If candidates prefer, they can be examined, as heretofore, in all the studies at once.

Candidates for admission to the Freshman Class of the Philosophical Course, will be examined in the following studies: English Grammar; History of the United States; Geography; Arithmetic; Algebra; five books of Geometry.

Candidates for admission to the Freshman Class of the Scientific Course, will be examined in the following studies: English Grammar; History of the United States; Geography; Arithmetic; Algebra, to Quadratics; Latin Grammar and Reader.

Candidates for admission to the First Year of the Literary Course will be examined in the following studies: English Grammar; History of the United States; Geography, and Arithmetic.

Candidates for advanced standing are examined in the above studies, and in those that have been pursued by the class which they purpose to enter; and, if from other colleges, they must furnish certificates of regular dismissal.

Students failing to maintain proper rank in any branch during the course, will be subjected to conditions which must be made up, before they can be entitled to a degree.

Students will not be permitted to enter the Senior Class, until all conditions upon previous work are removed.

Examinations for admission will be on Thursday after Commencement, and on Tuesday before the opening of the First Term of the year. The examinations commence at 9 o'clock A. M.

# COURSES OF STUDY.

## FRESHMAN CLASS.

### CLASSICAL.

#### First Term.

GREEK.—Xenophon's Memorabilia.  
LATIN.—Livy, Latin Prose Composition.  
MATHEMATICS.—Algebra, Olney's.  
HISTORY.—Roman History.  
RHETORIC.—Themes and Declamations.

#### Second Term.

GREEK.—Homer's Odyssey.  
LATIN.—Livy, Prose Composition.  
MATHEMATICS.—Algebra, Olney's, completed.  
HISTORY.—Greek and Roman.  
RHETORIC.—Themes and Declamations.

#### Third Term.

GREEK.—Phædo of Plato, Prose Composition.  
LATIN.—Horace's Odes, Metres and Prose Comp.  
MATHEMATICS.—Geometry.  
RHETORIC.—Hepburn's, twice a week, Themes and Declamations.

### PHILOSOPHICAL.

#### First Term.

MATHEMATICS.—Geometry, completed.  
GERMAN OR FRENCH.  
HISTORY.—General History.  
RHETORIC.—Analysis, Themes, and Declamations.

#### Second Term.

MATHEMATICS.—Plane and Spherical Trigonometry.  
GERMAN OR FRENCH.  
HISTORY.—General History.  
RHETORIC.—Analysis, Essays, and Declamations.

#### Third Term.

MATHEMATICS.—Field Surveying.  
GERMAN OR FRENCH.  
NATURAL SCIENCE.—Botany, Gray's.  
RHETORIC.—Hepburn's, twice a week, Themes and Declamations.

### SCIENTIFIC.

#### First Term.

HISTORY.—General History.  
LATIN.—Cæsar.  
MATHEMATICS.—Algebra, Olney's.  
RHETORIC.—Vocal Culture, Essays.

#### Second Term.

HISTORY.—General History.  
LATIN.—Cicero.  
MATHEMATICS.—Algebra, Olney's.  
RHETORIC.—Essays and Vocal Culture.

#### Third Term.

NATURAL SCIENCE.—Physiology.  
LATIN.—Cicero.  
MATHEMATICS.—Geometry.  
RHETORIC.—Twice a week, Essays, Vocal Culture.

# SOPHOMORE CLASS.

## CLASSICAL.

### First Term.

GREEK.—Demosthenes, Prose Composition.  
LATIN.—Horace's Satires and Epistles, Metres and Prose Composition.  
MATHEMATICS.—Geometry, completed.  
RHETORIC.—Twice a week, Themes and Orations.

### Second Term.

GREEK.—Agamemnon, or Prometheus of Æschylus, Prose Composition.  
LATIN.—Tacitus, Prose Composition.  
MATHEMATICS.—Plane and Spherical Trigonometry.  
ENGLISH LITERATURE, twice a week.  
NATURAL SCIENCE.—Zoology.  
RHETORIC.—Themes and Orations.

### Third Term.

GREEK.—Antigone of Sophocles, Prose Composition.  
LATIN.—Cicero de Oratore.  
MATHEMATICS.—Land Surveying.  
ENGLISH LITERATURE, twice a week.  
NATURAL SCIENCE.—Botany, Gray's.  
RHETORIC.—Themes and Orations.

## PHILOSOPHICAL.

### First Term.

MATHEMATICS.—Analytical Geometry.  
GERMAN OR FRENCH.  
RHETORIC.—Whately's, Themes and Orations.

### Second Term.

MATHEMATICS.—Differential Calculus.  
GERMAN OR FRENCH.  
ENGLISH LITERATURE.  
RHETORIC.—Themes and Orations.

### Third Term.

MATHEMATICS.—Integral Calculus, General Geometry.  
GERMAN OR FRENCH.  
NATURAL SCIENCE.—Geology, Newberry's.  
ENGLISH LITERATURE.  
RHETORIC.—Themes and Orations.

## SCIENTIFIC.

### First Term.

{ GERMAN.—Grammar, Exercises, or  
} FRENCH.—Grammar, Exercises, Reader.  
LATIN.—Virgil.  
MATHEMATICS.—Geometry, completed.  
RHETORIC.—Twice a week, Essays and Declamations.

### Second Term.

{ GERMAN.—Grammar, Exercises, Reader, or  
} FRENCH.—Grammar, Scribe, Le Verre d'eau.  
MATHEMATICS.—Plane and Spherical Trigonometry.  
ENGLISH LITERATURE, twice a week.  
RHETORIC.—Themes and Orations.

### Third Term.

NATURAL SCIENCE.—Botany, Gray's.  
{ GERMAN.—Grammar, Schiller, Maria Stuart, or  
} FRENCH.—Corinne.  
MATHEMATICS.—Land Surveying.  
ENGLISH LITERATURE, twice a week.  
RHETORIC.—Themes and Orations.

# JUNIOR CLASS.

## CLASSICAL.

### First Term.

GERMAN OR FRENCH.  
NATURAL SCIENCE.—Chemistry, with Laboratory Practice.  
MATHEMATICS.—Analytical Geometry.  
RHETORIC.—Whately's, Themes and Orations.

### Second Term.

GERMAN OR FRENCH.  
NATURAL SCIENCE.—Chemistry and Blow-pipe Analysis, Mineralogy, twice a week.  
MATHEMATICS.—Differential Calculus.  
RHETORIC.—Themes and Orations.

### Third Term.

GERMAN OR FRENCH.  
NATURAL SCIENCE.—Qualitative Chemical Analysis, Geology and Mineralogy.  
MATHEMATICS.—Integral Calculus, and General Geometry.  
RHETORIC.—Themes and Orations.

## PHILOSOPHICAL.

### First Term.

MATHEMATICS.—Civil Engineering.  
NATURAL SCIENCE.—Chemistry, with Laboratory Practice.  
LOGIC.—Jevon's.  
RHETORIC.—Themes and Orations.

### Second Term.

MATHEMATICS.—Descriptive Geometry.  
NATURAL SCIENCE.—Chemistry and Blow-pipe Analysis, Zoology.  
RHETORIC.—Themes and Orations.

### Third Term.

MATHEMATICS.—Civil Engineering.  
NATURAL SCIENCE.—Qualitative Chemical Analysis.  
HISTORY.—History of Civilization.  
RHETORIC.—Themes and Orations.

## SCIENTIFIC.

### First Term.

NATURAL SCIENCE.—Chemistry, with Laboratory Practice.  
{ GERMAN.—Undine, Prose Composition, or  
} FRENCH.—Moliere, Le Misanthrope.  
MATHEMATICS.—Analytical Geometry.  
RHETORIC.—Whately's, Themes and Orations.

### Second Term.

NATURAL SCIENCE.—Chemistry and Blow-pipe Analysis, Zoology.  
{ GERMAN.—Goethe, Hermann und Dorothea, Prose  
} Composition, or  
} FRENCH.—Racine, Phedre.  
MATHEMATICS.—Differential Calculus.  
RHETORIC.—Themes and Orations.

### Third Term.

NATURAL SCIENCE.—Qualitative Chemical Analysis, Geology, and Mineralogy.  
{ GERMAN.—Goethe, Faust, Prose Composition, or  
} FRENCH.—Cornelle, Cinna.  
SCIENCE OF CIVILIZATION.  
RHETORIC.—Themes and Orations.

# SENIOR CLASS.

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## CLASSICAL.

### First Term.

INTELLECTUAL PHILOSOPHY.  
LOGIC.—Jevon's.  
GERMAN OR FRENCH.  
NATURAL SCIENCE.—Physics, Atkinson's Ganot.  
RHETORIC.—Themes and Orations.

### Second Term.

POLITICAL ECONOMY.  
GERMAN OR FRENCH.  
MATHEMATICS.—Astronomy.  
NATURAL SCIENCE.—Physics, Atkinson's Ganot.  
RHETORIC.—Themes and Orations.

### Third Term.

MORAL SCIENCE.  
SCIENCE OF CIVILIZATION.  
MATHEMATICS.—Astronomy.  
NATURAL SCIENCE.—Physics, Atkinson's Ganot.  
RHETORIC.—Themes and Orations.

## PHILOSOPHICAL.

### First Term.

MATHEMATICS.—Higher Mechanics.  
NATURAL SCIENCE.—Physics, Atkinson's Ganot.  
INTELLECTUAL PHILOSOPHY.  
RHETORIC.—Themes and Orations.

### Second Term.

MATHEMATICS.—Astronomy.  
NATURAL SCIENCE.—Physics, Atkinson's Ganot.  
POLITICAL ECONOMY.  
RHETORIC.—Themes and Orations.

### Third Term.

MATHEMATICS.—Astronomy.  
NATURAL SCIENCE.—Physics, Atkinson's Ganot.  
MORAL SCIENCE.  
RHETORIC.—Themes and Orations.

## SCIENTIFIC.

### First Term.

NATURAL SCIENCE.—Physics, Atkinson's Ganot.  
LOGIC.—Jevon's.  
INTELLECTUAL PHILOSOPHY.  
RHETORIC.—Themes and Orations.

### Second Term.

NATURAL SCIENCE.—Physics, Atkinson's Ganot.  
POLITICAL ECONOMY.  
MATHEMATICS.—Astronomy.  
RHETORIC.—Themes and Orations.

### Third Term.

NATURAL SCIENCE.—Physics, Atkinson's Ganot.  
MORAL SCIENCE.  
MATHEMATICS.—Astronomy.  
RHETORIC.—Themes and Orations.

# ORDER OF RECITATIONS

BY CLASSES.

	<i>Senior.</i>	<i>Junior.</i>	<i>Sophomore.</i>	<i>Freshman.</i>
FIRST TERM. A. M.	9 Intel. Phil.	Chemistry.	Geometry.	Latin.
	10 Mechanics.	German.	Greek.	.....
	11 Physics.	Anal. Geome- try.	German.	Algebra.
	2 Logic.	French.	Latin.	.....
P. M.	3 .....	Civ.Engineer- ing.	French.	Greek.
	4 .....	.....	.....	.....
SECOND TERM. A. M.	9 Pol. Economy	Diff. Calculus.	German.	Latin.
	10 Astronomy.	Chemistry.	Greek.	.....
	11 Physics.	German.	Trigonometry	Greek.
	2 .....	French.	Zoology.	.....
P. M.	3 .....	Des.Geometry	French & Latin	Algebra.
	4 .....	.....	Eng. Litera- ture.	.....
THIRD TERM. A. M.	9 Moral Science	Intg. Calculus	German and Greek.	.....
	10 Physics.	German.	Eng. Litera- ture.	Geometry.
	11 Astronomy.	Geology.	French.	Latin.
	2 .....	Civil Engin- eering.	Botany.	.....
P. M.	3 .....	Anal. Chemis- try.	Surveying.	Greek.
	4 .....	French.	Latin.	.....

# LITERARY.

## FIRST YEAR.

### FIRST TERM.

Analytical Grammar.  
General History.  
Book-keeping.  
Essays.

### SECOND TERM.

Analytical Grammar.  
General History.  
Algebra.  
Essays.

### THIRD TERM.

Botany.  
Rhetoric.  
Algebra.  
Essays.

## THIRD YEAR.

### FIRST TERM.

Latin, German, or French.  
Chemistry.  
Geometry, completed.  
Essays.

### SECOND TERM.

Latin, German, or French.  
English Literature.  
Essays.  
And one of the following  
electives:  
Chemistry.  
Trigonometry.

### THIRD TERM.

Latin, German, or French.  
Geology.  
English Literature.  
Essays.

## SECOND YEAR.

### FIRST TERM.

Rhetoric.  
Physical Geography.  
Algebra.  
Essays.

### SECOND TERM.

Zoology.  
Natural Philosophy.  
Algebra.  
Essays.

### THIRD TERM.

Physiology.  
Geometry.  
Science of Government.  
Essays.

## FOURTH YEAR.

### FIRST TERM.

Intellectual Philosophy.  
Rhetoric.  
Themes.  
Latin, German, French, Log-  
ic, or Analysis of Ferns  
and Mosses.

### SECOND TERM.

Political Economy.  
Astronomy.  
Themes.  
Latin, German, French, or  
Physics.

### THIRD TERM.

Moral Science.  
History of Culture.  
Latin, German, French, or  
Structural Botany.

# STUDIES PREPARATORY

## FOR CLASSICAL COURSE.

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### FIRST YEAR.

*First Term:* Latin Grammar and Reader; Arithmetic; Geography; Reading and Spelling; Rhetorical Exercises; Reviews.

*Second Term:* Latin Grammar and Reader; Arithmetic; Geography; Reading and Spelling; Rhetorical Exercises; Reviews.

*Third Term:* Latin Grammar, Cæsar; Arithmetic; Reading and Spelling; Rhetorical Exercises; Written Reviews.

### SECOND YEAR.

*First Term:* Latin Grammar, Cæsar; Greek Grammar and Lessons; United States History; Rhetorical Exercises; Written Reviews.

*Second Term:* Latin Grammar, Cicero; Greek Grammar and Lessons; English History; Declamations and Compositions; Written Reviews.

*Third Term:* Latin Grammar, Cicero; Greek Grammar, Xenophon's Anabasis; French History; Rhetorical Exercises; Written Reviews.

### THIRD YEAR.

*First Term:* Latin Grammar, Virgil, Latin Prosody and Prose Composition; Greek Grammar, Anabasis; Algebra; Declamations and Compositions; Written Reviews.

*Second Term:* Virgil, Latin Prosody and Prose Composition; Greek Grammar, Homer's Iliad; Algebra; Declamations and Compositions; Written Reviews.

*Third Term:* Virgil; Homer's Iliad, Greek Prosody; Translations from Latin into Greek and Greek into Latin; Algebra; Declamations and Compositions; Oral and Written Reviews.

# STUDIES PREPARATORY

FOR PHILOSOPHICAL, OR SCIENTIFIC COURSE.

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## FIRST YEAR.

*First Term:* Arithmetic; Analysis and Parsing; United States History; Reading and Spelling; Declamation and Composition; Written Reviews.

*Second Term:* Arithmetic; Analysis and Parsing; English History; Reading and Spelling; Declamation and Composition; Written Reviews.

*Third Term:* Arithmetic; Algebra; Analytical Parsing; French History; Declamation and Composition; Written and Oral Reviews.

## SECOND YEAR.

*First Term:* Book-keeping; Algebra; Physical Geography; Analytical Parsing; Vocal Culture; Declamation and Composition; Written Reviews.

*Second Term:* Algebra; Analytical Parsing; Book-keeping; Vocal Culture; Composition and Declamation; Written Reviews.

*Third Term:* Algebra; Geometry; Analytical Grammar; Vocal Culture; Composition and Declamation; Written and Oral Reviews.

## NORMAL COURSE.

The studies pursued in the Normal Course, are those prescribed by the laws of the State, which are required, or permitted to be taught in the Public Schools. *Special attention* will be given to the Normal Classes during the Fall and Spring Terms.

## LECTURES.

TO FRESHMAN CLASS. On Health and Habits of Study.

TO SOPHOMORE CLASS. On English and Classical Literature.

TO JUNIOR CLASS. On Physical Science.

TO SENIOR CLASS. On Natural and Revealed Religion.

TO NORMAL CLASS. On Education and Methods of Teaching.

Additional lectures are delivered before the College students, on topics of general interest, by persons invited from abroad.

## DEGREES.

The Degree of Bachelor of Arts will be conferred on students having completed the Classical Course.

The Degree of Bachelor of Philosophy will be conferred on those having completed the Philosophical Course.

The Degree of Bachelor of Science will be conferred on those having completed the Scientific Course.

A Diploma will be given to those having completed the Literary Course.

Every Bachelor of three years' standing in the Classical Course, having sustained a good character and been devoted to intellectual pursuits, and having paid to the Treasurer five dollars, shall be entitled to the degree of Master of Arts; on the same conditions, any Bachelor of three years' standing in the Philosophical or Scientific Course, shall be entitled to the degree of Master of Philosophy or Science.

## CARY SOCIETY.

ESTABLISHED 1872.

*President.* .....LIZZIE HOUSTON.  
*Vice President.*.....KITTIE ROWE.  
*Secretary*.....CARRIE RANNEY.

MEMBERSHIP, 55.

## BRYANT SOCIETY.

ESTABLISHED 1873.

*President.*.....ALVIN I. FINDLEY.  
*Vice President.*.....FREMONT HAMILTON.  
*Secretary*.....KELSEY L. RANNEY.

MEMBERSHIP, 75.

# EXPENSES.

## COLLEGE COURSES.

Tuition, per year.....	\$40 00
“ Fall Term.....	15 00
“ Winter and Spring Terms (each).....	12 50

## NORMAL AND PREPARATORY COURSES.

Tuition, Fall Term, Normal Course.....	\$11 50
“ Winter or Spring Term, Normal Course.....	9 25
“ Fall Term, Preparatory Course.....	9 50
“ Winter or Spring Term, Preparatory Course.....	7 50

Room Rent, per term.....	\$ 6 50
Board, per week, (including lights and heating room).....	3 50
Washing, per dozen.....	75
Music.....	15 00
Use of Piano, per term.....	4 00
Painting, Drawing and Writing.....	Extra.

Students pursuing Elective Studies are charged the same tuition as College students.

Students in Practical and Analytical Chemistry are charged for the use of chemicals and apparatus.

The College is well provided with musical instruments.

Students boarding in the College Building, furnish their quilts, comforters, sheets, pillow-cases, towels, napkins and toilet soap.

All articles of clothing should be marked with the full name.

## PAYMENT OF BILLS.

The expenses of each term must be paid in advance.

No deduction from tuition, or from board, except for absence on account of sickness, or by permission of the President.

All charges against Seniors must be satisfactorily adjusted, at least, one week before Commencement.

Parents and guardians are especially requested not to furnish students with more money than may be requisite to discharge their bills, and necessary for the incidental expenses.

## INFORMATION.

All letters and communications of inquiry as to students and the progress of the College, addressed to the President, will be promptly answered.

# STUDENTS.

## COLLEGE DEPARTMENT.

### RESIDENT GRADUATE.

NAME.	COURSE.	RESIDENCE.
Jewett, Mary Belle, B. S.	C.	Akron.

### SENIOR CLASS.

Bogue, Byron John.	S.	Rootstown.
Ginn, Alver.	S.	Glendale.
Hamilton, Fremont.	S.	East Liberty.
Ralston, Arthur.	P.	Cheshire.
Risinger, John.	S.	Eaton.
Shipman, William David.	C.	Girard, Pa.
Slade, Lizzie Undine.	C.	Columbus.

### JUNIOR CLASS.

Baird, Herbert Wells.	P.	Mogadore.
Chisnell, Clara Victoria.	P.	Akron.
Evans, William Henry.	S.	Rochester, N. Y.
Glessner, Douglass.	S.	Findlay.
Jones, William Hidy.	P.	Jeffersonville.
Mc Ebright, Kitty.	C.	Akron.
Voris, Lucy.	P.	Akron.
Whitmore, William Henry.	P.	Akron.

## SOPHOMORE CLASS.

NAME.		RESIDENCE.
Beatty, Orin Charles,	s.	<i>Massillon.</i>
Chisnell, Newton Clarence,	s.	<i>Akron.</i>
Doyle, Dayton Augustine,	c.	<i>Akron.</i>
Findley, Alvin Irwin,	c.	<i>Akron.</i>
Kelley, Hermon Alfred,	p.	<i>Kelley's Island.</i>
Lamphear, Dewitt,	s.	<i>Rome, N. Y.</i>
Pleasants, William Hall,	s.	<i>Vevay, Ind.</i>
Risinger, Abel,	s.	<i>Eaton.</i>
Smith, Frank Darwin,	s.	<i>Brimfield.</i>
Stearns, Arthur Adelbert,	c.	<i>Olmsted.</i>

## FRESHMAN CLASS.

Burnett, Ralph,	s.	<i>Akron.</i>
Guthrie, Augustus,	c.	<i>Muncie, Ind.</i>
Koon, Frank Webster,	s.	<i>Lancaster.</i>
Litchfield, Annie,	s.	<i>Conneautville, Pa.</i>
Lockard, John,	c.	<i>Millport.</i>
Mack, Cora Lilian,	s.	<i>Norwalk.</i>
M'Colleston, Sullivan Lee,	c.	<i>Akron.</i>
Miller, Paul Raymond,	c.	<i>Akron.</i>
Ranney, Luther Kelsey,	c.	<i>Akron.</i>
Richardson, Burt,	s.	<i>Cleveland.</i>
Thomas, John Benjamin,	s.	<i>Akron.</i>
Tomlinson, Irving Clinton,	c.	<i>Akron.</i>
Tomlinson, Vincent Eaton,	s.	<i>Akron.</i>
Whitmore, George Thomas,	s.	<i>Akron.</i>
Wright, Charles Baker,	c.	<i>Akron.</i>
Young, Blanche,	s.	<i>Kent.</i>

## LITERARY DEPARTMENT.

NAME.	YEAR.	RESIDENCE.
Acomb, Seraph May,	2.	<i>Tidioute, Pa.</i>
Boardman, Rilla,	3.	<i>Akron.</i>
Carpenter, Lida Lilian,	3.	<i>Titusville, Pa.</i>
Houston, Lizzie,	4.	<i>London.</i>
Jewett, Lillie May,	2.	<i>Akron.</i>
Law, Jennie Alicia,	3.	<i>Willoughby.</i>
Pardee, Hattie Evaline,	3.	<i>Akron.</i>
Ranney, Carrie May,	2.	<i>Akron.</i>
Sisler, Grace Rebecca,	3.	<i>Akron.</i>
Wagoner, Carrie May,	1.	<i>Akron.</i>
Weston, Nannie Helen,	1.	<i>Springfield.</i>
Wikoff, Estelle Lou,	2.	<i>Mason.</i>

## ACADEMICAL DEPARTMENT.

NAME.		RESIDENCE.
Alexanderson, C. W.,	PR.	<i>Akron.</i>
Ames, Daniel Henry,	PR.	<i>Cincinnati.</i>
Barker, Emma,	N.	<i>Rutland.</i>
Bates, Jennie,	PR.	<i>Akron.</i>
Beem, Franklin K.,	PR.	<i>Beach.</i>
Bender, Curtis H.,	N.	<i>Akron.</i>
Bender, Lee S.,	N.	<i>Akron.</i>
Bingham, C. A.,	N.	<i>Orwell.</i>
Bolender, Clark,	PR.	<i>Akron.</i>
Boosinger, Omer Cassius,	PR.	<i>Brimfield.</i>
Bowen, Charles H.,	N.	<i>Mantua.</i>
Bradley, George Herbert,	PR.	<i>Mogadore.</i>
Briggs, Jerome J.,	N.	<i>Akron.</i>
Burnham, Charles S.,	PR.	<i>Akron.</i>
Carter, Frank Noah,	E.	<i>Akron.</i>
Carter, Allie,	N.	<i>Mansfield.</i>
Carter, Idella,	N.	<i>Mansfield.</i>
Carter, Laura,	N.	<i>Lexington.</i>
Carter, Lula,	N.	<i>Mansfield.</i>
Corwine, Conde May,	PR.	<i>Akron.</i>
Corwine, Corliss,	E.	<i>Akron.</i>
Corwine, William Austin,	PR.	<i>Akron.</i>
Crafts, Stanley C.,	E.	<i>Auburn.</i>
Cranston, Clarence,	E.	<i>Milford Centre.</i>
Cranz, Kate,	E.	<i>Bath.</i>
Evans, William R.,	PR.	<i>Akron.</i>

NAME.		RESIDENCE.
Ewart, Ada,	N.	<i>Akron.</i>
Field, Mandred,	N.	<i>Montrose.</i>
Fish, George,	PR.	<i>Baltimore, Md.</i>
Fitch, Clara Jane,	N.	<i>Olmsted.</i>
Foster, F. J.,	E.	<i>Akron.</i>
Fouse, Edwin P.,	E.	<i>Akron.</i>
French, Augusta C.,	N.	<i>Cuyahoga Falls.</i>
French, Jennie,	N.	<i>Cuyahoga Falls.</i>
Frost, Lida,	PR.	<i>Auburn.</i>
Gafkey, Clara,	PR.	<i>Akron.</i>
Gardner, Omar,	E.	<i>Akron.</i>
Gehr, Winfield S.,	PR.	<i>Linesville, Pa.</i>
Gould, Ettie B.,	N.	<i>Aurora.</i>
Green, Gershon S.,	PR.	<i>Akron.</i>
Green, Ezra L.,	PR.	<i>Akron.</i>
Grier, Carlton A.,	N.	<i>Bay City, Mich.</i>
Hamilton, Victor H.,	PR.	<i>East Liberty.</i>
Hardy, Harry B.,	N.	<i>Northampton.</i>
Harter, Edwin C.,	N.	<i>Akron.</i>
Hill, John E.,	PR.	<i>Western Star.</i>
Hirsch, George,	PR.	<i>Akron.</i>
Holloway, Harry F.,	E.	<i>Akron.</i>
Houghton, Harry B.,	E.	<i>Akron.</i>
Johnston, William G.,	PR.	<i>Erie, Pa.</i>
Johnston, John A.,	N.	<i>Cuyahoga Falls.</i>
Kelly, Edward S.,	E.	<i>Cambridgeboro, Pa.</i>
Kurt, Kate,	N.	<i>Lodi.</i>
Lee, Earle Earnest,	N.	<i>Mogadore.</i>
Lepper, John H.,	E.	<i>Akron.</i>
Martin, Matilda Augusta,	PR.	<i>Akron.</i>
Mershon, Lozen H.,	PR.	<i>Akron.</i>

NAME.		RESIDENCE.
Mishler, Scott,	PR.	<i>Mogadore.</i>
McWhorter, Alma,	PR.	<i>Charleston, W. Va.</i>
Nelan, Charles,	PR.	<i>Akron.</i>
Nelson, Celia,	N.	<i>Akron.</i>
Nelson, Delia,	N.	<i>Akron.</i>
Neville, Edward Henry,	PR.	<i>Akron.</i>
Neville, Katie,	N.	<i>Akron.</i>
Neville, Maggie,	N.	<i>Akron.</i>
Olin, Georgia,	E.	<i>Windsor.</i>
Olin, Ida,	N.	<i>Windsor.</i>
Parsons, Dora,	PR.	<i>Akron.</i>
Peckham, Mattie,	N.	<i>Akron.</i>
Pryor, Thomas Joseph,	E.	<i>Newark.</i>
Roche, William,	N.	<i>Akron.</i>
Scott, James Walter,	PR.	<i>Akron.</i>
Shipman, Carroll L.,	PR.	<i>Girard, Pa.</i>
Slade, Edward E.,	N.	<i>Solon.</i>
Slade, Lilla,	N.	<i>Solon.</i>
Smith, George Henry,	PR.	<i>Akron.</i>
Spicer, Ella,	E.	<i>Akron.</i>
Stearns, Nettie,	E.	<i>Olmsted.</i>
Swinehart, J. A.,	PR.	<i>Lake.</i>
Tibbals, Mattie Alethia,	E.	<i>Akron.</i>
Viall, Nannie,	E.	<i>Akron.</i>
Watters, Harry A.,	PR.	<i>Akron.</i>
Weston, Frank Salmon,	N.	<i>Akron.</i>
Wheeler, Frank H.,	PR.	<i>Akron.</i>
Wilcox, Dewitt,	E.	<i>Akron.</i>
Willets, James Frazier,	PR.	<i>Fredericksburg.</i>
Willson, Horatio T.,	PR.	<i>Akron.</i>
Winslow, Edna.	E.	<i>Windsor.</i>
Wormald, William Ellison,	PR.	<i>Conneautville, Pa.</i>

# ALUMNI.

## OFFICERS OF THE ASSOCIATION.

ADELLA VAUGHN, - - - - - PRESIDENT.  
ANNA C. SISLER, - - - - - VICE PRESIDENT.  
GEORGE A. PECKHAM, - - - - - SECRETARY.  
ELSIE HOWARD SHIPMAN, - - - - - TREASURER.

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NAMES.	DEGREE.	ADDRESS
	1873.	
Chamberlain, Susie Eola,	B. S.	Akron.
Pierce, James,	B. S.	Sharpsville, Pa.
Sisler, Cora Anna,	B. S.	Akron.
Saxe, Charles,	B. S.	Mogadore.
	1874.	
Flemming, Anna E.,	B. S.	W. Lebanon, Ind.
Garver, Ella,	B. S.	Bryan.
Gaskin, William Elbridge,	B. S.	Nashua, N. H.
Howard, Elsie (Mrs. Shipman.)	B. S.	Girard Station, Pa.
Hyde, Cora,	B. S.	Hydetown, Pa.
Pryor, Emory Albert,	B. S.	Cuyahoga Falls.
Ridgway, Demma,	B. S.	Hydetown, Pa.
Ridgway, Ida,	B. S.	Hydetown, Pa.
Smelser, Lizzie,	B. S.	Richmond, Ind.
Vaughn, Adella Viola,	B. S.	Chardon.

NAME.		RESIDENCE.
Calder, Nettie Rebecca,	B. P.	<i>Rouseville, Pa.</i>
Cox, Lucy Mary, (Mrs. Guy.)	B. S.	<i>London.</i>
McAlpine, George Albert,	B. S.	<i>Akron.</i>
Peckham, George Alfred,	A. B.	<i>Akron.</i>
Robinson, Nellie Maria,	B. S.	<i>Akron.</i>
Robinson, Charles James,	B. S.	<i>Lawton, Mich.</i>
Titus, Lettie Lenore,	B. P.	<i>Seneca.</i>
Voris, Edwin Francis,	A. B.	<i>Akron.</i>

## 1876.

Fullington, Walter Curtis,	B. S.	<i>Mechanicsburg.</i>
Hidy, Jr., Joseph,	B. P.	<i>Jeffersonville.</i>
Jewett, Mary Belle,	B. S.	<i>Akron.</i>
Kelly, Donna Dorinda,	B. S.	<i>Cambridgeboro, Pa.</i>
Kelly, Walla Langly,	B. P.	<i>Cambridgeboro, Pa.</i>
Laws, Mara Ella,	B. P.	<i>Marlboro, N. H.</i>
Pleasants, George Singer,	A. B.	<i>Vevay, Ind.</i>
Rowe, Kittie Florence,	B. S.	<i>Akron.</i>
Sampsell, Warren,	B. S.	<i>Elyria.</i>
Shipman, Inez Lyra,	B. S.	<i>Girard, Pa.</i>
Tinker, Albert,	B. S.	<i>Mantua.</i>

## HONORARY DEGREES.

Rev. Willard Spaulding,	1873. D. D., - -	<i>Peabody, Mass.</i>
Rev. Everett Levi Rexford,	1874. D. D., -	<i>San Francisco, Cal.</i>
Rev. John Stebbins Lee,	1875. D. D., - - -	<i>Canton, N. Y.</i>
Rev. John Wesley Hanson,	1876. D. D., - -	<i>Chicago, Ill.</i>
*Rev. Carles Smith,	D. D., - - -	<i>Akron, O.</i>

\*Deceased.

## SUMMARY.

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CLASSICAL, - - - - -	14
PHILOSOPHICAL, - - - - -	7
SCIENTIFIC, - - - - -	21
LITERARY, - - - - -	12
ACADEMICAL, - - - - -	89
AGGREGATE (for three terms,) - - - - -	320
<hr/>	
ALUMNI, - - - - -	33
HONORARIJ, - - - - -	5

# EXAMINATION QUESTIONS.

## COLLEGE DEPARTMENT.

These questions cover only a part of the course of instruction for the college year 1876-7.

Branches of the course not represented in the following list will appear in future catalogues.

### LIVY, LIB. XXI.

1. Ego, istum juvenem domi tenendum, sub legibus sub magistratibus *docendum vivere* aequo jure cum ceteris censeo, ne quandoque parvus hic ignis incendium ingens exsuscitet.

2. Finis et Gallis territandi et pavendi fuit Romanis, ut e saltu invio atque impedito *evasere*.

3. Ob id meritum commeatu copiaque rerum omnium, maxime vestis, est adjutus *quam infames frigoribus Alpes præparari, cogebant*.

4. Ad id dati duces Galli edocent, inde millia quinque et viginti ferme supra parvæ *insulae* circumfusum amnem *latiorem*, ubi dividebatur, *eoque* minus alto alveo transitum ostendere.

5. Quo lenius agunt, segnius incipiunt, eo, cum *coeperint*, vereor, ne perseverantius *sæviant*.

Parse the words in italics, giving the parts of the verbs and accounting for their moods.

1. In what year did the second Punic war begin, and how long after the close of the first Punic war?

2. What causes of war were alleged by the Romans, and what by the Carthaginians?

3. Where did Hannibal pay his vows before the campaign, and to whom?

4. From what point did he begin his march, and what places along its line are mentioned by Livy?

5. What estimates are made of the number of men he led into Italy, and what report given of the number lost in the passage of the Alps after crossing the Rhone?

6. Where was the first engagement between the Romans and the Carthaginians in this campaign, and what was its result?

7. Who commanded the Roman forces that met Hannibal in Italy, and near what river was he encountered?

ALGEBRA.

1. Solve the equation  $\frac{8.5}{x} - \frac{.2}{x} = 4\frac{1}{4} - \frac{1-.1x}{x}$ , and define Algebra.

2. Solve the equation  $\frac{1}{(a-x)^{\frac{1}{2}}+a^{\frac{1}{2}}} + \frac{1}{(a-x)^{\frac{1}{2}}-a^{\frac{1}{2}}} = \frac{a^{\frac{1}{2}}}{x}$ , and define an equation.

3. Find the values of the unknown quantities in the equations:

$$\frac{\frac{2}{3}x - \frac{5}{12}y}{\frac{7}{4}} - \frac{\frac{3}{2}x - \frac{1}{3}y}{\frac{2}{2}^3} = 2, \text{ and } \frac{x-y}{x+y} = \frac{1}{5}.$$

Define elimination, and name the different methods.

4. If  $\frac{1}{2}a-x : \frac{1}{2}a+x :: b-y : b+y$ , prove that  $2x : y :: a : b$ .

Define ratio, proportion, and mean proportional.

5. Develop the formula for the sum of an arithmetical progression, when the first term, last term and number of terms are known. Define a progression, an arithmetical progression.

6. Given  $a$ ,  $n$ , and  $l$ , in any geometrical progression, find  $s$ . Define a geometrical progression.

7. Solve the equation  $\left(\frac{a^2}{x^2} + b^2\right)^{\frac{1}{2}} - \left(\frac{a^2}{x^2} - b^2\right)^{\frac{1}{2}} = b$ , and define a pure quadratic equation.

8. Solve the equation  $\frac{(1+x)^{\frac{1}{2}}}{1+(1+x)^{\frac{1}{2}}} = \frac{(1-x)^{\frac{1}{2}}}{1-(1-x)^{\frac{1}{2}}}$ , and define an adfected quadratic equation.

9. Solve the equation  $1 + \left(1 - \frac{a}{x}\right)^{\frac{1}{2}} = \left(1 + \frac{a}{x}\right)^{\frac{1}{2}}$ . What is meant by a special expedient?

10. Given

$$\left(\frac{x}{y}\right)^{\frac{1}{2}} + \left(\frac{y}{x}\right)^{\frac{1}{2}} = \frac{7}{(xy)^{\frac{1}{2}}} + 1, \text{ and } (x^3y)^{\frac{1}{2}} + (xy^3)^{\frac{1}{2}} = 78,$$

to find the values of  $x$  and  $y$ . What are simultaneous equations?

GREEK.

Ἐτεοκλέα μὲν, ὡς λέγουσι, σὺν δίκῃ  
 χρησθεὶς δικαίᾳ καὶ νόμῳ κατὰ χθονὸς  
 ἔκρυψε, τοῖς ἐνεργῶν ἐντιμον νεκροῖς.

Translate these lines, and state what belief is embodied in them. What is ἐνεργῶν, and how used? What additional meaning does it give?

Explain δεξιόσειρος as an epithet of Ἄρης.

ἦμεν δ' ἔτοιμοι καὶ μύδρους αἶρειν χεροῖν,

Explain the belief expressed in this and following verses.

ἀλλ' ἔα με καὶ τὴν ἐξ ἐμοῦ δυσβουλίαν  
παθεῖν τὸ δεινὸν τοῦτο. πέισομαι γὰρ οὐ  
 τοσοῦτον οὐδὲν ὥστε μὴ οὐ καλῶς θανεῖν.

Translate the above, and parse the words which are underscored. What does τὸ δεινὸν τοῦτο represent?

ἰὼ δυσπότημων  
 κασίγνητε γάμων κρηῖσας  
 θανῶν ἔτ' οὐσαν κατήμαρές με.

Translate the above. γάμων has reference to what marriage, and why is it characterized as δυσπότημων? οὐσαν refers to what time? Account for accentuation of κατήμαρές.

καὶ τὰ μὲν ἄλλα καὶ φέρειν ἠδύναθ', ὡς ἔοικεν ἢ πόλις καὶ ποιῶν οὕτως λανθάνειν. ἐν δ' ἐπεξεργάσατο, ὡ ἀνδρες Ἀθηναῖοι, τοιοῦτον, ὃ πᾶσι τοῖς προτέροις ἐπέθηκε τέλος· περὶ οὗ τοῦς πολλοὺς ἀνάλωσε λόγους, τὰ τῶν Ἀμφισσέων τῶν Δοκρῶν δεξιῶν δόγματα, ὡς διαστρέφων τάληθές. τὸ δ' οὐ τοιοῦτόν ἐστι πόθεν; οὐδέποτ' ἐκνίφη σὺ τάκεῖ πεπραγμένα σαντῶ· οὐχ οὕτω πολλὰ ἔρεϊς.

Translate the above, and parse words underscored.

Is ἄλλα conjunction or pronoun? How determined?

Account for accent of ποιῶν, and from what does its accent distinguish it? Account for breathing upon τάληθές, and explain acute final. Explain double accent upon τοιοῦτόν, and acute final. Composition of οὐδέποτ' and τάκεῖ? Account for the form οὐχ.

## GEOMETRY.

1. Prove that two angles, not in the same plane, which have their sides parallel and similarly situated, are equal, and that their planes are parallel. Define a plane, parallel planes.
2. Show that the sum of the squares of the four diagonals of a parallelepiped, is equivalent to the sum of the squares of the twelve edges. Define a prism, a parallelepiped.
3. Prove that the frustum of a pyramid is equivalent to the sum of three pyramids having the same altitude as the frustum, and whose bases are the lower base of the frustum, the upper base, and a mean proportional between them. Define a pyramid, a frustum of a pyramid.
4. In two polar triangles, show that each angle of either triangle, is measured by the supplement of the side lying opposite to it, in the other triangle. Define a spherical triangle, a polar triangle.
5. Show that the area of a spherical triangle is equal to its spherical excess multiplied by the tri-rectangular triangle. Find the area of a spherical triangle whose angles are  $90^\circ$ ,  $150^\circ$ ,  $130^\circ$ , on a sphere whose radius is 10.
6. Prove that the surface of a sphere is measured by the product of its diameter by the circumference of one of its great circles. Define a sphere, a great circle.
7. Define a cone, a cylinder, the frustum of a cone; and express in symbols, the convex surface, the entire surface, and the volume of each.
8. If two circumferences be drawn, one circumscribed about, and the other inscribed within a right angled triangle, show that the sum of their diameters is equal to the sum of the sides containing the right angle.
9. Prove that the area of a regular hexagon inscribed in a circle, is three-fourths of a regular hexagon circumscribed about the circle.
10. A quadrant of the earth is equal to 32,800,000 feet. required the radius of the earth, the area of its surface, its volume and its weight, the mean density of the earth being 4.5 times that of water.

## TRIGONOMETRY.

1. Define Trigonometry, Plane Trigonometry, Trigonometrical Functions.
2. Represent, in tabular form, the limiting values and signs of the cosine, tangent and cosecant, for each of the four quadrants.
3. Write out, in tabular form, the equivalents of the sine, secant and cotangent of  $90^\circ - x$ ,  $90^\circ + x$ ,  $180^\circ - x$ ,  $180^\circ + x$ ,  $270^\circ - x$ ,  $270^\circ + x$ , and  $360^\circ - x$ .
4. Develop the equivalent of  $\sin(x+y)$ , when  $x > 90^\circ$ ,  $y < 90^\circ$  and  $x+y < 180^\circ$ .
5. Develop the equivalent of  $\tan(x+y)$ , in terms of  $\tan x$  and  $\tan y$ .
6. Express  $\sin x$ , in terms of each of the functions,  $\cos x$ ,  $\tan x$ ,  $\cot x$ ,  $\sec x$  and  $\operatorname{cosec} x$ .
7. Give the several cases in the solution of oblique angled plane triangles, and generalize the formulæ necessary, when two sides and the included angle are known.
8. Generalize a formula, adapted to the use of logarithms, expressing an explicit relation between any trigonometrical function of an angle and the three sides of an oblique angled triangle.
9. In a right angled plane triangle, given the base 150 ft., and the perpendicular 123 ft., calculate the remaining elements.
10. In an oblique angled plane triangle, given  $a=65$ ,  $b=80$ , and  $A=40^\circ - 35'$ , determine the other elements.
11. Name the different cases in the solution of right angled spherical triangles, and write out the formulæ necessary, when  $B$  and  $c$  are known.
12. Name the several cases in the solution of oblique angled spherical triangles, and give the formulæ necessary, when  $A$ ,  $c$  and  $B$  are known.
13. Develop a formula for the direct solution of an oblique angled spherical triangle, when the three angles are known.
14. What is the time of day at Akron, in latitude  $40^\circ 7' 40''$  N., when the sun's declination is  $18^\circ 32'$  N., and its altitude, in the forenoon,  $40^\circ 25'$ ? Project.
15. Find the shortest distance on the surface of the earth,

in miles, from Akron, situated in latitude  $41^{\circ} 7' 40''$  N., longitude  $81^{\circ} 20'$  W., to San Francisco, situated in latitude  $37^{\circ} 48' 30''$  N., longitude  $122^{\circ} 27' 23''$  W., the earth's radius being 3957.5 miles. Project.

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TACITUS, AGRICOLA AND GERMANIA.

1. *Integritatem atque abstinenciam in tanto viro referre, injuria virtutum fuerit.*
2. Jam Britannorum etiam deos misereri, qui Romanum ducem absentem, qui relegatum in alia insula exercitum detinerent: jam ipsos, *quod* difficillimum fuerit deliberare.
3. Ibi, acceptis obsidibus, præfecto classis *circumvehi* Britanniam præcipit.
4. Sciant, quibus *moris* est illicita mirari, *posse* etiam sub malis principibus *magnos* viros esse.
5. Si *prohibuerunt*, nulla de eadem re in eundem diem consultatio; sin permissum, auspiciorum adhuc fides exigitur.

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Parse the words in italics and account for the mood of each verb parsed.

1. What comparison does Tacitus make of the form and of the extent of Great Britain?
2. About what time was the campaign of Agricola made, and how many years did it occupy?
3. What Roman commanders had preceded him, and what portion of the island had they conquered?
4. What does he give as the ethnological affinities of the Silures and of the Caledonians, and upon what grounds does he base this judgment?
5. Where was fought the last battle of the campaign and with what Caledonian commander?
6. What Greek heroes does Tacitus mention as known to the Germans, and upon what evidence?
7. What practice of theirs does he mention which may be the original of duelling?
8. What was the order of succession among them to the inheritance of property?

## ZOOLOGY.

### STRUCTURAL.

1. What are the principal differences between plants and animals?
2. Describe connective tissue; structure of a nerve.
3. Show how the structure and form of the teeth may aid in classification. Write the formula for dentition of man.
4. How does the alimentary canal differ in the different groups? In what respect do birds resemble reptiles?
5. Describe the blood. What vertebrate animal has colorless blood?
6. How does the heart differ in different groups?
7. Locate the lumbar and sacral vertebræ.
8. What sensory nerves are connected with the cerebrum directly? What are ganglia?
9. Describe the metamorphosis of the frog-larva.
10. When are organs homologous?
11. State briefly the doctrine of the evolution of living forms.
12. What is meant by Natural Selection?

### SYSTEMATIC.

1. Upon what is a natural classification based? Show the varying relations between sub-kingdoms, classes, orders, &c.
2. Difference between species and variety. Describe the nature of the sub-kingdom *Protozoa*.
3. Describe fully the *Hydra*.
4. Explain the growth of the two kinds of coral.
5. Give classes of *Articulata* with an example under each class.
6. Describe Hymenoptera.
7. Mention the peculiar characteristics of venomous snakes. How does the heart of a crocodile differ from that of other Reptiles?
8. Describe the parts of a feather. What order of *Aves* have two toes turned backward?
9. What Mammal does not possess teeth? Describe ruminants.
10. Carry the classification of the following animals as far as possible: Sow-bug; Leech; Ant; Humming-bird.

# GERMAN.

## MARIA STUART.

### 1. Translate: Schillers Maria Stuart, Act I, Scene II.

- M a r i a.** Ihr geht, Sir? Ihr verlaßt mich abermals,  
Und ohne mein geängstigt fürchtend Herz  
Der Qual der Ungewißheit zu entladen.  
Ich bin, Dank eurer Späher Wachsamkeit,  
Von aller Welt geschieden, keine Kunde  
Gelangt zu mir durch diese Kerkermauern,  
Mein Schicksal liegt in meiner Feinde Hand.  
Ein peinlich langer Monat ist vorüber,  
Seitdem die vierzig Commissarien  
In diesem Schloß mich überfallen, Schranken  
Errichtet, schnell mit unanständiger Eile,  
Mich unbereitet, ohne Anwalts Hilfe,  
Vor ein noch nie erhört Gericht gestellt,  
Auf schlaugefasste schwere Klagepunkte  
Mich, die Betäubte, Ueberraschte, flugs  
Aus dem Gedächtniß Rede stehen lassen—  
Wie Geister kamen sie und schwanden wieder.  
Seit diesem Tage schweigt mir jeder Mund,  
Ich such' umsonst in eurem Blick zu lesen,  
Ob meine Unschuld, meiner Freunde Eifer,  
Ob meiner Feinde böser Rath gesiegt.  
Brecht endlich euer Schweigen—Laßt mich wissen,  
Was ich zu fürchten, was zu hoffen habe.
- P a u l e t.** (nach einer Pause.) Schließt eure Rechnung mit dem Himmel ab.
- M a r i a.** Ich hoff' auf seine Gnade, Sir—und hoffe  
Auf strenges Recht von meinen ird'schen Richtern.
- P a u l e t.** Recht soll euch werden. Zweifelt nicht daran.
- M a r i a.** Ist mein Prozeß entschieden, Sir?
- P a u l e t.** Ich weiß nicht.
- M a r i a.** Bin ich verurtheilt?
- P a u l e t.** Ich weiß nichts, Madam.
- M a r i a.** Man liebt hier rasch zu Werk zu gehn. Soll mich  
Der Mörder überfallen, wie die Richter?
- P a u l e t.** Denkt immerhin, es sei so, und er wird euch  
In besserer Fassung dann, als diese, finden.
- M a r i a.** Nichts soll mich in Erstaunen setzen, Sir,  
Was ein Gerichtshoff in Westminsterhall,  
Den Burleighs Haß und Hattons Eifer lenkt,  
Zu urtheeln sich erdreiste—weiß ich doch,  
Was Englands Königin wagen darf zu thun.
- P a u l e t.** Englands Beherrscher brauchen nichts zu scheuen,  
Als ihr Gewissen und ihr Parlament.  
Was die Gerechtigkeit gesprochen, furchtlos,  
Vor aller Welt wird es die Macht vollziehn.

2. (a) Give tense and principal parts of the following verbs: geht, verlaßt, geschieden, liegt, überfallen, stehen, kamen, schwanden, lesen, brecht, wissen, schließt, weiß, finden, darf, thun, gesprochen, vollziehn. (b) Give case and state how governed: Qual, Ungewißheit, Späher, Wachsamkeit, Feinde, Hand.

3. (a) Recht soll euch werden. Subject? What case is euch and how is it governed? (b) Ob meiner Feinde böser Rath gesiegt. What tense and consequently what word is understood? (c) Vor aller Welt wird es die Macht vollziehn. Is es Subject or die Macht? If es is Subject to what does it refer? Which is the object in this case? If die Macht is Subject, to what does the object es refer? Give translation both ways. Which explanation is to be preferred and why?

4. (a) Analyze: (Act I, Scene I.) „Die Unglückselige, . . . eine Königin“! so as to show the connection of clauses. (b) *Auffstehen würde Englands ganze Jugend, säße der Dritte seine Königin!* (Act I, Scene VI.) Account for the mood and tense of *säße*? What effect would the conjunction, if supplied, have upon the construction of the sentence?

5. (a) State the nature and particular character of inseparable and separable verbs. (b) Their accent. (c) Name eleven inseparable prefixes. (d) Give three inseparable verbs which admit the prefix *ge* in the Participle past and state why? (e) In which tenses only and in what sentences is the prefix detached from separable verbs? (f) State the nature, meaning and accent of verbs compounded with *durch*, *über*, *unter*, *um*. Take as an example the verb: *durchreißen* and *durchreißen*. (g) Name three verbs which by change of vowel become transitive from intransitive verbs.

6. Translate into German: [Not previously translated by Class] Johann Christoph Friedrich von Schiller, one of the greatest poets of the Germans, was born on the 10th of November 1759 at Marbach, a small town in Würtemberg. His father was a captain in the army. In his early youth already Schiller manifested a fiery and lively imagination and in his thirteenth year he wrote a drama: „Die Christen“.

7. In 1773 the duke Carl of Würtemberg bade him to enter the Military Academy at Stuttgart, not altogether in conformity with the wishes of his parents. In 1777 Schiller who was then in his eighteenth year, wrote „Die Räuber“, a work which was played at the theatre at Mannheim for the first time in 1782 and again shortly afterwards. As he was absent from his post both times, in order to attend (betwohnen with dat.) these representations, he was put under arrest for fourteen days. (erhielt einen 14tägigen Arrest.)

8. Dissatisfied with his situation in Stuttgart, he secretly left the city in 1782, went first to Mannheim, then to Bauerbach, returned to Mannheim in 1783 as theatrical poet (Theaterdichter) lived in Leipzig 1785 and later in Dresden where he finished his tragedy: „Don Carlos“! In the year 1788 he met Goethe for the first time and these two great men soon became true friends.

9. In 1789 Schiller received a professorship in the philosophical faculty at Jena where he devoted himself with the greatest enthusiasm to the study of history and archaeology. In 1790 he married Charlotte von Langefeld. Schiller's fame spread rapidly in Germany and other countries; the French republic conferred (ertheilen) [upon] him (dat.) citizenship.

10. Recovered (genesen) from a severe sickness which brought him near the grave, he now entered upon the third, the most brilliant period of his activity which gave to the world his choicest productions, among these: *Wallenstein* (finished in 1799). *Maria Stuart* (1800). *Jungfrau von Orléans* (1801). In 1804 appeared his last great work: „*Wilhelm Tell*“. His death which occurred (erfolgen) on the 9th of May 1805, caused a deep and general sorrow. The world had lost one of its greatest poets.

## FRENCH.

### CORINNE.

Translate: *Corinne*, Book V. Chapter I. (Not previously translated by Class.)

1. *Le lendemain, Oswald et Corinne furent embarrassés l'un et l'autre en se revoyant. Corinne n'avait plus de confiance dans l'a-*

mour qu'elle inspirait. Oswald était mécontent de lui-même ; il se connaissait dans le caractère un genre de faiblesse qui l'irritait quelquefois contre ses propres sentiments, comme contre une tyrannie ; et tous les deux cherchèrent à ne pas se parler de leur affection mutuelle.

2. Je vous propose aujourd'hui, dit Corinne, une course assez solennelle, mais qui sûrement vous intéressera : allons voir le dernier asile de ceux qui vécurent parmi les monuments dont nous avons contemplé les ruines.—Oui, répondit Oswald, vous avez deviné ce qui convient à la disposition actuelle de mon âme ; et il prononça ces mots avec un accent si douloureux, que Corinne se tut quelques moments, n'osant pas essayer de lui parler.

3. Mais reprenant courage, par le désir de soulager Oswald de ses peines en l'intéressant vivement à tout ce qu'ils voyaient ensemble, elle lui dit :—Vous le savez, milord, loin que chez les anciens l'aspect des tombeaux décourageât les vivants, on croyait inspirer une émulation nouvelle en plaçant ces tombeaux sur les routes publiques, afin que, retraçant aux jeunes gens le souvenir des hommes illustres, ils invitassent silencieusement à les imiter.

4. Ah ! que j'envis, dit Oswald en soupirant, tous ceux dont les regrets ne sont pas mêlés à des remords !—Vous, des remords, s'écria Corinne, vous ! Ah ! je suis certaine qu'ils ne sont en vous qu'une vertu de plus, un scrupule du cœur, une délicatesse exaltée. Corinne, Corinne, n'approchez pas de ce sujet, interrompit Oswald : dans votre heureuse contrée, les sombres pensées disparaissent à la clarté des cieux ; mais la douleur qui a creusé jusqu'au fond de notre âme ébranle à jamais toute notre existence.

5. Vous me jugez mal, répondit Corinne ; je vous l'ai déjà dit, bien que mon caractère soit fait pour jouir vivement du bonheur, je souffrirais plus que vous, si... Elle n'acheva pas, et changea de discours. Mon seul désir, milord, continua-t-elle, c'est de vous distraire un moment ; je n'espère rien de plus.—La douceur de cette réponse toucha lord Nelvil ; et, voyant une expression de mélancolie dans les regards de Corinne, naturellement si pleins d'intérêt et de flamme, il se reprocha d'attrister une personne née pour les impressions vives et douces, et s'efforça de l'y ramener. Mais l'inquiétude qu'éprouvait Corinne sur les projets d'Oswald, sur la possibilité de son départ, troublait entièrement sa sérénité accoutumée.

6. Give tense and principal parts of: furent embarrassés, revoyant, cherchèrent, intéressera, allons, voir, vécurent, convient, se tut, reprenant, savez, croyait, invitassent, disparaissent, soit fait, souffrirais, acheva, née.

7. (a) plus *de* confiance Why *de*? (b) dont nous avons contemplé les ruines. Why are the words "les ruines" not placed immediately after *dont*? (c) changea. How do you account for the vowel *e* after *g*? (d) qu'ils. To which previous word does *ils* refer?

8. Give principal parts, conjugate Present Ind. and Present Subj., state also first person Sing. of Preterite and Future of the following irregular verbs: dire, vouloir, valoir, boire, faire, mettre, prendre, vivre, mourir, venir, savoir, voir, aller, suivre, craindre, croire.

9. (a) Under what circumstances does the Past Participle undergo a change? (b) What rule when several sentences begin with the same conjunction? (c) State the use and translation of: venir *de*.

10. (a) After which verbs is the second negation omitted? (b) Where is *ne* used in French, but not translated in English?

## BOTANY.

1. Describe and name specimen marked A.
2. Describe and name specimen marked B.
3. Mention some differences between exogenous and endogenous plants. What tissue occurs in the pith of plants?
4. Describe the stem of Solomon's seal. What part of the plant is an Irish potato?
5. Distinguish between a corm and a bulb.
6. Describe stomate. What are bracts? Stipules?
7. What is meant by inflorescence? Involucre?
8. By what would the order Cruciferae be distinguished? Describe a ligulate corolla.
9. Draw and define an orthotropous and an anatropous ovule. Distinguish between a follicle and a legume.
10. Point out the botanical difference between a strawberry and a raspberry.

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## RHETORIC.

1. Give the province of rhetoric, as defined by Whately.
2. What is the first requisite of style in all compositions, and to what dangers is it subjected?
3. In the construction of sentences, what is to be aimed at?
4. Give an illustration of Synecdoche, Personified Metaphor, Simile, Vision, Antithesis, and Climax.
5. Explain how energy is promoted by conciseness.
6. Mention the striking peculiarities of the suggestive style.
7. State the advantages which the ancient languages had in point of arrangement of words.
8. What is the analogy between poetry and prose, speaking and thinking?
9. Explain how excellence in matter and in delivery, is to be gained in opposite ways.
10. Experience has given what method as best for composing, writing, and criticising essays?

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## CHEMISTRY.

### ELEMENTARY CHEMISTRY OF METALS.

1. Give a definition of a metal. Upon what principle are metals grouped?
2. What is the lightest metal; the heaviest? What is the equivalence of the alkalis; of the alkaline earths?

3. Describe the peculiarity of the *ous* and *ic* compounds of the iron group.
4. What is Nitre? State its properties and uses. How is Potassic Hydrate produced from the carbonate (formula)?
5. Show the action of Soda and Cream Tartar in raising bread (formula).
6. The antidote for the poison Baric Carbonate, is Epsom Salts; show, by formula, its action.
7. Describe the different forms of Calcic Carbonate.
8. How is Plaster of Paris formed? What is the action of lime on soils?
9. Give the blow-pipe test for Aluminum; the symbol for Alum.
10. How is Cadmium distinguished from Zinc? Distinguish between wrought iron and steel in chemical composition and physical properties.
11. How would you test an ore for Arsenic? Distinguish in Marsh's test between Arsenic and Antimony.
12. How is the presence of Lead in water detected?
13. Explain why it is that Aqua Regia dissolves Gold.
14. Give the symbol for White Vitriol; Corrosive Sublimate; Tartar Emetic; Glauber's Salt. Write the chemical names of the following:  $\text{Cu}_2\text{O}$ ;  $\text{Fe}_2\text{CO}_3$ ;  $\text{SbH}_3$ ;  $\text{SnO}_2$ .
15. What gas in the atmosphere attacks metallic Silver? Give the formula for its action. What will remove the compound?

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#### GENERAL GEOMETRY.

1. Name the principal divisions of the science of Geometry. Define General Geometry, and give the reasons for the several names under which it is known.
2. Produce the different equations of a straight line referred to rectangular axes, and discuss  $y = ax + b$ .
3. Find the angles of a triangle whose sides are  $2x + 4y + 7 = 0$ ,  $2x + y - 2 = 0$ ,  $2x - 2y + 1 = 0$ , and construct the triangle.
4. The eccentricity of a locus is  $\frac{4}{3}$ , and the distance from the directrix to the focus is  $2\frac{1}{2}$ ; determine its elements, and construct the locus. Define locus, eccentricity.

5. Develop either, and discuss both of the equations,

$$y^2 = \frac{B^2}{A^2} (2Ax - x^2) \text{ and } y^2 = -\frac{B^2}{A^2} (2Ax - x^2).$$

Define an ellipse.

6. Designate the features of an equation of the second degree between two variables, which characterize the several species of conic sections, and discuss the varieties of the parabola. Define a parabola.

7. Develop and discuss the polar equation of the hyperbola. Define an hyperbola, and describe the systems of coordinates in common use.

8. Develop and discuss the equation of the conchoid of Nicomedes, construct the locus, and show its application to the trisection of any angle.

9. Produce and discuss the equation of the cycloid. Name and describe the varieties of the cycloid, and define a trochoid.

10. Find the position of oblique axes, to which, when  $y^2 = 2px$  is referred, the equation will retain the same form. What is meant by transformation of coordinates?

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### PHYSICS.

1. Explain the two theories of heat. What is the origin of the term Caloric?
2. How are thermometers filled? What are tests of a good thermometer?
3. What thermometers are used for low temperatures; for very high temperatures? Convert  $-41^\circ$  F. to C. degrees.
4. Explain what is meant by coefficient of expansion. Deduce the formula  $l' = l(1 + at)$ .
5. Define the term "specific heat."
6. Describe Bunsen's Ice Calorimeter.
7. Explain the relation between the specific heat and atomic weight of bodies.
8. What is meant by the absolute zero of temperature?
9. What is the law of the relation of mechanical energy to heat? Give Joule's experiment.
10. Describe the emission theory of light.
11. Show (with figure) why images as seen in water are inverted.

12. Prove that the reflection of a ray in a rotating mirror moves through twice the angle of the mirror.

13. Deduce the formula  $\frac{1}{P'} + \frac{1}{P} = \frac{2}{R}$ .

14. In concave mirrors define position of principal, conjugate, and virtual foci, as related to the mirror.

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### HISTORY OF CULTURE.

1. The Savage, or Stone Age, is supposed to have lasted how long? Speak of some of its striking peculiarities. What were then the leading occupations of the people? Had they then any forms of government? How was woman regarded? Do you think that savagism was the original state of man? If so, how will you account for his civilization? Can you give any historical facts showing that man has ever advanced from such a state to one of enlightenment? Describe the language, arts, and religion of the Stone Age.

2. What was the Bronze Age, and its probable duration? Speak of its social features, modes of worship, and morality. Describe some of the public monuments of this period, as found in South America, Egypt, and Assyria. Who were the Aztecs, where did they live, and what did they accomplish? Which was the first country to reach a high state of culture? Who were the Aryans, and where did they dwell? The Brahmans were divided into what two classes? Wherein is Buddhism superior to Brahmanism? In what did the Phoenicians excel? By whom was Carthage settled? How as to learning before the Christian Era? Where did the Pelasgian civilization flourish? What did it produce? How did the culture of the Romans compare with that of the Greeks?

3. In the Middle Era, name four ecclesiastical councils held in Asia Minor, stating their object, and showing their influence upon the progress of civilization. Where did Islamism take its rise, and by what has it been supported? Describe the commercial power of Venice in its palmiest days.

4. Specify some of the important events in the Press Age. Who were the Reformers, and what were the reformations of this period? Speak of the progress made in literature and science during this age.

5. The Steam Age has lasted already how long? How do its inventions and advancements in the arts and sciences compare with those of any previous era? In what does the superiority of our present culture consist?

LOGIC

1. Define logic as an art; as a science. Distinguish between *form* of thought and *matter* of thought.
2. Name and define the three acts of the mind considered in logic.
3. Distinguish between general and collective terms, illustrating with examples.
4. Write the negative and opposite of *greater*; of *agreeable*.
5. Distinguish between the use of a term in *extension* and *intension*, and state the law which connects the quantity of each.
6. Classify propositions according to quality and quantity; also, state the distribution of all the terms.
7. Of the propositions A, E, I, O, state which are true or false, when E is true.
8. Why is it desirable, in controversy, to refute a statement by its contradictory and not by its contrary?  
Convert by contra-position, "No men are fallible."
9. Give the rules for correct logical division.  
" " primary laws of thought.
10. Every rational agent is accountable.  
Brutes are not rational agents.  
" " " accountable.  
Test truth of this by dictum of Aristotle.
11. All Z's are Y's. No Y's are X's. ∴ No Z's are X's.  
Arrange and give mood.  
Reduce *Cesare* to first figure; also *Baroko*, using indirect method.
12. State from which of the following a valid conclusion can be drawn:  
If A is B, C is D; A is B; ∴ \_\_\_\_\_  
" " A is not B; ∴ \_\_\_\_\_  
" " C is D; ∴ \_\_\_\_\_  
Either A is B, or C is D; A is B; ∴ \_\_\_\_\_  
" " C is not D; ∴ \_\_\_\_\_

13. Name the semi-logical fallacies. Explain the fallacy, *petitio principii*.

15. Explain the exact meaning of *a priori*; *a posteriori*. Distinguish carefully between induction and deduction.

15. What is meant by quantification of the predicate? Write *Darapti*, using Hamilton's symbols.

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#### POLITICAL ECONOMY.

1. What three things are required to produce wealth?
2. By what means is value fixed?
3. Why only six cases of value possible, and what are they?
4. What is exchange, and on what does it depend?
5. The demand for labor is how constituted?
6. What is the law of wages, and how modified?
7. Explain how capital arises, and how it is divided?
8. When land is disposed of, what is it that is sold?
9. Cost of production is made up of what two elements?
10. Cost of labor is made up of what three elements?
11. Why are gold and silver the best materials for money?
12. A National Bank is how established?
13. What is credit, and its tendency?
14. Make the distinction between revenue and protective tariff.
15. Who pays the direct taxes, and who the indirect?
16. Do you believe in free trade or not, and why?
17. How is our paper money to be redeemed?
18. Under what circumstances is a nation justified in contracting a large debt?
19. Give the three best reasons you can, why division of labor increases its efficiency.
20. Assign three causes for a commercial crisis.

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#### INTELLECTUAL PHILOSOPHY.

1. How do we know we have a being?
2. Reasons for regarding consciousness a distinct faculty?
3. Give analysis of the mental process in attention.
4. What is the difference between sensation and perception?
5. Why is memory a distinct faculty?

6. How do you regard the theory that the full perception of an object is instantaneous, and why?
7. Mention the distinguishing powers of the human intellect, giving their special office.
8. By illustration, show the difference between instinct and intuition.
9. What is the dividing line between instinct and intellect?
10. Will sustains what relation to the other faculties?
11. Show why imagination should be considered an ultimate faculty, and mention its special office.
12. Describe the School of Plato and name its leading supporters down to the present time in their order, noting some of their peculiar views.
13. Treat the School of Aristotle in the same manner.
14. The tendency is now to which School, and who are the representatives in England, and in America?
15. How will you account for dreaming?
16. State the causes which act upon, and move our power of association.
17. Name five metaphysical axioms.
18. Specify five moral axioms.
19. Can the mind think of more than one thing at a time? Explain many of the phenomena in which it seems to do several things at the same time.
20. Present the strongest reasons possible to prove the immortality of the soul.

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#### CALCULUS.

1. Name and define the general divisions of the Calculus. Give its origin, and trace the order of its development.
2. Explain the method of determining the direction of convexity or concavity with respect to the axis of abscissas.
3. How is the order of contact of any two loci found, and what is the highest order of contact possible? Define a parameter, an osculatory circle.
4. Define an envelope. Explain the method of finding

envelopes to plane curves, and produce the equation of the caustic, when the incident rays are parallel to the axis of a parabolic reflector.

5. Give the tests for maxima and minima ordinates, points of inflection, multiple points, conjugate points, shooting points, and ceratoid and ramphoid cusps.

6. Write out the general formulæ for the rectification of plane and polar curves, the quadrature of plane curves, the quadrature of surfaces of revolution, and the cubature of volumes of revolution.

7. Find the volume of the prolate spheroid, the oblate spheroid and the sphere.

8. What are the tests for asymptotes? Give the general intercepts. Which of the conic sections has asymptotes? Why? Which have not? Why?

9. Examine for singular points, and trace the locus whose equation is  $r = a(2 \cos \theta + 1)$ .

10. Determine the singular points, and trace the locus whose equation is  $(x-a)(x-b)y^2 - a^2x^2 = 0$ .

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#### MATHEMATICAL ASTRONOMY.

1. Explain the general method of determining the parallax of the moon. How is the horizontal parallax found?

2. Explain the causes of heat in summer, and cold in winter. State the law governing each cause.

3. Give the different proofs of the earth's diurnal rotation.

4. What is the theory, generally accepted, concerning the nature of the sun and sun-spots? How is the position of the spots in relation to the surface of the sun, determined?

5. What is the form of the moon's shadow? Find its angle, length, and greatest breadth of section on the earth.

6. Describe the different lunar perturbations, and explain the inequalities, evection and variation.

7. How is the parallax of the sun determined by a transit of Venus? Demonstrate.

8. Name the several elements of a planetary orbit, and

explain the method of finding the third,—the longitude of the node.

9. What is the greatest, and least meridian altitude of the moon, in latitude  $41^{\circ} 8' N.$ ? At what seasons of the year will the crescent moon, when setting soon after the sun, have the line joining her cusps most, and least inclined to the horizon, and what is the maximum and minimum angle?

10. A person starts at sunrise to travel around the earth along its equator, from east to west; the sun crosses his meridian  $n$  times, and he reaches the point of starting at sunset; required his rate of travel, the radius of the earth being  $R$ .

#### MORAL SCIENCE.

1. What is the faculty by which all men discern moral qualities? In moral judgments, to what extent are these qualities acquired?

2. What were the views of Locke, and Berkley, respecting moral duty?

3. Show the relation of conscience to the understanding.

4. Point out the error in Paley's theory of morals, and state what is the true theory of moral obligation.

6. What are intuitive principles, and how are they liable to vary?

7. To what extent are we responsible for our opinions?

8. What constitutes moral agency? Show that man is a moral agent.

9. Explain, whether man's self-directing power resides in internal principles, or depends upon outward circumstances.

10. By example, indicate how morality pertains to principles as well as to acts.

11. In what respect is one accountable for his disposition and his habits?

12. Point out the difference between moral good and natural good.

13. Nature of virtue, as presented by Hobbes, Mandeville, Epicurus, Cumberland, Edwards, Hopkins, and Adam Smith?

14. Define a virtuous action; also a sinful action.
15. Explain motives, and give the office of will in acts of choice.
16. Present the leading arguments of moral science in favor of a Divine Being.
17. Why is not the visibility of God necessary to satisfy one that He is?
18. Specify some of our special duties to God.
19. By illustration, make it evident that the moral affections are higher than the intellect.
20. Reasons for giving supreme love to God, and impartial love to man?