

THE
CORNELL UNIVERSITY
REGISTER

1889-90

[THIRD EDITION]



THE
CORNELL UNIVERSITY
REGISTER

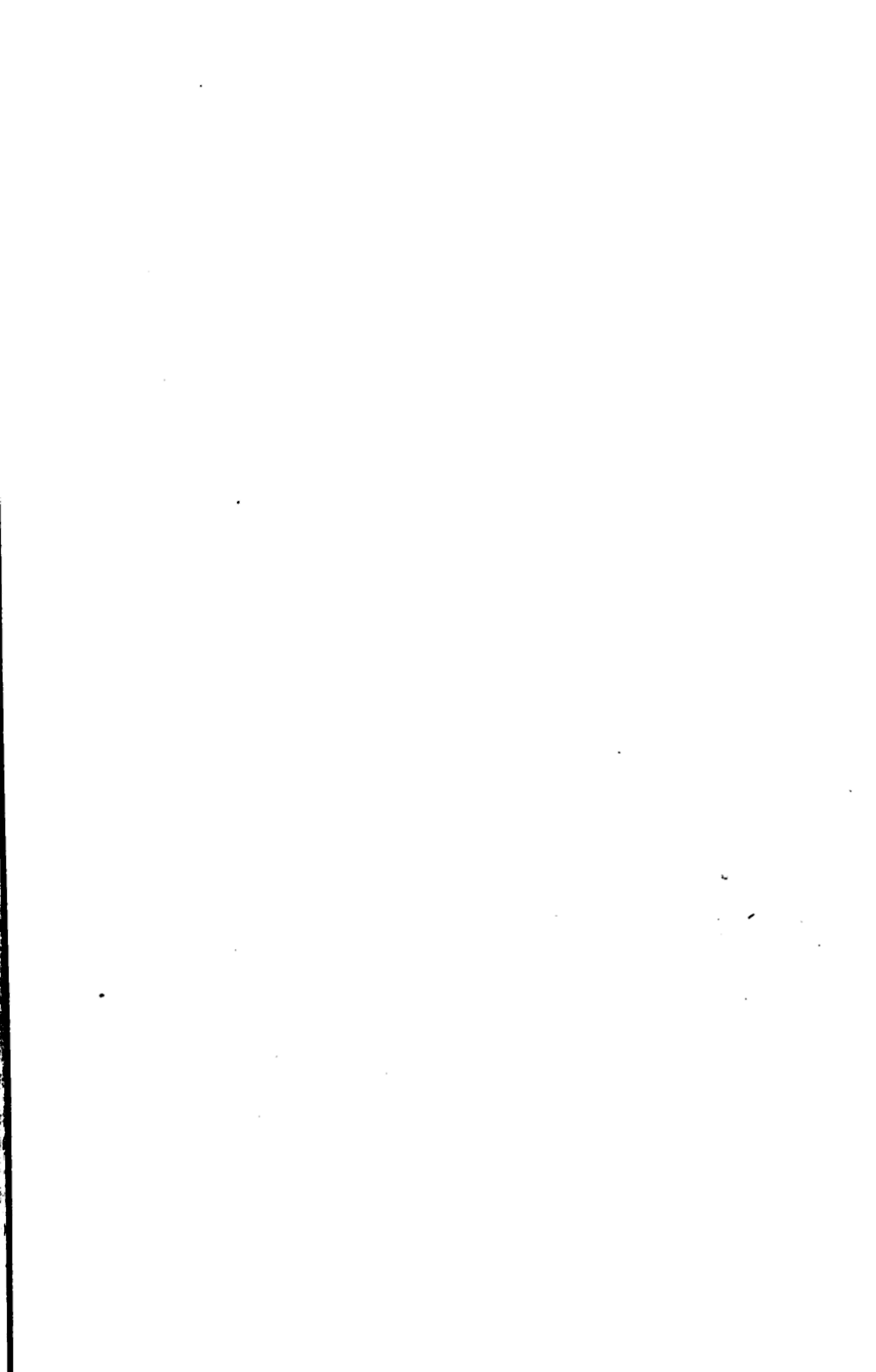
1889-90

THIRD EDITION

“ I would found an institution where any person can find instruction in any study ”

EZRA CORNELL

ITHACA, N. Y.
PUBLISHED BY THE UNIVERSITY
PRESS OF ANDRUS & CHURCH



PREFATORY NOTE.

The most important differences between the announcements in the Register for the present collegiate year, and those in the Register for the year 1888-9, are the following :

1. The fees for tuition have been increased as noted on page 152.
2. Three additional University Scholarships have been founded, yielding to the holders two hundred dollars a year for four years. See page 173.
3. For admission to all courses in the University, American History is hereafter to be required. For admission to the courses in Arts and Philosophy, Sallust is an added requirement. For the courses in Science, Letters, Agriculture, and Chemistry, preliminary studies in Natural Science, and History and Political Science are withdrawn from the list of those from which the applicant may make a selection.

Attention is called to the fact that after the Register had for the most part, been printed, some important modifications in the rules governing the competition for University scholarships were adopted by the Trustees. These modifications (to go into effect in the Fall of 1891) are in substance as follows :

1. No person more than twenty-one years of age will be allowed to enter the competition.
2. No person holding a scholarship will be allowed, except under special conditions, to change his course, without forfeiting his scholarship.
3. Holders of scholarships must be candidates for the first degree, and will not be recommended for such degree, except after a residence of four years at the University.
4. No person will be allowed to compete for a scholarship, who in any previous year shall have been registered in this University, or in any other institution of similar standing.

Attention is also called to the fact that no examination papers are this year published in the Register. Such papers are now issued in a separate pamphlet, and will be sent on special application to the Registrar of the University.

C. K. A.

November 16, 1889.

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THE UNIVERSITY CALENDAR.

1889-90.

FALL TERM—1889.

September 19	Thursday	Entrance Examinations begin.
September 23	Monday	{ REGISTRATION of Students in the School of Law.
September 24	Tuesday	
September 25	Wednesday	{ REGISTRATION of matriculated Stu- dents.
September 26	Thursday	
November 28	Thursday	Matriculation of new Students.
		Instruction begins.
		Thanksgiving.
December 2	Monday	{ Subjects of Theses for advanced de- grees announced.
December 16	Monday	
December 23	Monday	Term Examinations begin.
		Term ends.

WINTER TERM—1890.

January 3	Friday	REGISTRATION for the Term.
January 4	Saturday	Instruction begins.
January 10	Friday	{ Subjects of Theses for baccalaureate degrees announced.
January 11	Saturday	
February 22	Saturday	FOUNDER'S DAY.
March 14	Friday	Washington's Birthday.
March 21	Friday	Term Examinations begin.
		Term ends.

SPRING TERM—1890.

April 1	Tuesday	REGISTRATION for the Term.
April 2	Wednesday	Instruction begins.
April 7	Monday	Woodford Orations due.
May 8	Thursday	Theses for advanced degrees due.
May 12	Monday	Commencement Theses due.

THE CALENDAR.

May	15	Thursday	Fellowship Applications due.
May	23	Friday	{ Eighty-Six Memorial Prize Competition.
May	30	Friday	
			Decoration Day.
June	2	Monday	{ Applications due for Teachers' Certificates, for Special Mention, for degrees in History and Political Science and in Natural History, and for Medical Preparatory Certificates.
June	6	Friday	Term Examinations begin.
June	13	Friday	{ Term Examinations end.
June	15	Sunday	
June	17	Tuesday	Entrance Examinations begin.
			Baccalaureate Sermon.
			Class Day.
June	18	Wednesday	{ Alumni Day.
			Annual Meeting of the Trustees.
			Woodford Prize Competition.
June	19	Thursday	{ Twenty-second Annual Commencement.

SUMMER COURSE.

June	23	Monday	{ Summer course in Entomology and Invertebrate Zoology begins.
August	29	Friday	
			Summer course ends.

FALL TERM—1890.

September	24	Wednesday	Entrance Examinations begin.
September	29	Monday	{ REGISTRATION of new students in the School of Law.
September	30	Tuesday	{ REGISTRATION of matriculated students. Mathematical Scholarship Examinations begin.
October	1	Wednesday	{ MATRICULATION of new students, (except Students in the School of Law.)

October	2	Thursday	Instruction begins.
October	3	Friday	{ Classical Scholarship Examinations begin.
December	1	Monday	{ Subjects of Theses for advanced de- grees announced.
December	16	Tuesday	Term Examinations begin.
December	23	Tuesday	Term ends.

DIRECTORY.

The office of the *President* is No. 2 Morrill Hall.

The office of the *Dean of the Faculty* is No. 2 Morrill Hall.

The office of the *Registrar and Secretary* is No. 9 Morrill Hall.

The office of the *Treasurer* is No. 1 Morrill Hall.

The office of the *Director of Sibley College* is on the second floor of Sibley College, east entrance.

The office of the *Dean of the College of Civil Engineering* is in Lincoln Hall, first floor, south entrance.

The offices of the *Military Commandant* and of the *Professor of Physical Culture* are in the Armory.

The office of the *Secretary of the School of Law* is 24 Morrill Hall.

ORGANIZATION AND GOVERNMENT.

THE UNIVERSITY AND THE STATE.

The existence of Cornell University is due to the bounty of the United States and Ezra Cornell. On the second day of July, 1862, Congress passed an act granting public lands to the several States which should "provide at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts." Thirty thousand acres for each of its senators and representatives in Congress were appropriated to every State; and the share of the State of New York was nine hundred and ninety thousand acres.

On the twenty-seventh of April, 1865, the Legislature of New York incorporated "The Cornell University," appropriating to it the income arising from the sale of this land scrip. The most important conditions were, that Ezra Cornell should give to the University five hundred thousand dollars, that the University should give instruction in branches relating to agriculture, mechanic arts, and military tactics; and that it should receive, without charge for tuition, one student annually from each assembly district. Mr. Cornell fulfilled the first requirements of the charter, and made an additional gift of more than two hundred acres of land, with buildings to be used for the general purposes of the University, and for the department of agriculture.

The Act of Incorporation satisfies the condition of the congressional grant by providing for instruction in such branches of learning as are related to agriculture and the mechanic arts, and in military tactics, "in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." And it further declares that "such other branches of science and knowledge may be embraced in the plan of instruction and investigation pertaining to the University, as the trustees may deem useful and proper."

By Act of the Legislature, passed April 10, 1866, the State authorized the Comptroller to sell the scrip remaining unsold to the Trustees

of Cornell University at a price of not less than thirty cents per acre ; and in case the Trustees should not agree to make the purchase, the Legislature further authorized the sale "to any person or persons" on the terms above named, provided that proper security should be given that "the whole net avails and profits from the sale of scrip" should be paid over and devoted to the purposes of Cornell University. The Trustees were not in condition to make the purchase. After some delay Mr. Cornell offered to take the scrip on certain conditions, the most important of which was embodied in a letter to the Comptroller containing the following words :

"I shall most cheerfully accept your views so far as to consent to place the entire profits to be derived from the sale of the lands to be located with the college land scrip in the treasury of the State, if the State will receive the money as a separate fund from that which may be derived from the sale of the scrip, and will keep it permanently invested, and appropriate the proceeds from the income thereof annually to the Cornell University, subject to the direction of the trustees thereof for the general purposes of said institution, and not to hold it subject to the restrictions which the Act of Congress places upon the funds derived from the sale of college land scrip, or as a donation from the Government of the United States, but as a donation from Ezra Cornell to the Cornell University."

The terms proposed by Mr. Cornell were accepted, and the profits on the land located under this agreement constitute the larger part of the endowment from which the income of the University is derived.

The University, organized in accordance with the requirements of its charter, was opened on the seventh of October, 1868.

TRUSTEES.

The number of trustees, when the Board is full, is twenty-three. The eldest male lineal descendant of the Founder is, by the law of the State, a trustee. The President of the University, the Governor of the State of New York, the Lieutenant-Governor, the Speaker of the Assembly, the Superintendent of Public Instruction, the President of the State Agricultural Society, and the Librarian of the Cornell Library, are *ex officio* members of the Board. Of the remaining fifteen, two are elected annually by the trustees and one by the alumni. The term of every trustee not *ex officio* is five years.

FACULTY.

The Faculty consists of professors, acting professors, associate professors, and assistant professors, and is aided by non-resident professors

and lecturers, and by instructors, assistants, and examiners. It comprises the following special faculties : Arts ; Literature ; Philosophy ; Science ; Agriculture ; Architecture ; Chemistry and Physics ; Civil Engineering ; Mathematics ; Mechanical Engineering and the Mechanic Arts ; Natural History ; History and Political Science ; Law ; Pharmacy. The several special faculties constitute standing committees to which are referred questions relating to the departments under their control, but their action, except in the case of the Faculty of Law, is subject to the approval of the general faculty.

STATE STUDENTS.

The ninth paragraph of the original Act of Incorporation provides for the admission of one student annually from each assembly district without payment of tuition. The number thus received, when all the scholarships are filled, is five hundred and twelve. These State students are selected, by yearly competitive examinations held on the first Saturday in June, from pupils of the various academies and public schools of the State. It is the duty of the school commissioners of counties and of the boards of education of cities to hold and conduct such examinations, and on the basis of these examinations the scholarships are awarded by the State Superintendent of Public Instruction, in whom the administration of the law is exclusively vested. As the law requires the selection of "the best scholar," no distinction of sex is recognized in the competition.

OPTIONAL AND SPECIAL STUDENTS.

It is one of the leading objects in founding the University to provide for the wants of those who, though earnest and industrious students, cannot complete a full four-year course. The class distinctions which are in most cases strictly observed elsewhere, are not regarded by the Faculty of the University as any obstacle to recitation and attendance upon lectures with any class which the student is prepared to join. Students not candidates for a degree may therefore pursue an optional course provided their proficiency is equivalent to that required of students admitted to one of the general courses. Special students of approved character, maturity, and attainments, are admitted for a limited period without examination, on recommendation of some member of the Faculty under whom a large part of the work is to be taken.

GRADUATE STUDENTS.

For purposes of advanced study the University extends its privileges to its own graduates and to graduates of like standing from other colleges and universities, and it confers advanced degrees under conditions described elsewhere. Graduate students who are not candidates for a degree are also received.

SCHOLARSHIPS AND FELLOWSHIPS.

The Scholarships and Fellowships of Cornell University were founded, in the prosperity of the University, in grateful remembrance of financial aid, given at a time of need by its Trustees, the Hon. Ezra Cornell, John McGraw, Esq., the Hon. Henry W. Sage, the Hon. Hiram Sibley, and President Andrew D. White. In accordance with their wishes as then expressed, a sum of money (amounting to one hundred and fifty-five thousand dollars) has been permanently set aside to provide encouragement and assistance for students of high character and ability of either sex, in the prosecution of collegiate work, and of advanced study and research after graduation. Details concerning the number of these fellowships and scholarships, and the manner in which they are awarded, will be found under the appropriate head below.

PECUNIARY ASSISTANCE TO STUDENTS.

The most effective method of rendering assistance to that large class of gifted and ambitious young persons who lack the means for securing an education, without compromising their self-respect and independence, or injuring their health by over-exertion, has been for years one of the perplexing problems before educators everywhere. Letters come almost daily to the office of the University from young men and women who are willing to make any possible sacrifice, if only the way can be opened by which they can secure the education they so much crave. As a general thing the answers that can be given to such letters are not very encouraging. In offering annually free tuition to more than five hundred holders of State Scholarships, Cornell University is able to help a great many, and, by means of her thirty-six University scholarships she renders additional aid to many more. Experience has shown that with very few exceptions these scholarships are taken by students who actually are in need of the pecuniary assistance they afford. The good that is thus accomplished cannot be estimated. In behalf of those young men and women

whom a little assistance will enable to take positions of commanding influence in society, the University would call the attention of philanthropic people to the good which their means can in this way be made to accomplish. The Trustees hold themselves in readiness at all times to receive and carefully administer any endowment that may be offered for this purpose.

SELF-SUPPORT BY STUDENTS.

So numerous are the inquiries addressed to the University by applicants for admission who have received the impression that this institution undertakes to furnish to students without means employment by which they can support themselves wholly or in part, that it is but right to say that Cornell University cannot undertake to furnish employment to any student. Nor can any student be encouraged to come here who is entirely without resources. It is true that many students have aided themselves by their labor while pursuing their studies, and a considerable number are always doing so ; but the opportunities for such employment are not offered by the University, and every student must rely upon his own ability, industry, and perseverance. Skilled labor often secures fair remuneration ; but for unskilled labor, such as most students have to offer, the price here is the same as elsewhere.

HIGHER EDUCATION OF WOMEN.

By an act of the trustees, passed in April, 1872, women are admitted to the University on the same terms as men, except that they must be at least seventeen years old. A separate building, the Sage College, has been erected and furnished for their residence. The entrance examinations, and all the studies, except military science, are the same for women as for men. In view of the superior advantages afforded by the Sage College, it is expected that all women students of the University, so far as the capacity of Sage College permits, will live in that building.

In order to give Sage College more of the safeguards of a well-ordered home, and to bring its inmates directly under an influence akin to that of the family, the trustees, in the year 1884-5, established a Principalship, the intention being to have a woman of high character, attainments, and social position living at the college, associating with its students, ready to give suggestions as to their general culture, and counsel in special matters at any moment, and to act toward them at all times as a friend and adviser.

Special provision has also been made for physical training in the

Sage College Gymnasium. The professor, Edward Hitchcock, Jr., M.D., and his assistant in this department, have organized a system of exercises calculated to maintain and develop the physical strength of young women, and at the same time to prevent any of the evils which might arise from exercises that are too violent or too long continued.

The exercises thus provided for are obligatory upon all members of the freshman and sophomore classes in the college, subject to exceptions in particular cases by the Principal and by the Professor of Physical Culture.

Letters of inquiry in regard to rooms and board at Sage College should be addressed to Mr. E. P. Gilbert, Business Manager of Sage College, Ithaca, N. Y.

PHYSICAL TRAINING.

For the physical training and development of male students there has been provided a Gymnasium, thoroughly equipped with baths, dressing-rooms, and all the apparatus usually found in a well-furnished gymnasium. This is under the charge of an experienced physician, the Professor of Physical Culture and Director of the Gymnasium, who examines every male student at his entrance and at stated intervals thereafter, learns the condition of his health, takes his physical measurements, and prescribes such exercises as may be required for his complete and symmetrical bodily development. The gymnasium is also open to all the members of the University for voluntary exercise; but the Professor of Physical Culture or the Instructor in Gymnastics is in constant attendance, and no student is suffered to indulge in hazardous or excessive athletic efforts, or to attempt any feat which in his individual case might be attended with risk. The supplementary gymnasium at the Sage College for the women students is described above. In the physical training of the students the practical instruction in military science is found to be a valuable aid.

An Athletic Field of nearly ten acres has also recently been furnished for out-of-door sports. The field has been carefully graded and is well-furnished with modern appliances.

MILITARY SCIENCE.

Pursuant to the act of Congress creating the land grant on which the Cornell University is founded, and the act of the Legislature of the State of New York assigning that land grant, instruction is provided in Tactics and Military Science. Drill and Military Science are

part of the studies and exercises in all courses of study and in the requirements of all male students in the University during the fall and spring terms of the freshman and sophomore years and the winter term of the senior year. Aliens, laboring students, special students, and those physically unfitted therefor are excused from drill. Students in the Department of Law are exempted from this requirement, but are at entire liberty to take the exercises in Military Science if they desire to do so. Students are required to provide themselves with the University uniform, unless excused on account of inability to procure it, and they are held accountable for loss or injury to the arms and other public property issued to them.

RELIGIOUS SERVICES.

The University, established by a government which recognizes no distinction of religious belief, seeks neither to promote any creed nor to exclude any. By the terms of its charter, persons of any religious denomination or of no religious denomination are equally eligible to all offices and appointments; but it is expressly ordered that "at no time shall a majority of the Board of Trustees be of any one religious sect, or of no religious sect." This is understood to imply that, while the University cannot be identified with, or under the control of, any one religious denomination, it must, nevertheless, always be religious in spirit. In the University Chapel—the gift of the Hon. Henry W. Sage—religious services are held, and discourses, provided for by the Dean Sage Preachership Endowment, are delivered by eminent clergymen selected from the various Christian denominations.

CHRISTIAN ASSOCIATION.

The Christian Association is a voluntary organization of about five hundred students and professors for the promotion of their religious culture, and for Christian work in the University. It has a permanent Secretary, and a well equipped reading-room of religious and secular journals. A committee of this Association is in attendance at Association Hall during the first week of every fall term for the purpose of assisting those entering the University with information in regard to rooms, board, times and places of examinations, etc., and in general to afford any assistance in their power which students who are strangers in Ithaca may feel inclined to seek from them. A handsome and commodious building, the gift of the late Alfred S. Barnes, Esq., a former trustee of the University, has been erected for the Association, and came into use in the summer of 1889.

GENERAL STUDENT ORGANIZATIONS.

The Seabury Guild, the Presbyterian Union, the Methodist Alliance, the Catholic Union, the Baptist Circle, the several Engineering Associations, the Architectural Association, the History and Political Science Association, the Classical Association, the Natural History Society, the Camera Club, the Agricultural Association, the Chemical Association, the Medical Society, the Mock Congress, the Prohibition Club, and the Fortnightly Club are organizations of professors and students for mutual assistance and improvement in the several lines indicated in the names of the associations. These all hold regular meetings, and are assisted and directed in their work by members of the Faculty, whenever such assistance is practicable and desirable.

BOARD OF TRUSTEES.

The Hon. ALONZO B CORNELL,	New York City.
The PRESIDENT of the University,	<i>Ex officio.</i>
His Excellency the GOVERNOR of New York, . . .	"
His Honor the LIEUTENANT-GOVERNOR,	"
The SPEAKER of the Assembly,	"
The SUPERINTENDENT of Public Instruction,	"
The PRESIDENT of the State Agricultural Society, .	"
The LIBRARIAN of the Cornell Library,	"
The Hon. HENRY B. LORD, Ithaca.	} Term of office expires in 1890.
The Hon. ANDREW D. WHITE, LL.D., L.H.D., Ithaca.	
The Rev. GEORGE R. VAN DE WATER, D.D., New York.	
The Hon. AMASA J. PARKER, LL.D., . Albany.	} Term of office expires in 1891.
GEORGE R. WILLIAMS, LL.B., . . . Ithaca.	
MYNDERSE VAN CLEEF, B.S., Ithaca.	
The Hon. DOUGLAS BOARDMAN, A.M., Ithaca.	} Term of office expires in 1892.
The Hon. HENRY W. SAGE, Ithaca.	
DAVID S. JORDAN, LL.D., Bloomington, Ind.	
WILLIAM H. SAGE, A.B., Ithaca.	} Term of office expires in 1893.
DANIEL E. SALMON, D.V.M., Washington, D. C.	
Gen. ALFRED C. BARNES, Brooklyn.	
The Hon. STEWART L. WOODFORD, LL.D., New York.	} Term of office expires in 1894.
HIRAM W. SIBLEY, Esq., Rochester.	
FRANK H. HISCOCK, A.B., Syracuse.	

OFFICERS OF THE BOARD.

HENRY W. SAGE,	Chairman
WILLIAM R. HUMPHREY,	Secretary
EMMONS L. WILLIAMS,	Treasurer

EXECUTIVE COMMITTEE.

HENRY W. SAGE, Chairman.

EMMONS L. WILLIAMS, Secretary.

The PRESIDENT of the University,	HENRY B. LORD,
The LIBRARIAN of the Cornell Library,	ANDREW D. WHITE,
GEORGE R. WILLIAMS,	MYNDERSE VAN CLEEF,
DOUGLAS BOARDMAN,	WILLIAM H. SAGE.

STANDING COMMITTEES.

Committee on Buildings and Grounds :

Trustees H. W. SAGE, ADAMS, WILLIAMS.

Committee on Departments of Applied Science :

Trustees WILLIAMS, LORD, H. W. SAGE.

Committee on Departments of Natural History :

Trustees VAN CLEEF, BOARDMAN, TYLER.

Committee on Ancient and Modern Languages :

Trustees TYLER, LORD, VAN CLEEF.

Committee on Departments of History, Philosophy, and Pedagogy :

Trustees WHITE, ADAMS, LORD.

Auditing Committee :

Trustees LORD, WILLIAMS.

Finance Committee :

Trustees BOARDMAN, LORD, H. W. SAGE, WILLIAMS.

Land Committee :

Trustees H. W. SAGE, BOARDMAN, and the Treasurer.

Committee on Sage College :

Trustees H. W. SAGE, ADAMS, and the Treasurer.

Committee on Appropriations :

Trustees ADAMS, H. W. SAGE, BOARDMAN.

THE UNIVERSITY COUNCILS.

LIBRARY COUNCIL.

The PRESIDENT of the University and the ACTING LIBRARIAN, *ex officio* ; the Hon. H. B. LORD, of the Trustees, and Professors COMSTOCK, NEWBURY, WHEELER, and TUTTLE, of the Faculty.

COUNCIL OF THE MUSEUM OF NATURAL HISTORY.

The PRESIDENT of the University, *ex officio* ; MYNDERSE VAN CLEEF, Esq., of the Trustees ; Professors COMSTOCK, PRENTISS, WILDER, H. S. WILLIAMS, and GAGE, of the Faculty.

GYMNASIUM COUNCIL.

The PRESIDENT, *ex officio* ; GEORGE R. WILLIAMS, Esq., of the Trustees ; the Professor of Physical Culture, the Professor of Military Science, and the Professor of Physiology, *ex officio*.

AGRICULTURAL EXPERIMENT STATION COUNCIL.

The PRESIDENT of the University, the PRESIDENT of the State Agricultural Society, and the Director of the Experiment Station, *ex officio* ; the Hon. ANDREW D. WHITE, of the Trustees ; and Professors CALDWELL, PRENTISS, COMSTOCK, LAW, and BAILEY, of the College of Agriculture.

OFFICERS OF INSTRUCTION AND ADMINISTRATION.

FACULTY.

ARRANGED IN GROUPS, WITH THE EXCEPTION OF THE PRESIDENT, IN
THE ORDER OF SENIORITY OF APPOINTMENT.

CHARLES KENDALL ADAMS, LL.D., PRESIDENT,
41 East Avenue.

THE REV. WILLIAM DEXTER WILSON, D.D., LL.D., L.H.D.,
Professor of Moral and Intellectual Philosophy, Emeritus,
Syracuse.

GEORGE CHAPMAN CALDWELL, B.S., Ph.D., Professor of Agri-
cultural and Analytical Chemistry, *11 Central Avenue.*

BURT GREEN WILDER, B.S., M.D., Professor of Physiology, Com-
parative Anatomy, and Zoology, *60 Cascadilla Place.*

JAMES LAW, F.R.C.V.S., Professor of Veterinary Medicine and
Surgery, *33 East Avenue.*

ALBERT NELSON PRENTISS, M.S., Professor of Botany, Horti-
culture, and Arboriculture, *3 Central Avenue.*

JOHN LEWIS MORRIS, A.M., C.E., Sibley Professor of Practical
Mechanics and Machine Construction, *5 Central Avenue.*

THOMAS FREDERICK CRANE, A.M., Professor of the Romance
Languages and Literatures, *9 Central Avenue.*

HIRAM CORSON, A.M., LL.D., Professor of English Literature and
Rhetoric, *[In Europe.]*

• WATERMAN THOMAS HEWETT, A.B., Ph.D., Professor of the
German Language and Literature, *31 East Avenue.*

CHARLES CHAUNCEY SHACKFORD, A.M., Professor of Rhetoric
and General Literature, Emeritus, *Brookline, Mass.*

THE REV. CHARLES BABCOCK, A.M., Professor of Architecture,
Sage Avenue.

- JAMES EDWARD OLIVER, A.M., Professor of Mathematics,
[In Europe.]
- ESTEVAN ANTONIO FUERTES, C.E., M.A.S.C.E., Professor of
Civil Engineering, and Dean of the College of Civil Engineering,
13 East Avenue.
- ISAAC PHILLIPS ROBERTS, M.Agr., Professor of Agriculture, and
Dean of the College of Agriculture, *37 East Avenue.*
- HORATIO STEVENS WHITE, A.B., DEAN, and Professor of the
German Language and Literature, *23 East Avenue.*
- JOHN HENRY COMSTOCK, B.S., Professor of Entomology and
General Invertebrate Zoology, *43 East Avenue.*
- SAMUEL GARDNER WILLIAMS, A.B., Ph.D., Professor of the
Science and Art of Teaching, *Green and Albany Streets.*
- HENRY SHALER WILLIAMS, Ph.B., Ph.D., Professor of Geology
and Paleontology, *1 East Avenue.*
- WILLIAM GARDNER HALE, A.B., Professor of the Latin Language
and Literature, *7 East Avenue.*
- THE REV. MOSES COIT TYLER, LL.D., L.H.D., Professor of Ameri-
can Constitutional History and Law, *5 East Avenue.*
- ROBERT HENRY THURSTON, A.M., LL.D., Doc. Eng., Director
of Sibley College; Professor of Mechanical Engineering,
15 East Avenue.
- JACOB GOULD SCHURMAN, A.B., D.Sc., Susan E. Linn Sage Pro-
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Political and Municipal Institutions, and of International Law,
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22 E. Buffalo Street.
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- CHARLES AVERY COLLIN, A.M., Professor of Law,
116 E. Seneca Street.
- FRANCIS MARION BURDICK, A.M., Professor of Law,
South Avenue.
- EDWARD LEAMINGTON NICHOLS, B.S., Ph.D., Professor of
Physics, *South Avenue.*

- LIBERTY HYDE BAILEY, M.S., Professor of General and Experimental Horticulture, *3 East Avenue.*
- EDWARD HITCHCOCK, JR., A.M., M.D., Professor of Physical Culture, and Director of the Gymnasium, *South Avenue.*
- HERBERT EVERETT TUTHERLY, A.M., 1st Lieut., 1st Cav., U. S. A., Professor of Military Science and Tactics, *Reservoir Avenue.*
- SPENCER BAIRD NEWBURY, E.M., Ph.D., Acting Professor of General, Organic, and Applied Chemistry, *27 East Avenue.*
- LUCIEN AUGUSTUS WAIT, A.B., Associate Professor of Mathematics, *35 East Avenue.*
- EDWIN CHASE CLEAVES, B.S., Associate Professor of Freehand Drawing and Mechanical Drawing, *Cortland.*
- BRAINARD GARDNER SMITH, A.M., Associate Professor of Rhetoric and Oratory, *East Avenue.*
- SIMON HENRY GAGE, B.S., Associate Professor of Physiology, and Lecturer on Microscopical Technology, *South Avenue.*
- CHARLES LEE CRANDALL, C.E., Assistant Professor of Civil Engineering, in charge of Road Engineering and Geodesy, *100 Hector Street.*
- IRVING PORTER CHURCH, C.E., Assistant Professor of Civil Engineering, in charge of Applied Mechanics, *151 E. Seneca Street.*
- WILLIAM RUSSELL DUDLEY, M.S., Assistant Professor of Cryptogamic Botany, *108 Cascadilla Place.*
- GEORGE WILLIAM JONES, A.M., Assistant Professor of Mathematics, *17 Stewart Avenue.*
- GEORGE SYLVANUS MOLER, A.B., B.M.E., Assistant Professor of Physics, *119 N. Aurora Street.*
- CHARLES FRANCIS OSBORNE, Assistant Professor of Architecture, *137 Cascadilla Place.*
- CHARLES DAVID MARX, C.E., Assistant Professor of Civil Engineering, in charge of the Graphics of Engineering, *7 Central Avenue.*
- ALBERT WILLIAM SMITH, M.M.E., Assistant Professor of Mechanical Engineering, *7 Central Avenue.*
- GEORGE PRENTICE BRISTOL, A.M., Assistant Professor of Greek, *163 E. Buffalo Street.*
- JAMES FURMAN KEMP, A.M., E.M., Assistant Professor of Geology and Mineralogy, and Assistant Secretary of the Faculty, *163 E. Buffalo Street.*

ALFRED BRUCE CANAGA, Passed Assistant Engineer, U.S.N., Assistant Professor of Mechanical Engineering, and Instructor in Marine Engineering, 69 *Heustis Street*.

GEORGE LINCOLN BURR, A.B., Assistant Professor of History, 43 *East Avenue*.

HARRIS JOSEPH RYAN, M.E., Assistant Professor of Electrical Engineering, 31 *Dryden Road*.

FRANK HEYWOOD HODDER, Ph.M., Assistant Professor of Political Economy and Finance. 69 *Heustis Street*.

HERBERT CHARLES ELMER, A.B., Ph.D., Acting Assistant Professor of Latin, 77 *Heustis Street*.

EDWARD EVERETT HALE, JR., A.B., Acting Assistant Professor of English Literature, and Secretary of the Faculty, 163 *E. Buffalo Street*.

EDWIN MILES BROWN, Ph.B., Acting Assistant Professor of English Literature, 63 *Eddy Street*.

INSTRUCTORS AND ASSISTANTS.

JAMES McMAHON, A.B., Instructor in Mathematics, 68 *Hazen Street*.

JAMES OWEN GRIFFIN, Instructor in German, 229 *E. State Street*.

ARTHUR STAFFORD HATHAWAY, B.S., Instructor in Mathematics, 19 *Stewart Avenue*.

COURTNEY LANGDON, Instructor in Romance Languages, *State Street and Stewart Avenue*.

ORRIN LESLIE ELLIOTT, Ph.B., Instructor in English, *Dryden Road*.

EUGENE HENRY PRESWICK, B.S., Instructor in Qualitative Analytical Chemistry, *Forest Home*.

CHARLES BENJAMIN WING, C.E., Instructor in Civil Engineering, *Reservoir Avenue*.

WILLIAM RIDGELY ORNDORFF, A.B., Ph.D., Instructor in General and Organic Chemistry, 163 *E. Buffalo Street*.

LUDLOW ELIAKIM LAPHAM, A.B., Instructor in French, 10 *Stewart Avenue*.

DUANE STUDLEY, B.S., Instructor in Mathematics, 77 *Heustis Street*.

- RICHARD FRANCIS NELLIGAN, Instructor in Gymnastics,
96 *E. Seneca Street.*
- HERMAN KLOCK VEDDER, C.E., Instructor in Civil Engineering,
48 *W. Seneca Street.*
- THEODORE HENCKELS, B.S., Instructor in German,
51 *Hazen Street.*
- FRANK HOVEY NOYES, Instructor in Industrial Art,
96 *E. Seneca Street.*
- EUGENE WEST MANNING, A.M., Ph.D., Instructor in Romance
Languages, 77 *Heustis Street.*
- WILLIAM ANGELL VIAL, Instructor in Practical Pharmacy, Lec-
turer on Materia Medica and Secretary of the School of Pharmacy,
35 *East Avenue.*
- EDWIN HAMLIN WOODRUFF, LL.B., Instructor in English,
Aurora and Mill Streets.
- HIRAM SAMUEL GUTSELL, B.P., A.M., Instructor in Drawing
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- FRANK MELVILLE BRONSON, A.M., Instructor in Greek and
Latin, 98 *N. Aurora Street.*
- WALTER LORING WEBB, C.E., Instructor in Civil Engineering,
122 *Cascadilla Place.*
- HARVEY DANIEL WILLIAMS, M.E., Instructor in Mechanical
Drawing and Designing, 100 *Cascadilla Place.*
- GEORGE WELTON BISSELL, M.E., Instructor in Sibley College,
57 *N. Geneva Street.*
- BENJAMIN WARNER SNOW, B.S., Instructor in Physics,
63 *Eddy Street.*
- WILLARD WINFIELD ROWLEE, B.L., Instructor in Botany,
147 *Cascadilla Place.*
- JAMES EDWIN CREIGHTON, A.B., Instructor in Philosophy,
69 *Heustis Street.*
- ERNEST GEORGE MERRITT, M.E., Instructor in Physics,
68 *Hazen Street.*
- OLIVER FARRAR EMERSON, A.M., Instructor in English,
69 *Heustis Street.*
- HERBERT ELMER MILLS, A.M., Instructor in Ancient History,
69 *Heustis Street.*
- GEORGE ARLIN RUYTER, A.B., Instructor in Romance Lan-
guages, 78 *Heustis Street.*

- HENRY NEELY OGDEN, C.E., Instructor in Civil Engineering,
9 *E. Buffalo Street.*
- WILLIAM BELKNAP NEWBURY, Ph.B., Instructor in Chemistry,
163 *E. Buffalo Street.*
- ALBERT PAUL WILLIS, Instructor in Freehand Drawing,
23 *Heustis Street.*
- JOHN ALBERT MILLER, M.S., A.M., Ph.D., Instructor in Chemistry,
37 *East Avenue.*
- CHARLES SUMNER FOWLER, A.B., Instructor in Mathematics,
179 *E. State Street.*
- WILLIAM MASON TOWLE, B.S., Instructor in Mechanical Engineering and Foreman of the Machine Shop, *East Hill House.*
- WALKER GLAZIER RAPPEYE, B.S., Instructor in Mathematics,
Orchard House.
- SAMUEL J SAUNDERS, A.B., Instructor in Physics,
27 *Hazen Street.*
- JAMES WHEAT GRANGER, Instructor in Forging,
Exchange Hotel.
- WILLIAM HENRY WOOD, Instructor in Woodworking,
72 *W. Mill Street.*
- JAMES ELIJAH VANDERHOEF, Instructor in Moulding,
Sibley College.
- FRED CLARKSON FOWLER, Mechanician, and Instructor in Physics,
75 *W. Mill Street.*
- GEORGE POLLAY, Instructor in the Wood Shop,
86 *W. Seneca Street.*
- LEVI FREDERICK CHESEBROUGH, Instructor in Mechanic Arts,
134 *E. State Street.*
- WILLIAM OGDEN KERR, Assistant in Meteorology, and Meteorological Observer,
101 *Cascadilla.*
- GEORGE W TAILBY, Assistant to the Professor of Agriculture, and Foreman of the Farm, *Reservoir Avenue.*
- ROBERT SHORE, Assistant to the Professor of Botany, and Head Gardener,
23 *Hazen Street.*
- VERNON FREEMAN MARSTERS, A.B., Assistant to the Professor in Geology,
114 *University Avenue.*
- GRANT SHERMAN HOPKINS, B.S., Assistant in Anatomy,
29 *Cascadilla Place.*
- HARRY SNYDER, B S., Assistant in Analytical Chemistry,
Mill and Linn Streets.

SPECIAL LECTURERS.

Besides the instruction regularly given by the resident officers of the University, a large number of lectures are delivered by non-resident lecturers on special subjects of importance. For this branch of instruction the services of eminent specialists are sought, and the number of lectures given by each lecturer varies according to the nature of the subject treated. In the year 1888-89, the lecturers were as follows :

PROFESSOR BASIL L. GILDERSLEEVE, Ph.D., LL.D., Lecturer on
the American Element in Greek Studies, *Baltimore, Md.*

PROFESSOR AUGUSTUS C. MERRIAM, A.M., Ph.D., Lecturer on
the Home of Thespis, *New York City.*

PRESIDENT MERRILL E. GATES, Ph.D., LL.D., L.H.D., Lecturer
on the Poetry of Sidney Lanier, *New Brunswick, N. J.*

THE REV. J. C. ECCLESTON, D.D., Lecturer on Dante's Divina
Commedia, *Rose Bank.*

PROFESSOR GOLDWIN SMITH, LL.D., L.H.D., Lecturer on Some
Difficulties in Representative Government, and the Influence of
Human Progress upon War, *Toronto, Canada.*

MRS. ELIZA H. SCHUMACHER, Lecturer on the Art Treasures of
the Vatican, *Boston, Mass.*

THE REV. GEORGE CONSTANTINE, D.D., Lecturer on Modern
Greek Life, *Smyrna, Turkey.*

PROFESSOR IRA REMSEN, M.D., Ph.D., Lecturer on the Relation
of Pure Science to the Application of Science, *Baltimore, Md.*

PROFESSOR CHARLES SEDGWICK MINOT, D.Sc., Lecturer on
Embryology, *Boston, Mass.*

PROFESSOR J. W. ROBERTSON, Lecturer on Practical Dairy
Husbandry, *Guelph, Canada.*

ARTHUR M. WELLINGTON, C.E., M.A.S.C.E., Lecturer on the
Profession of the Civil Engineer, *New York City.*

FRANCIS COLLINGWOOD, C.E., M.A.S.C.E., Lecturer on Founda-
tions, *Elizabeth, N. J.*

CHARLES MACDONALD, C.E., M.A.S.C.E., Lecturer on the
Hawksbury Bridge, *New York City.*

- IRA A. SHALER, M.C.E., Lecturer on High Masonry Dams,
New York City.
- ALEXANDER GRAHAM BELL, A.M., Lecturer on Telephony,
Washington, D. C.
- GEN. FRANCIS A. WALKER, A.M., Lecturer on the Economics of
Manufactures, *Boston, Mass.*
- FRANK J. SPRAGUE, Esq., Lecturer on Electric Motor Construc-
tion, *New York City.*
- ROBERT W. HUNT, E.M., Lecturer on Steel Manufactures,
Chicago, Ill.
- ECKLEY B. COXE, E.M., Ph.D., Lecturer on Coal Mining and Me-
chanical Engineering, *Drifton, Pa.*
- J. F. HOLLOWAY, M.E., Lecturer on Steam Pumping Machinery,
New York City.
- EDWARD ATKINSON, Esq., Lecturer on the Economics of Trade,
Boston, Mass.
- CHARLES E. EMERY, M.E., Ph.D., Lecturer on Marine Engineer-
ing, *New York City.*
- JAMES C. BAYLES, E.M., Lecturer on Sanitation and Mechanical
Engineering, *New York City.*
- HENRY M. HOWE, E.M., Lecturer on Heat Treatment of Iron and
Steel, *Boston, Mass.*
- WILLIAM BLAKIE, Esq., Lecturer on the Significance of Physical
Culture, *New York City.*
- THE HON. FRANCIS M. FINCH, LL.D., Lecturer on the Statute of
Frauds and Fraudulent Conveyances, *Ithaca.*
- THE HON. DANIEL H. CHAMBERLAIN, LL.D., Lecturer on the
Congress of the United States, *New York City.*
- GEORGE S. POTTER, Esq., Lecturer on the Law of Marine In-
surance, *Buffalo.*
- THE HON. BENJAMIN F. THURSTON, A.M., Lecturer on the
Patent Laws of the United States, *Providence, R. I.*
- ALBERT H. WALKER, LL.B., Lecturer on the Patent Laws of the
United States, *Hartford, Conn.*
- MARSHALL D. EWELL, M.D., LL.D., Lecturer on Medical Juris-
prudence, *Chicago, Ill.*

UNIVERSITY PREACHERS.

The preachers appointed from year to year on the Dean Sage foundation are chosen from eminent representatives of the several religious denominations. The following were the preachers for 1888-9 :

THE REV. THOMAS K. BEECHER,	<i>Elmira.</i>
THE REV. ALEXANDER MCKENZIE, D.D.,	<i>Cambridge, Mass.</i>
THE REV. P. S. MOXOM, D.D.,	<i>Boston, Mass.</i>
THE REV. S. R. CALTHROP,	<i>Syracuse,</i>
THE RT. REV. J. H. VINCENT, D.D., LL.D.,	<i>Plainfield, N. J.</i>
THE REV. J. H. WARD, D.D.,	<i>Brookline, Mass.</i>
THE REV. HENRY BAKER, D.D.,	<i>Philadelphia, Pa.</i>
THE REV. PROFESSOR F. G. PEABODY, D.D.,	<i>Cambridge, Mass.</i>
THE REV. JOHN A. BROADUS, D.D., LL.D.,	<i>Louisville, Ky.</i>
THE RT. REV. W. S. RULISON, D.D., LL.D.,	<i>South Bethlehem, Pa.</i>
THE REV. T. S. HAMLIN, D.D.,	<i>Washington, D. C.</i>
PRESIDENT M. E. GATES, Ph.D., LL.D., L.H.D.,	<i>New Brunswick, N. J.</i>
THE REV. J. H. ECOB, D.D.,	<i>Albany.</i>
THE REV. JOHN BASCOM, D.D., LL.D.,	<i>Williamstown, Mass.</i>
THE REV. MYRON ADAMS, D.D.,	<i>Rochester.</i>
THE REV. PROFESSOR C. J. LITTLE, LL.D.,	<i>Syracuse.</i>
THE REV. J. C. ECCLESTON, D.D.,	<i>Rose Bank.</i>
THE REV. W. C. WILKINSON, D.D.,	<i>Tarrytown.</i>
THE REV. J. H. TWICHELL, A.M.,	<i>Hartford, Conn.</i>
THE REV. PROFESSOR W. P. CODDINGTON, D.D.,	<i>Syracuse.</i>
THE REV. PRESIDENT E. B. ANDREWS, D.D., LL.D.,	<i>Providence, R. I.</i>
THE REV. THOMAS ARMITAGE, D.D., LL.D.,	<i>New York City.</i>
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THE REV. PRESIDENT S. T. SCOVILLE, D.D.,	<i>Wooster, Ohio.</i>
THE REV. T. T. MUNGER, D.D.,	<i>New Haven, Conn.</i>
THE REV. PROFESSOR W. U. RICE, D.D.,	<i>Middletown, Conn.</i>
THE REV. T. EDWIN BROWN, D.D.,	<i>Providence, R. I.</i>
THE REV. ROBERT COLLYER,	<i>New York City.</i>
THE REV. NELSON MILLARD, D.D.,	<i>Rochester.</i>
THE REV. G. W. DOUGLASS, D.D.,	<i>New York City.</i>
THE REV. E. E. HALE, D.D.,	<i>Boston, Mass.</i>
THE REV. D. H. GREER, D.D., LL.D.,	<i>New York City.</i>

OTHER OFFICERS.

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- ARTHUR HASTINGS GRANT, Ph.B., Registrar and Secretary,
35 *East Avenue.*
- CHARLES BAKER MANDEVILLE, B.S., Assistant to the Treasurer,
63 *Eddy Street.*
- HORACE MACK, Assistant to the Treasurer in the Land Office,
116 *Cascadilla Place.*
- HERBERT ELMER MILLS, A.M., Assistant Registrar,
69 *Heustis Street.*
- SARA ADELIA BEACH, Treasurer's Stenographer,
57 *N. Geneva Street.*
- HENRY JOHN POTTER, President's Stenographer,
61 *E. Buffalo Street.*
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60 *E. Mill Street.*
- CHARLES HENRY HULL, Ph.B., Assistant Librarian,
89 *E. Buffalo Street.*
- JULIA WELLS BROWN, Cataloguer in the Library, *Sage College.*
- GERTRUDE FRANCES VAN DUZEN, Cataloguer in the Library,
7 *Central Avenue.*
- ELLSWORTH DAVID WRIGHT, A.B., Cataloguer in the White
Library, 18 *Linn Street.*
- WILLARD HENRY AUSTIN, Delivery Assistant in the Library,
89 *Heustis Street.*
- CHARLES HENRY PARSHALL, A.B., Delivery Assistant in the
Library, 1 *Linn Street.*
- OWEN LINCOLN POTTER, LL.B., Assistant in the Law Library,
Coddington Road.
- JOHN TRACY MORRISON, A.B., Assistant in the Law Library,
9 *E. Buffalo Street.*
- MRS. ELLEN KELLEY HOOKER, Principal of Sage College,
Sage College.
- EDWARD PAYSON GILBERT, Business Manager of Sage College,
166 *E. State Street.*
- CLARENCE WENTWORTH MATHEWS, Master of the Chime,
130 *Osmun Place.*

THE UNIVERSITY SENATE.

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GEORGE CHAPMAN CALDWELL, B.S., Ph.D.
BURT GREEN WILDER, B.S., M.D.
JAMES LAW, F.R.C.V.S.
ALBERT NELSON PRENTISS, M.S.
JOHN LEWIS MORRIS, A.M., C.E.
THOMAS FREDERICK CRANE, A.M.
HIRAM CORSON, A.M., LL.D.
WATERMAN THOMAS HEWETT, A.B., Ph.D.
THE REV. CHARLES BABCOCK, A.M.
JAMES EDWARD OLIVER, A.M.
ESTEVAN ANTONIO FUERTES, C.E., M.A.S.C.E.
ISAAC PHILLIPS ROBERTS, M.Agr.
HORATIO STEVENS WHITE, A.B.
JOHN HENRY COMSTOCK, B.S.
SAMUEL GARDNER WILLIAMS, A.B., Ph.D.
HENRY SHALER WILLIAMS, Ph.B., Ph.D.
WILLIAM GARDNER HALE, A.B.
THE REV. MOSES COIT TYLER, LL.D., L.H.D.
ROBERT HENRY THURSTON, A.M., LL.D., Doc. Eng.
JACOB GOULD SCHURMAN, A.B., D.Sc.
HERBERT TUTTLE, A.M., L.H.D.
BENJAMIN IDE WHEELER, A.B., Ph.D.
HARRY BURNS HUTCHINS, Ph.B.
CHARLES AVERY COLLIN, A.M.
FRANCIS MARION BURDICK, A.M.
EDWARD LEAMINGTON NICHOLS, B.S., Ph.D.
LIBERTY HYDE BAILEY, M.S.
EDWARD HITCHCOCK, JR., A.M., M.D.
HERBERT EVERETT TUTHERLY, A.M., 1st Lieut., 1st Cav.,
U.S.A.

AGRICULTURAL EXPERIMENT STATION.

The corps of the Agricultural Experiment Station is made up as follows :

ISAAC PHILLIPS ROBERTS, M.Agr., Director and Agriculturist,
37 *East Avenue.*

HENRY HIRAM WING, B. Agr., Deputy Director and Secretary,
Reservoir Avenue.

GEORGE CHAPMAN CALDWELL, B.S., Ph.D., Chemist,
11 *Central Avenue.*

JAMES LAW, F.R.C.V.S., Veterinarian, 33 *East Avenue.*

ALBERT NELSON PRENTISS, M.S., Botanist and Arboriculturist,
3 *Central Avenue.*

JOHN HENRY COMSTOCK, B.S. Entomologist and Invertebrate
Zoologist, 43 *East Avenue.*

HENRY SHALER WILLIAMS, Ph.B., Ph.D., Geologist,
1 *East Avenue.*

LIBERTY HYDE BAILEY, M.S., Horticulturist, 3 *East Avenue.*

SIMON HENRY GAGE, B.S., Anatomist, *South Avenue.*

WILLIAM RUSSELL DUDLEY, M.S., Cryptogamic Botanist,
108 *Cascadilla Place.*

WILLIAM PARKER CUTTER, B.S., Assistant Chemist,
151 *Cascadilla Place.*

WELTON MARKS MUNSON, B.S., Assistant Horticulturist,
40 *Heustis Street.*

JOHN MOORE STEDMAN, B.S., Assistant Entomologist,
148 *Cascadilla Place.*

ED TARBELL, B.S., Assistant Agriculturist, 31 *Cascadilla Avenue.*

SPECIAL FACULTIES.

The President of the University is *ex officio* Chairman of each of the Special Faculties. In the absence of the President, the Professor whose name is printed first on the list of members, is the acting Chairman.

ARTS—Professor W. G. HALE, Professors WHEELER, OLIVER, SCHURMAN, BRISTOL, and ELMER.

LETTERS—Professor CORSON, Professors CRANE, HEWETT, WAIT, WHITE, WILDER, SCHURMAN, B. G. SMITH, BROWN, and E. E. HALE, JR.

PHILOSOPHY—Professor SCHURMAN, Professors NICHOLS, COMSTOCK, CRANE, OLIVER, PRENTISS, CALDWELL, WHITE, H. S. WILLIAMS, S. G. WILLIAMS, W. G. HALE, WHEELER, and WILDER.

SCIENCE—Professor WILDER, Professors COMSTOCK, CRANE, HEWETT, PRENTISS, CALDWELL, NICHOLS, WAIT, and H. S. WILLIAMS.

AGRICULTURE—Professor ROBERTS, Professors CALDWELL, COMSTOCK, LAW, PRENTISS, BAILEY, and H. S. WILLIAMS.

ARCHITECTURE—Professor BABCOCK, Professors FUERTES, OLIVER, CLEAVES, and OSBORNE.

CHEMISTRY AND PHYSICS—Professor CALDWELL, Professors NICHOLS, NEWBURY, MOLER, and RYAN.

CIVIL ENGINEERING—Professor FUERTES, Professors NICHOLS, THURSTON, OLIVER, CALDWELL, CHURCH, CRANDALL, and MARX.

MATHEMATICS—Professor OLIVER, Professors WAIT, JONES, NICHOLS, BABCOCK, FUERTES, MORRIS, and THURSTON.

THE SIBLEY COLLEGE OF MECHANICAL ENGINEERING AND THE MECHANIC ARTS—Professor THURSTON, Professors NICHOLS, FUERTES, MORRIS, CALDWELL, OLIVER, CLEAVES, A. W. SMITH, and CANAGA.

NATURAL HISTORY—Professor PRENTISS, Professors COMSTOCK, LAW, WILDER, H. S. WILLIAMS, BAILEY, DUDLEY, and GAGE.

HISTORY AND POLITICAL SCIENCE—Professor TYLER, Professors TUTTLE, CRANE, W. G. HALE, HEWETT, WHITE, BURR, and HODDER.

SCHOOL OF LAW—Judge BOARDMAN, Professors HUTCHINS, BURDICK, COLLIN, TYLER, and TUTTLE.

MATERIAL EQUIPMENT OF THE UNIVERSITY.

LOCATION.

CORNELL UNIVERSITY is situated on the eastern hillside of the Cayuga Lake valley, some four hundred feet above the head of the lake. This lake stretches away more than twenty miles to the north, and the valley leading to it twelve or fifteen miles to the south, in full view from the University. From both sides of the lake ravines run back, through which considerable streams fall from four to six hundred feet in the course of a mile.

The University grounds consist of two hundred and seventy acres of land bounded north and south by Fall Creek Ravine and Cascadilla Gorge respectively. The eastern portion, of about two hundred acres, is devoted to the uses of the agricultural department. Two main avenues, Central and East Avenue, well shaded by elms, run parallel to each other the entire length of the eastern portion, a distance of half a mile. On these and the intersecting avenues are grouped the university buildings and more than thirty residences of professors. The grounds are laid out with great care, are decorated with ornamental trees and shrubs, and are made to illustrate the courses of instruction in botany, horticulture, and arboriculture.

BUILDINGS.

MORRILL HALL AND WHITE HALL.—These two edifices, architecturally alike, are each one hundred and sixty-five feet by fifty, four stories in height, of blue Ithaca stone, with light Medina trimmings. Each building is divided by three corridors, running from front to rear. The middle corridors lead to the larger lecture-rooms, and the other corridors to the smaller lecture and recitation-rooms. In Morrill Hall are the offices of the President, the Treasurer, the Dean, the Registrar of the University, and the Secretary of the School of Law; the Faculty-room, architectural rooms, agricultural museum, and office of the Agricultural Experiment Station.

MCGRAW HALL.—This building, the gift of the late Mr. John McGraw, of Ithaca, is constructed, like the edifices adjacent to it, of dark blue stone, quarried near the University grounds, but with dressings and cornices of gray Onondaga limestone. In its architecture it corresponds with the other buildings. Its length is two hundred feet, and its width sixty, while its tower rises to a height of over one hundred and twenty feet. It consists of a main edifice and two wings. The main or central portion of the building comprises one room one hundred feet long, fifty-six wide, and nineteen in height; and another above it of the same length and breadth, but nearly forty feet high, and containing three galleries with an average height of twelve feet each. In this part of the McGraw building are alcoves and galleries for the library on the lower floor; while on the second floor and in the galleries above it a large part of the museum of natural history is arranged. In the north wing is the anatomical lecture-room, and the special anatomical laboratory. Beneath this is the seminary-room, and the basement is occupied by the general anatomical laboratory. In the south wing are the geological lecture-room and the paleontological laboratory, and immediately over them the geological laboratory. In the campanile, in the center of the front of McGraw Hall—a massive stone tower twenty-two feet square—are placed the great bell of the University, the nine smaller bells of the McGraw chime, and the great University clock. The different parts of McGraw Hall are separated by walls of brick and doors of iron, rendering them completely fire-proof. The library room contains shelving for eighty thousand volumes. The galleries of the museum are fifteen feet deep, with a total length of six hundred feet.

The trustees of the University at a recent meeting, provided for the erection of a fire-proof building for the use of the Library. The extreme dimensions of this building, which will be constructed of stone, will be one hundred and seventy feet by one hundred and fifty-three feet. Its book capacity will be four hundred and seventy-five thousand volumes. It is hoped that it will be ready for occupation in two years.

LINCOLN HALL is a substantial brown stone structure, two hundred feet long and seventy feet wide. It contains sixty-one rooms in its five floors, and has been specially designed for the use of the departments of Civil Engineering and Architecture. In addition to the laboratories and museums described elsewhere, the building contains the libraries of the two departments, aggregating about three thousand volumes, reading-rooms, class-rooms, and draughting-rooms. The latter are eighty feet long and sixteen feet wide, and are provided with means for regu-

lating the height and intensity of the illumination. The building contains also the offices of the professors, the central office of the Commissioners of the State Meteorological Bureau, and the meteorological observatory of the department of civil engineering.

A temporary astronomical observatory has been erected near the main building, in which are mounted, on brick piers, an astronomical transit by Troughton and Sims, provided with two collimators; a sidereal clock; a four-and-a-half inch Clark equatorial; two large altazimuths reading to seconds by levels and micrometers; and a three-and-three-eighths inch zenith telescope by Fauth.

THE SIBLEY COLLEGE. — The buildings of Sibley College were erected and presented to the University by the late Hon. Hiram Sibley, of Rochester, N. Y., who also gave the machinery, and the greater part of all the collections with which they are supplied. The main building is of Ithaca stone, trimmed with a fine white sandstone, and in its architecture is similar to most of the other main buildings of the University. It is one hundred and sixty feet long, forty feet in width, and three stories in height. The workshops form three sides of a quadrangle, of which the fourth side is formed by the college building proper; they are of brick and one story in height. The main building contains on the first floor two large museums, which are fully described elsewhere, the library and reading-room, a large and well-lighted lecture-room, and the private rooms of the professor of practical mechanics. On the second floor are the lecture-room of the professor of mechanical engineering and the director, with its collections of illustrative materials, the drawing-rooms of the department of industrial drawing and art, and the private rooms of the director and professor of mechanical engineering and of the instructor. The third floor is occupied by the drawing-rooms for the younger classes in free-hand drawing and decorative art, and the private rooms of the professor of drawing and his assistants. The workshops consist of a machine shop, a foundry, a blacksmith shop, and a wood-working shop, and include rooms devoted to the storage of tools, to emery grinding, etc. These shops are from forty to sixty feet in length, about forty feet in width, and are lofty and well lighted. An additional building, one hundred and fifty feet by forty in dimensions, and two stories in height, was completed in the summer of 1887. Its second floor is devoted to the work in machine design, and includes several drawing-rooms for upper classmen, a lecture-room, and a room appropriated to the use of the professor having charge of the laboratories. The main floor is divided into several rooms, each devoted to some department of experimental work, as to steam engine trials, to tests of boilers, to deter-

mination of the strength and other useful qualities of the materials of engineering. The tools and machinery are described fully under the head of Sibley College Collections. At the bottom of Fall Creek gorge is the house protecting the turbine which supplies the power ordinarily required for driving the machinery of the college and the electric apparatus for lighting the campus and the buildings.

FRANKLIN HALL.—This building, situated on the north side of the quadrangle, was opened for occupancy in September, 1883. It is of red sandstone, about one hundred and forty feet in length, with a width of fifty and seventy feet, and is three stories in height above a well-lighted basement. The exterior is ornamented with casts and medallions of distinguished scientists. The rooms of the physical department occupy the first floor and the basement. The second and third floors are occupied by the chemical department. The building contains, in addition to the amply equipped laboratories, two large lecture-rooms, one for chemistry and one for physics, seating about one hundred and seventy students each. A fire-proof one-story annex, built of brick, has lately been erected north of Franklin Hall for the further extension of the work of the chemical department. This addition is one hundred feet in length by thirty-seven feet in width, and contains the laboratories of organic chemistry and assaying, with the necessary balance rooms, store-room and reading-room. It is so placed with reference to the main building as to inclose a partly paved court, suitable for experiments in the open air.

The Trustees of the University, at a recent meeting, provided for the erection of a new building, to be occupied exclusively by the department of Chemistry. This building is to be one hundred and seventy-five feet long, seventy-one wide, and sixty-four high. The laboratories will accommodate three hundred and fifty students, working at one time, and the lecture-rooms four hundred. It is hoped that the building will be ready for occupation by the opening of the next collegiate year.

THE SAGE COLLEGE FOR WOMEN.—This building is the gift of the Hon. Henry W. Sage. It is a home or dormitory for students, not a separate department or school. The front façade has a length of one hundred and sixty-eight feet, a depth of forty-one feet, and is four stories in height. The north wing is eighty-five feet long, and the south wing one hundred and twelve. The building is of brick, with stone trimmings. A gymnasium nearly connects the wings in the rear. The rooms for the students are eighteen feet by fourteen, with a low partition dividing off one part for a sleeping-room. The college

will accommodate about one hundred students. Besides the dormitories, dining-hall, and parlors, it contains a large lecture-room, a museum, laboratories, with very complete equipments, for students in botany, with green-houses, forcing-houses, and other necessary facilities for the pursuit of floriculture and ornamental gardening.

THE SAGE CHAPEL.—This chapel, the gift of the Hon. Henry W. Sage, and situated about midway between Morrill Hall and Sage College, is constructed of brick with elaborately carved stone trimmings, and is of the Gothic order of architecture. The auditorium has a seating capacity of about five hundred persons. One of the most noteworthy features of the room is the number of memorial windows and tablets. Opening into the auditorium is a smaller chapel, so arranged as to be used in connection with it. On the opposite or north side is **THE MEMORIAL CHAPEL**, constructed in the Gothic style of the second or decorated period. It was erected, as a tablet in its northern end bears witness, to the memory of Ezra Cornell, John McGraw, and Jennie McGraw-Fiske, and was completed in 1884. The exterior is of red brick with stone trimmings. The interior walls are of Ohio stone and yellow brick. The ceiling is vaulted, with Ohio stone ribs and Caen stone panels. On entering the chapel the eye is at once arrested by the rich memorial windows, constructed by Clayton & Bell, of London. They are designed not only to commemorate the connection of Mr. Cornell, Mr. McGraw, and Mrs. Jennie McGraw-Fiske with this University, but also to associate their names with the names of some of the greatest benefactors in the cause of education. The north window contains the figures of William of Wykeham, John Harvard, and Ezra Cornell; the east window the figures of Jeanne of Navarre, Margaret of Richmond, and Jennie McGraw-Fiske; the west window those of Elihu Yale, Sir Thomas Bodley and John McGraw. Directly beneath the great northern window is a recumbent figure of Ezra Cornell, in white marble, of heroic size, by William W. Story, of Rome; near this is another recumbent figure, that of Mrs. Andrew D. White, also in white marble, by Franklin Simmons, of Rome. A vault underneath the chapel contains recesses for the remains of the founders of the University.

The building erected for the purposes of the **GYMNASIUM AND ARMORY** is situated at the extreme southern end of the campus, and was completed in the winter of 1883-4. The main portion is of brick, one hundred and fifty feet long, sixty feet wide, and fifty feet high. The Annex, joining the main hall on the south, is a two-storied building, having an area of fifty-two by forty-eight feet, the main build-

ing, with the exception of a small portion that is set apart for an office and military store-room, is used for gymnastics and military drill. This contains the arms and equipment of the cadet corps, and a carefully selected supply of the most improved gymnastic apparatus and appliances for both individual and class work. The hall is heated by steam and lighted by electricity, and gives a clear space for floor room in the gymnasium of one hundred and fifty by sixty feet. The Annex contains the offices of the Department of Physical Culture, faculty dressing-room, bath-rooms, lavatory, closets, general repair room and dressing-rooms which contain locker accommodations for eight hundred students.

CASCADILLA PLACE, situated on the south bank of Cascadilla gorge, is built of blue stone, is one hundred and ninety-five feet long by one hundred feet wide, four stories high, and contains about two hundred rooms. It was completed in 1868. University exercises are no longer held there, the rooms being rented to professors and students as living apartments.

BARNES HALL.—The University is indebted to the generosity of the late Alfred S. Barnes, Esq., of New York, for a commodious and elegant building designed mainly for the use of the University Christian Association. The building, which during the present year is for the first time open for use, is one hundred and twenty feet by eighty feet in dimensions, and three stories in height. The material is brick, with trimmings of Ohio stone, brown stone and granite. On the north, the main entrance is marked by a graceful tower rising to a height of one hundred feet. The building contains a secretary's room, assembly-room, library, reading-room, and all other needed accommodations for the work of the association, in addition to a spacious auditorium which occupies the larger part of the second floor. Besides the auditorium, there is a smaller class-room on this floor, the two being separated by a screen which in case of need is easily removed, thus throwing the entire second floor into one hall, and furnishing seating room for one thousand persons. The various assembly-rooms and class-rooms are furnished with fire-places, and the best modern methods of heating and ventilation are employed.

MUSEUMS.

THE AGRICULTURAL MUSEUM occupies a large room on the first floor of Morrill Hall and four rooms in the basement. It contains (1) THE RAU MODELS, being one hundred and eighty-seven models of plows made at the Royal Agricultural College of Württemberg, under

the direction of Professor Rau, and arranged and classified by him for the Paris Exposition of 1867; (2) Engravings and photographs of cultivated plants and animals, obtained at the various agricultural colleges of Europe; (3) THE AUZOUX VETERINARY MODELS, being the entire series used at the government veterinary colleges of France and Russia; (4) A collection of the CEREALS OF GREAT BRITAIN, being a duplicate of that in the Royal Museum of Science and Art at Edinburgh, presented by the British government; (5) A collection of agricultural seeds; (6) A large number of models representing a great variety of agricultural implements. The class-room has been provided with a special set of diagrams and other appliances designed to illustrate the subjects of the lectures on agriculture.

THE MUSEUM OF ARCHÆOLOGY consists of about four thousand specimens. Of these about fifteen hundred illustrate primitive society in South America and the Pacific Islands, and were collected chiefly by Professors Hartt, Barnard, Derby, Steere, and Ward. There are a few hundred antiquities from Great Britain, Denmark, France, Switzerland, and Egypt. The most valuable object in the Egyptian collection is a mummy of the XXIII dynasty, taken in 1883 from the necropolis at Thebes, and presented to the University by the Hon. G. P. Pomeroy, American Consul at Cairo. The remainder of the museum is composed of the relics of the Indians and Mound-Builders of North America.

THE ARCHITECTURAL MUSEUM contains over two thousand photographic prints, the most of which are of large size; several hundred drawings; and about two hundred models in stone and wood. These are all designed to illustrate the constructive forms and peculiarities of the different styles of architecture. These, as well as the White Architectural Library—containing over one thousand volumes—are all freely accessible to the student of architecture.

THE BOTANICAL MUSEUM.—The means of illustrating the instruction in botany include the herbarium, estimated to contain fifteen thousand species; two series of models, the Auzoux and the Brendel; the full set of wall maps of Achille Compte, and the botanical charts of Professor Henslow; a lime lantern with five hundred views, illustrating different departments of botany; twenty compound and dissecting microscopes; a collection of fruits, barks, cones, nuts, seeds, fibres, and various dry and alcoholic specimens; a general collection of economic vegetable products, and above a thousand specimens of the woods of different countries. Besides these, the large conservatories and gardens, and an uncommonly rich native flora afford abundant material for illustration and laboratory work.

THE CHEMICAL MUSEUM is located in a large room in the eastern end of Franklin Hall, and contains the Silliman collection of minerals, and the collection of applied chemistry. The former comprises about three thousand five hundred specimens, many of them of extreme rarity. The latter consists of materials and products illustrating many of the applications of chemistry to the arts and manufactures, such as the manufacture of soap, sulphuric acid, soda ash, alum, white lead, gunpowder, pottery, porcelain, glass, cement, dyes, pigments, oils, the refining of petroleum, etc., etc. These collections are being constantly and rapidly increased by gifts and purchases.

THE MUSEUM OF CONCHOLOGY, one of the most complete in existence, is on the second floor of McGraw Hall. It contains the Newcomb collection of shells, which embraces more than eighty thousand examples of more than twenty thousand varieties, representing at least fifteen thousand species. The collection is systematically classified and exhibited with special reference to making it available for study. As many of the specimens are of great rarity and not a few unique, the collection offers unusual facilities for the systematic study of conchology.

THE SPECIAL MUSEUMS OF THE CIVIL ENGINEERING DEPARTMENT contain the following collections. 1. The MURET collection of models in descriptive geometry and stone cutting. 2. The DE LA-GRAVE general and special models in topography, geognosy, and engineering. 3. The SCHROEDER models in descriptive geometry and stereotomy, with over fifty brass and silk transformable models made in this department after the OLIVIER models. 4. The GRUND collections of bridge and track details, roofs, trusses, and masonry, supplemented by similar models by Schroeder and other makers. 5. A model railroad bridge of twenty-five feet span, the scale being one-fourth of the natural size. 6. The DIGEON collection of working models in hydraulic engineering. 7. Working models of water wheels. 8. Several large collections of European and American photographs of engineering works during the process of construction, and many other photographs, blue prints, models and diagrams. 9. AN EXTENSIVE COLLECTION of instruments of precision, such as a Troughton and Sims astronomical transit; a universal instrument, by the same makers, reading to single seconds; sextants, astronomical clocks, chronographs, a Negus chronometer, two equatorials—the larger having an objective, by Alvan Clark, four and a half inches in diameter,—and other instruments, like pier collimators, etc., necessary to

the complete equipment of a training observatory. 10. A GEODESIC COLLECTION, consisting of a secondary base line apparatus made under the direction of the Coast Survey, and all the portable, astronomical, and field instruments needed for extensive triangulations, including sounding-machines, tachometers, deep-water thermometers, heliotropes, etc. 11. Among the usual field instruments there is nearly every variety of engineers' transits, theodolites, levels, solar and other compasses, omnimeters, and tachometers, with a large number of special instruments, such as planimeters, pantographs, elliptographs, arithmometers, computing machines, altazimuths, sextants, hypsometers, and meteorological instruments of all descriptions.

THE MUSEUM OF ENTOMOLOGY AND GENERAL INVERTEBRATE ZOOLOGY.—The entomological cabinet contains, in addition to many exotic insects, specimens of a large proportion of the more common species of the northeastern United States. This collection includes many sets of specimens illustrative of the metamorphoses and habits of insects. The general collection of invertebrates comprises a well-selected series of forms representing all of the larger groups. In this collection there is a nearly complete set of the duplicates distributed by the U. S. National Museum, many specimens collected on the coast of Brazil by the late Professor C. F. Hartt, and specimens from Florida and the West Indies, collected by Dr. Wesley Newcomb. The collection includes, moreover, a set of the Auzoux models and of the glass models made by the Blaschka.

THE MUSEUMS AND COLLECTIONS OF THE SIBLEY COLLEGE OF MECHANICAL ENGINEERING AND MECHANIC ARTS are of exceptional extent, value, and interest. The two principal rooms on the first floor of the main building are devoted to the purposes of a museum of illustrative apparatus, machinery, products of the manufacturing industries, and collections exhibiting processes and methods of manufacture, new inventions, the growth of standard forms of motors, and other collections of value in the courses of technical instruction given in the college. In the west museum are placed the Reuleaux collection of models of kinematic devices and movements, which is, so far as known, the only complete collection on this continent, and is one of the very few in the world. Besides these are the Schroeder and other models, exhibiting the forms and proportions of parts of machinery, the construction of steam engines and other machines, and methods of making connections. In the east museum are placed a large number of samples of machines constructed by the best makers, to illustrate their special forms and methods of manufacture. Among these are several

beautifully finished samples of steam pumps, "sectioned" to exhibit their internal construction and arrangement, steam-boiler injectors similarly divided, governors for steam engines, water-wheels, and other motors, devices for lubrication, shafting and pulleys, couplings, and other apparatus for the transmission of power, both by shafting and by wire-rope transmission. The lecture-rooms of Sibley College, each being devoted to a specified line of instruction and list of subjects, are each supplied with a collection of materials, of drawings, and of models and machines, especially adapted to the wants of the lecturer in each subject. Thus, the lecture-room of the instructor in "Materials of Engineering" contains a fine collection of samples of all the metals in common use in the arts, with samples of ores and of special intermediate products, exhibiting the processes of reduction and manufacture. Among these are specimens of the whole range of copper-tin and copper-zinc alloys, and of the "kalchoids" produced by their mixture, such as were the subjects of investigations made by the Committee on Alloys of the U. S. Board appointed by President Grant, by authority of Congress, in the year 1875. The collection is supplemented by other alloys produced later by the Director, and is one which has no known superior, and is perhaps unequaled. The course in machine design is illustrated by the standard forms of parts of machinery. The course of instruction in mechanical engineering is illustrated by a fine collection of steam engines of various well-known types, gas and vapor engines, water-wheels, and other motors, models and drawings of every standard or historical form of prime mover, of parts of machines, and of completed machinery.

The collections of the Department of Drawing include a large variety of studies of natural and conventional forms, shaded and in outline, geometrical models, casts and illustrations of historical ornament.

The workshops are supplied with every needed kind of machine or tool, including lathes, of our own and other makes, and hand and bench tools sufficient to meet the wants of over one hundred students of the first year, in woodworking; in the foundry and forge all needed tools for a class of eighty in the second year; in the machine shop, lathes from the best builders, and others made in the University shops, planes, drills, milling machines, and a great variety of special and hand tools, which are sufficient to work a class of sixty or seventy in the third year, and fifty or sixty seniors.

The Department of Experimental Engineering possesses experimental engines and boilers, and other heat motors, such as air and gas engines, and is well supplied with testing machines in considerable variety, as well as all the apparatus required, as indicators, dy-

namometers, etc., for determining the efficiency of engines. Each of the several rooms on the first floor of the Sibley College annex is a museum of apparatus.

THE MUSEUM OF PALEONTOLOGY comprises the following collections: 1. THE JEWETT COLLECTION, accumulated by the late Colonel Jewett when curator of the State Cabinet of Natural History. This collection is especially rich in New York fossils, containing many of the original specimens described in the State reports, and not a few unique specimens. 2. A fair representation of the rich faunas of the cretaceous and tertiary formations along the eastern and southern parts of the Union, and a large number of characteristic English and European fossils. 3. A fine series of English mesozoic fossils; of tertiary fossils from Santo Domingo; of pre-glacial fossils from Sweden; and numerous smaller collections from various typical localities in our own country. 4. The Ward series of casts. 5. The unique collections from Brazil, made by Professor Hartt and party on the Morgan expedition, containing the original specimens; and a great number of duplicates. Numerous additions have been made during the past year.

THE MUSEUM OF VETERINARY SCIENCE embraces the following collections: 1. The Auzoux veterinary models, comprising plastic models of the horse, showing the relative position of over three thousand anatomical parts; models of limbs, sound and with detachable pieces, and their morbid counterparts, illustrating changes in diseases of the bones, joints, muscles, etc.; a set of obstetrical models, showing the virgin and gravid uterus in different animals, and the peculiarities of the female pelvis and its joints; models of the gastric cavities of domestic animals; an extensive set of models of jaws, showing the indications of age as well as various habits and diseases; models of equine teeth in sections, showing structure and the changes effected by wear. 2. Skeletons of the domestic animals, articulated and unarticulated. 3. A collection of diseased bones, illustrating the various constitutional diseases which impair the nutrition of these structures, together with the changes caused by accidental injuries and purely local disease. 4. Skulls of domestic animals prepared to illustrate the surgical operations demanded in the different genera. 5. Jaws of farm animals, illustrating the growth and wear of the teeth, age, dentinal tumors, caries, etc. 6. A collection of specimens of teratology, consisting of monstrous foals, calves, and pigs. 7. A collection of tumors and morbid growths removed from the different domestic animals. 8. Some hundreds of specimens of parasites from

domestic animals. 9. A collection of calculi from the digestive and urinary organs, etc., of farm animals. 10. Foreign bodies taken from various parts of the animal economy. 11. A collection of surgical instruments used in veterinary practice. 12. A collection of medicinal agents. 13. In addition, a large number of diagrams, the property of Professor Law, available in illustration of different points in anatomy, physiology, and pathology.

THE MUSEUM OF GENERAL ZOOLOGY.—The vertebrate collections are as follows : About thirty-five hundred examples of about twenty-four hundred species of entire animals in alcohol, nearly half of the specimens being fishes collected in Brazil by the late Professor C. F. Hartt ; the remainder include series of named fishes from the Smithsonian Institution and the Museum of Comparative Zoology, representatives of the general North American fauna, and of the local fauna, and many rare forms from various parts of the world, including the following : Chimpanzee, orang, cheiromys, dingo, pangolin, sloth, ant-eater, armadillo, ornithorhynchus, echidna, jacana, sphenodon, monitor, heloderma, crocodile, alligator, draco, axolotl, proteus, megalobatrachus, siren, amphiuma, pipa, ceratodus, protopterus, flying-fish, polypterus, calamoicthys, thalassophryne, chimæra, cestracion, myxine, bdellostoma, and branchiostoma ; about twenty-eight hundred anatomical preparations, including mounted skeletons of man, gorilla, lion, panther, camel, horse, porpoise, manatee, sloth, kangaroo, ostrich, apteryx, alligator, draco, frog, cryptobranchus, necturus, cæcilia, and amia ; more than six hundred preparations of the brain ; large series of dissections of the lamprey, necturus, and cat ; embryos or young of man, ape, leopard, opossum, kangaroo, manatee, dugong, peccary, llama, sea-lion, bat, alligator, necturus, amia, lepidosteus, shark, skate, and domesticated animals ; about nine hundred microscopical preparations, chiefly from the cat, frog, and necturus ; more than eleven hundred mounted skins, including orang, tiger, cheetah, otter, moose, tringulus, camel, beaver, hyrax, centetes, galcopithecus, sloth, armadillo, manatee, porpoise, koala, wombat, kangaroo, echidna, ornithorhynchus, emeu, apteryx, boat-bill, penguin, gavial, crocodile, rattlesnake, heloderma, megalobatrachus, ceratodus, cestracion, saw-fish, gar-pike, polypterus, etc. Besides the papier-mâché models by Auzoux mentioned above, there are several Bock-Steger models in plaster, a Bucchi model of the brain, and wax models by Weisker as follows : the brain cavities, the pelvis, the diaphragm, the development of the frog, trout, and branchiostoma. In the arrangement of the collections reference has been had to the exemplification of zoological and morphological ideas, such as the unity

of general structure under diversity of form and mode of life in the branch and within each class, the resemblances between members of different classes, the existence of apparently useless organs, etc. Among special series are placed together the vertebrates inhabiting this neighborhood, all venomous forms, etc.

LABORATORIES.

THE ANATOMICAL LABORATORIES are in the north wing of McGraw Hall, second floor and basement. They are furnished with instruments and materials for practical work in anatomy, human and comparative, histology, and elementary physiology. Among the appliances recently acquired are an incubator, a first-class microscope with apochromatic objectives and oculars, and apparatus for determining the results of aquatic or combined aquatic and aerial respiration. Students have access to many works of reference and to a standard series of anatomical and microscopical preparations.

THE BOTANICAL LABORATORY is located on the first and second floors of the south wing of Sage College, adjoining the botanical lecture-rooms. The laboratory is very completely supplied with microscopes and other apparatus necessary for investigations in this branch of science. Connected with the laboratory are the green-houses, which at all seasons of the year furnish ample material for illustration and for laboratory use.

THE CHEMICAL LABORATORIES occupy a portion of the second story and the whole of the third story of Franklin Hall, and also the new chemical annex. On the second floor, adjoining the chemical lecture-room, is the laboratory for blowpiping and mineralogy, which is equipped with tables covered with porcelain tiles, and will accommodate seventy students. In the same room is a working collection of minerals comprising all of the more common species. In the third story, occupied by the department of agriculture and analytical chemistry, are two large laboratories; one of these, for beginners in chemical practice, can accommodate one hundred students; a shaft from the ventilating-fan in the basement conveys a supply of fresh air to the room; the fume and hydrogen-sulphide closets are ventilated by means of special flues heated by gas-burners. The laboratory for quantitative chemical work has places for seventy students; each place is supplied with reservoir and distilled water, gas, and suction for filtration produced by the air pump in the basement. Tables for distillation, combustion, etc., at each end of the room are supplied with gas

and water, and with suction, blast, oxygen and hydrogen from the works in the basement. Steam evaporating and drying closets, and fume closets are easily accessible from all parts of the room. There are, besides the rooms already described, weighing and reading-rooms, the private laboratories of the professors, and a number of rooms for special experiments.

The new Annex contains the laboratories of organic chemistry, and of assaying. The organic laboratory contains slate-topped tables for twenty-four students, and is fitted with all modern appliances for original research in this important field. Adjoining the laboratory are the store-rooms, private laboratory, and the balance and reading-room, where a large part of the chemical section of the University library, including complete sets of all the important chemical journals, is deposited. The assay laboratory contains six crucible furnaces, one large and two small muffle furnaces, one Fletcher gas cupel furnace, anvil, steel rolls, and the tools used in the various operations of assaying ores of the precious metals. In designing the Chemical Annex the intention has been to concentrate in that building all work involving any risk of fire. With this in view all partitions have been constructed of brick, the tables covered with slate slabs, and the floors inlaid with asphalt pavement.

THE CIVIL ENGINEERING LABORATORIES cover a floor area of about ten thousand square feet. They are well equipped, and comprise :

1. A GENERAL LABORATORY containing a large collection of machines and apparatus for the experimental study of subjects connected with the theoretical instruction of the lecture-rooms, and as preparation for the special laboratories.
2. AN HYDRAULIC LABORATORY with complete appliances for determinations of "efficiency"; piping, mouth pieces, and special castings, for the derivation of coefficients; weirs provided with all forms and heights of notches and orifices; gauges, electrical and automatic devices for the most refined measurements of weights, pressures, velocities, equilibrium, viscosity, efflux in closed and open conduits, water reaction, etc.
3. A CEMENT LABORATORY provided with automatic machines for the establishment of standard tests. The furniture of this laboratory has been designed by specialists in view of its needs, and what has been already done at the great laboratories of Professors Tetmayer and Bauschinger, at Zürich and Munich.
4. A BRIDGE LABORATORY for the study of stresses in many types of trusses, the determination of the effect of strains upon the nature and requirements of bridge designs and their details, etc. This laboratory has under way important investigations.
5. A GRAVIMETRIC LABORATORY where cold and hot pendulums swing in con-

nection with other instruments of precision. 6. A GEODETIC LABORATORY for the determination of the values and errors of graduation of circles and levels of high precision, fitted with level testers, collimators, cathetometers, etc. 7. A MAGNETIC LABORATORY in which is acquired the skill necessary to use the Kew magnetometer and Barrow's circle. The instrumental constants are derived in an isolated "copper house"; but the magnetic quantities are obtained, each year, by the students in civil engineering, at the astronomical stations of the systematic survey of the State. This work has been carried on since 1874 under the auspices of Cornell University. 8. A METRIC LABORATORY for the absolute comparison of lengths. The comparator is intended for end and line measurements, is provided with independent microscopes, and rests on piers in a room surrounded by double walls. 9. A BACTERIOLOGICAL LABORATORY in which students may become acquainted with bacterial forms and such portions of this subject as bear upon sanitary engineering. 10. A PHOTOGRAPHIC LABORATORY for reproducing the appearance of tested specimens, for the purposes of the lecture-room, as aid in topographical surveys, and for the distribution, to graduates and purchasers, of reprints of the great collection of engineering structures owned by this department.

THE LABORATORIES OF ELECTRICAL ENGINEERING are provided with many special collections of apparatus. As standards for electrical measurements there are at the Magnetic Observatory the great tangent galvanometer, and a potential instrument. By means of the former, measurements of current may be made with the highest attainable accuracy, through the range of from a small fraction of an ampère to two hundred and fifty ampères. In this galvanometer are provided means for the simultaneous reading of horizontal intensity and strength of current. The standard potential instrument is arranged for accurate determinations of electromotive forces, varying from the small fraction of a volt to three thousand volts. The Observatory is provided also with a Vienna apparatus for "direct" reading of current, and the standardizing of ammeters. In these laboratories are several authorized copies of the British Association standards of resistance. From these a Wheatstone bridge of dial pattern has been adjusted with much care for the ready and accurate determination of resistance. There are besides a number of Wheatstone bridges for general use. For work in general practice requiring the making of electrical measurements there is a large number of ammeters, voltmeters, and electrodynamos, of all of the well known commercial forms, a Sir Wm. Thompson electric balance reading through a wide

range of current strength, and a wide range electrometer for the determination of alternate current electromotive forces. The collection includes also a number of dynamos of arc and incandescent lighting types, including a three hundred light and a twenty-five light Edison, two Thompson-Houston, three Weston, a Ball, Mather, Waterhouse "third brush," Gramme, six hundred and fifty light Westinghouse alternate current machine and its complement of converters; a variety of motors, including a Brush five horse-power constant current, and a Tesla alternate current motor. Storage batteries are of the Julien, Gibson, Sorley, "accumulator," and Brush types; and have an aggregate capacity of one hundred and twenty cells. There are a large number of arc and incandescent lamps of the various types, exhibits of carbons, filaments, storage battery elements, in the processes of manufacture, and commercial electric meters. The means of making quantitative measurement are supplied by a photometer room for the photometry of arc and incandescent lamps; several Brackett "cradle" dynamometers for efficiency tests of dynamos and motors; a rehostat of *German-silver wire* for resistance and current, with a capacity ranging from twenty-two hundred ohms and four ampères, to four-tenths of an ohm and three hundred ampères; and the extensive apparatus for electrical measurements furnished by the department of physics.

THE LABORATORY OF ENTOMOLOGY AND GENERAL INVERTEBRATE ZOOLOGY occupies the entire second floor of the north division of White Hall. It is equipped with microscopes, breeding cages, and other apparatus necessary for practical work in entomology. The greater part of the entomological cabinet is kept here for reference. The laboratory is also supplied with a large collection of duplicate specimens of insects, and typical forms of other orders of invertebrates for the use of the students.

THE GEOLOGICAL LABORATORIES occupy the entire second floor of the south wing of McGraw Hall, and are well furnished with the appliances needful for successful study in paleontology, lithology, practical geology, and the optical study of rocks and minerals. The laboratory on the east side is devoted especially to the collections and other equipments for the study of fossils and the various branches of paleontological science. The west room is devoted to the lithological collection and the equipments for macroscopic and microscopic study of minerals and rocks. Both laboratories are in connection with the main geological museum, occupying the central part of the same floor.

THE MECHANICAL LABORATORY, which is the department of demonstration and experimental research of Sibley College, and in which not only instruction but investigation is conducted, is located in the annex of Sibley College, in several rooms of good height, well lighted on all sides, and carefully fitted up for the purpose for which they are designed. It occupies the entire lower floor, a space one hundred and fifty feet long by forty feet wide, and represents the latest contributions of Mr. Sibley to the University. It is supplied with the apparatus for experimental work in the determination of the power and efficiency of the several motors, including steam engines, and the turbine driving the machinery of the establishment; with boiler-testing plant and instruments; and with a number of machines for testing lubricants and the strength of metals. Among these is the "autographic testing machine," which produces an autographic record of the results of the test of any metal which may be placed within its jaws, securing exact measures of the strength, the ductility, the elasticity, the resilience or shock-resisting power, the elastic limit, etc., of the material. Several steam engines and boilers, air and gas engines, several kinds of dynamometers, lubricant-testing machines, standard pressure-gauges, and other apparatus and instruments of precision employed by the engineer in such researches as he is called upon, in the course of his professional work, to make, are all collected here.

THE PHYSICAL LABORATORY.—The rooms of the physical department occupy the first floor and the basement of Franklin Hall. Piers are provided in several of the rooms for apparatus requiring immovable support, and some of the basement rooms have solid floors of cement, upon any part of which galvanometers, etc., may be used. The lecture-room on the first floor has fixed seats for one hundred and fifty-four students. The arrangements for experimental demonstrations are most complete. Gas, water, steam, oxygen, hydrogen, compressed air, blast, and vacuum cocks are within easy reach of the lecturer, and dynamo and battery currents are always at hand, and under complete control from the lecture-table. A masonry pier, four by twelve feet, permits the use in the lecture-room of apparatus that could otherwise only be used in the laboratory. A small turbine on the lecture table furnishes power for a variety of experiments. Lanterns with the lime or electric light are always in readiness for use when their use can in any way aid a demonstration. Adjacent to the lecture-room are the apparatus rooms, serving also, in part as laboratories. On the same floor are other laboratory rooms, among which may be mentioned one for photometry, without windows, and painted black throughout.

The equipment of the physical department comprises many fine instruments of precision. The standard clock, having Professor Young's gravity escapement, is placed in a room provided with double walls, and actuates two chronographs by which the time observations of the laboratory are recorded. A very perfect automatic dividing engine, a large comparator, a standard yard and meter, an electro-calorimeter of a platinum wire resistance in a hard rubber tank, a spectrometer reading to seconds, sets of resistance coils, and galvanometers of various forms are among the instruments. For magnetic and other measurements by the magnetic needle, a special building free from iron has been erected. In this are placed the magnetometers and the instruments for the accurate measurement of currents and potentials. Of the latter is the large tangent galvanometer, constructed at the University, with coils respectively one and six-tenths and two meters in diameter, and giving deflections to ten seconds. A very valuable adjunct is a well-equipped workshop connected with the department, where a skilled mechanic is constantly employed in making apparatus. Some of the most valuable instruments in the collection have been made in this shop.

THE UNIVERSITY LIBRARY.

The Library, including the President White collection, described below, contains about one hundred and three thousand volumes, besides thirty thousand pamphlets. It is made up largely of the following collections, increased by annual additions of from three thousand to five thousand volumes : A SELECTION of about five thousand volumes purchased in Europe in 1868, embracing works illustrative of agriculture, the mechanic arts, chemistry, engineering, the natural sciences, physiology, and veterinary surgery ; THE ANTHON LIBRARY, of nearly seven thousand volumes, consisting of the collection made by the late Professor Charles Anthon, of Columbia College, in the ancient classical languages and literatures, besides works in history and general literature ; THE BOPP LIBRARY, of about twenty-five hundred volumes, relating to the oriental languages and literatures, and comparative philology, being the collection of the late Professor Franz Bopp, of the University of Berlin ; THE GOLDWIN SMITH LIBRARY of thirty-five hundred volumes, comprising chiefly historical works and editions of the English and ancient classics, presented to the University in 1869 by Professor Goldwin Smith, and increased during later years by the continued liberality of the donor ; THE PUBLICATIONS of the Patent Office of Great Britain, about three thousand

volumes, of great importance to the student in technology and to scientific investigators ; THE WHITE ARCHITECTURAL LIBRARY, a collection of over a thousand volumes relating to architecture and kindred branches of science, given by ex-President White ; THE KELLEY MATHEMATICAL LIBRARY, comprising eighteen hundred volumes and seven hundred tracts, presented by the late Hon. William Kelley, of Rhinebeck ; THE CORNELL AGRICULTURAL LIBRARY, bought by the Hon. Ezra Cornell, chiefly in 1868 ; THE SPARKS LIBRARY, being the library of Jared Sparks, late president of Harvard University, consisting of upwards of five thousand volumes and four thousand pamphlets, relating chiefly to the history of America ; THE MAY COLLECTION, relating to the history of slavery and anti-slavery, the nucleus of which was formed by the gift of the library of the late Rev. Samuel J. May, of Syracuse ; THE SCHUYLER COLLECTION of folklore, Russian history and literature, presented by the Hon. Eugene Schuyler in 1884 ; THE LAW LIBRARY, containing over four thousand volumes of legal works, purchased by the University in 1886. The number of periodicals and transactions, literary and scientific, currently received at the Library is four hundred and thirty-five, and of many of these complete sets are on the shelves.

The British Patent Office and the United States Patent Office supply all reports published by them ; a very large number of mechanical and engineering periodicals are taken, and some progress has been made toward collecting a library of books of similar character.

The Library is a circulating one for members of the Faculty and a library of reference for students. Undergraduates have free access to a collection of encyclopædias, dictionaries, and works of reference in the various departments of study, but they apply to the librarian for other works desired. Graduate students are admitted to the alcoves. Upon the recommendation of the professor in any department, students of the senior and junior classes, engaged in special work in that department, will be granted access to the shelves for purposes of consultation.

Connected with the Library, and intended for use as a study room by advanced students, is the seminary-room, containing one hundred and fifty of the principal historical, literary, and philological periodicals, and about four thousand volumes, selected with reference to the needs of students engaged in special work. In the departments of architecture, agriculture, arts, botany, civil engineering, and mechanical engineering, collections are set apart in seminary-rooms for the use of students carrying on special investigations.

The Library is managed by a body known as the LIBRARY COUNCIL,

which consists of seven members, as follows: The President of the University and the Acting Librarian, *ex officio*, one trustee chosen by the Board, and four professors nominated by the Faculty and confirmed by the Board of Trustees. The President of the University is *ex officio* chairman of the council. The elected members hold office one year.

By the will of the late Mrs. Jennie McGraw-Fiske, the library received a specific bequest, and was also made residuary legatee. From this source there has been paid to the University up to the present time about \$700,000; and the income from this fund, known as the McGraw Library Fund, when it becomes available, will be applied to the support and increase of the Library.

THE LIBRARY BULLETIN is issued three or four times a year, and contains classified lists of recent accessions, and of books in various departments, as well as other bibliographical matter intended to assist students in their use of the Library.

THE PRESIDENT WHITE LIBRARY OF HISTORY AND POLITICAL SCIENCE.—On the 19th of January, 1887, ex-President Andrew D. White, in accordance with a purpose long entertained, made a formal proffer of his Library of History and Political Science as a gift to the University. On the same day a committee was appointed by the trustees to confer with Mr. White in regard to the conditions of the transfer of the collection. The preliminary arrangements were satisfactorily made, and this invaluable collection thus at once became available for the purposes of the University. A catalogue, already far advanced, will be pushed forward to completion with the utmost practicable rapidity, with a view to publication. The collection consists of about 30,000 volumes and 10,000 pamphlets, besides a large number of manuscripts of unusual interest and value. In almost all departments it contains works that are rare and valuable, while in one or two its completeness is believed to be unequaled in the United States. It is especially rich in primary sources on the History of Superstition, on the Period of the Reformation, on the French Revolution, and on the Period of the Civil War. The principal conditions on which this munificent gift is made are that it shall be placed in a fire-proof room, where it will be easily accessible to students and historical scholars, that it shall be placed in care of a special attendant, and that a sum of money shall be annually appropriated by the University to keep the collection supplied with the most important new books.

THE UNIVERSITY FARM.

The Farm consists of about one hundred and seventy acres of land, and is devoted to the uses of the agricultural department, for experi-

mental purposes and for the illustration of the principles of agriculture, horticulture, and arboriculture. Nearly all the domestic animals are kept to serve the same ends. Those portions of the farm and stock not used for experiments are managed with a view to their greatest productiveness. Statistics of both experiments and management are kept on such a system as to show at the close of each year the profit or loss not only of the whole farm, but also of each crop and group of animals. The North Barn (one hundred and forty feet in length by one hundred and twenty in width, and three stories in height) is used for experimental purposes and the general needs of practical agriculture. The large basement contains a covered yard and accommodations for the dairy cows, thirty in number, besides a cellar for roots and a place for cattle-scales, the steam boiler and the engine. The second floor is largely devoted to accommodations for wagons, carriages, farm implements, and rooms for the purpose of administration. The third story contains the stationary thresher, the chaffer, and the grain, straw, and hay, as well as the sleeping-room for the workmen. The Dairy House, an independent structure not far from the North Barn, is a wooden building two stories high, and fitted with accommodations for the making of butter and cheese by the most approved modern methods. The building is constructed with special reference to securing the most even temperature and the most perfect ventilation. Its equipment embraces a steam boiler, an engine, two creamers, and other modern appliances for the manufacture of butter and cheese.

THE UNIVERSITY GARDENS.

About thirty acres are devoted to gardens and orchards. The area presents a great variety of soils and exposures. There are now growing upon this area over fifty varieties of apples, over fifty of grapes, and many kinds of plums, cherries, peaches, apricots, mulberries, currants, gooseberries, raspberries, blackberries, strawberries, and many miscellaneous fruits, as almonds, nectarines, figs, service berries, and edible nuts. A large portion of the grounds is devoted to illustrative and experimental vegetable gardening in great variety. A steam-heated forcing-house, twenty feet by sixty feet, belongs to the horticultural department, and other forcing structures are in process of erection. A mushroom pit is connected with the forcing-house. The South Barn (eighty feet long by sixty wide, and three stories high) is now used by the department, and contains, aside from stables, a large grafting-room, tool-room, and rooms for the storing of

vegetables. A portion of the ground adjoining the forcing-house is being prepared for specimen plots.

ATHLETICS.

The Cornell Athletic Association, composed of representatives from the trustees, faculty, and student athletic organizations, was incorporated in June, 1889. A standing committee on athletics, including the faculty members of the association, has also been appointed from the faculty. It is hoped that the coöperation of these various interests, and the existence of a permanent organization may tend to produce a greater steadiness in the management of athletics, and permit of some continuity in the transmission of athletic methods and traditions.

Through the generosity of friends of the University, the association has had placed at its disposal a field of about nine acres, situated on the north side of Fall Creek gorge, together with a sum of money sufficient for enclosing and grading the field properly, erecting a grand stand, and providing a suitable cinder track. The field, which is admirably adapted to the purpose, will contain base-ball and foot-ball grounds, with additional space sufficient for lawn-tennis and other out-door sports.

ORGANIZATION OF DEPARTMENTS AND METHODS OF INSTRUCTION.

ANCIENT CLASSICS.

I. GREEK.

The courses of study in the department of Greek have been arranged with distinct reference to the fact that the Course in Arts does not require the study of Greek after the sophomore year, and, furthermore, with reference to the principle, that the choice of this Course does not by any means imply an intention to specialize in Greek.

In view of this it is clearly desirable to give to the Greek studies of the first two years such a form that they will satisfy some distinct purpose and represent in themselves some sort of completeness.

The work of the freshman year is directed toward cultivating the ability of reading easily and at sight. Authors of the simplest style have therefore been selected, Lysias as representative of the Attic type, Herodotus as representative of the Ionic, and the Odyssey of Homer of the Epic. The first term of the year will include, in connection with the reading of Lysias, a thorough review-drill in the fundamentals of accidence and syntax, and exercises in Greek composition will be required throughout the year. The class will be divided on the basis of scholarship into two numerically equal sections at the beginning of each term, and both sections will cover essentially the same ground, and pass the same examinations.

The required work of the sophomore year aims at giving the student some acquaintance with the scope and meaning of Greek literature and with the characteristics of Greek thought. It couples with the study of representative masterpieces from the four departments of Athenian literature,—oratory, philosophy, tragedy, and comedy,—a course of text-book study, lectures, and illustrative readings briefly reviewing in outline the history of the Greek literature.

The elective work of the department falls under three distinct heads :

(1) The literature. Four reading courses accompanied by lectures are offered, two of which are given each year ; viz., a course in the

drama, a course in the historians and orators, a course in the philosophers, and a course in the lyric and epic poets.

(2) The antiquities. Course 7 treats of the entire equipment and environment of ancient Greek life as made known to us in the literature and from the monuments, its usages and occupations, its ideas and institutions.

(3) The language. Lectures on Greek grammar from a historical point of view are given in alternate years. The exercises of the philological seminary are especially adapted to the needs of prospective teachers of the classics, and introduce the student to the original sources of information concerning the language and its history, and accustom him to methods of independent investigation. The seminary-room has been equipped with a carefully selected reference library of over six hundred volumes, and will be used as a regular study-room and laboratory by the more advanced students.

A course in elementary Greek has been added for the advantage of non-Greek students, who for any reason, may have found it, though late in their college course, desirable to acquire at least a rudimentary knowledge of the language, and are willing to incur the labor incident to doing two years work in one. The acknowledged purpose of the course is to attain within one year of extraordinary effort a reading knowledge of Attic prose, and all other objects are made secondary to this. The course cannot be used to make up conditions in the entrance examinations, it cannot be counted for graduation in the Course in Arts, and it cannot, without much additional study, serve as a preparation for the entrance examination.

II. LATIN.

The aim of the work in Latin covers several distinct heads :

1. To teach students of fair ability and of industry to read Latin understandingly and rapidly, without translating.

2. To give to students who acquire this power the opportunity of making a considerable acquaintance with the literature of the language, through the reading of large quantities of the important writers ; with the history of the development of the literature, through a brief course given in the sophomore year, and a more detailed study in connection with the authors read in the later years ; and with the political and social development of the Roman people, through the required course in history in the freshman year (see History 1), and in the last years, the collateral reading of history in greater detail in connection with the reading of Roman writers.

3. To afford a more thorough and sympathetic knowledge of Roman private life than the courses in the literature alone would give, through systematic lectures, illustrated abundantly, mainly by lantern views and photographs, from the remains of Roman civilization preserved in Pompeii, Herculaneum, and Rome, and elsewhere.

4. To offer to students whose interest extends to the scientific aspects of the language (and especially to those who are preparing to be teachers) advanced courses, partly by lectures, and partly by work in the Seminary, in tracing the development of the forms from the earliest stage of the language known to us, in the study of these forms from a comparative point of view, and in the advanced study of the origin and development of the syntactical uses of the language, and of the beginnings of their decay.

III. COMPARATIVE PHILOLOGY.

The work in comparative philology is planned with reference to the needs: first, of the general student with linguistic interests; second, of those proposing to be teachers of language, and more especially, of the classical languages; third, of those who propose to devote themselves to the special scientific study of the Indo-European languages.

To the first mentioned class of students course I is especially adapted. For those who propose to be teachers of other than the classical languages the course in comparative grammar is recommended in addition to course I. The courses on Greek and Latin grammar, and the seminary work on the Greek dialects are of the first importance for prospective teachers of the classics, and for such work a preliminary study of the elements of Sanskrit is considered eminently desirable, though not absolutely essential. For such as may wish to devote themselves exclusively to the study of comparative philology, there will be offered, as occasion may demand, in addition to the courses already announced, a more advanced course in Sanskrit, and special courses in the comparative grammar of other branches of the Indo-European family of languages.

GERMANIC LANGUAGES.

The aim of the first two years in German, besides preparing the student for progressive and independent work, is to afford those who have not a full classical training some grammatical and linguistic discipline, an insight into the relations between German and English, and a certain degree of literary culture.

During the freshman year Whitney's Grammar and Reader are used, accompanied by exercises in writing German, and translation at sight, while some special work is also read, as the tales of Grimm, of Fouqué or of Zschokke.

In the sophomore year the standard German classics are translated and special attention is paid to the study of etymology, to prose composition, to reading at sight, and to literary biography.

During the junior and senior years occur lectures and recitations, with elective classes, on German history, literature, and mythology; and courses are given varying from year to year, embracing the works of the leading authors. Classes are also formed in composition and conversation, and recent dramatic literature and the writings of living novelists are read. Instruction is further offered in Gothic, Old Saxon, Old and Middle High German, and the Scandinavian and Netherland languages.

The seminary system of study for advanced students has been employed in the department for several years with satisfactory results. To different members of such classes different portions of the same general subject are assigned, with references to the proper authorities or sources; or individual members pursue individual courses of reading under the supervision of the professor in charge. Lectures for those intending to be teachers are also given on class-room methods and theories of instruction in the modern languages; and generous provision has been made by the University for the use of lantern slides for illustrative purposes.

ROMANCE LANGUAGES.

Provision is made in the department of French for the wants of two classes of students; those in the technical, and those in the general courses. Students in the technical courses are instructed five times a week for one year in the principles of French grammar, writing of exercises, and reading of simple prose. It is expected that the instruction thus received will enable the student to read ordinary French scientific works and the French text-books which may be used in his course. Students in the general courses are divided into two classes: those who have had a Latin preparation, and those who have not. The former are instructed three times a week for the first year; the latter five times. The two sections are united in the second year when the object of study is more literary than philosophical. The instruction during the first year is essentially the same for all courses. In the second year two hours a week are devoted to reading advanced French

and the study of the history of the literature, with special reference to its principal schools or movements. One hour a week is given up to French composition, dictation, and pronunciation.

The required course ends with the second year, but more advanced instruction is given for one or two years more as may be desired. The instruction in the department is so planned that a student who pursues French for three or four years has an opportunity to study every period in French literature from the mediæval to the modern. Special instruction is also provided for graduates and other advanced students in French philology, Old French, and Provençal.

The courses in Spanish and Italian are of two years each, two hours a week. The grammar is rapidly studied the first term, and reading begun in the second. In the second year more advanced works in Spanish and Italian are read; in the former Cervantes and Calderon; in the latter selections from Dante, Petrarch and Boccaccio, with lectures on the history of the literature. Advanced instruction is given in Spanish and Italian philology.

The library is well provided with materials for the special study of the literature of the XVII century and of the Romantic school, while means are not wanting for the study of other periods, and of the other Romance literatures and philology.

ENGLISH LANGUAGE AND LITERATURE,

RHETORIC AND ORATORY.

I. RHETORIC.

During the first year two hours a week of class-room work are required of all students, and are devoted mainly to a systematic examination of the intellectual qualities of style. The text-book is supplemented by lectures, discussions, and a variety of composition exercises designed to test the student's command of clear, forcible and graceful English, so far as these qualities depend upon choice of words and arrangement. Special attention is also given to the outline construction of the paragraph and the theme. A sharp discrimination is made between those qualities of style which can be reduced to rules, and those which depend on the writer's own feeling and literary sense; and, indirectly, the development of this literary appreciation is made the object of the course.

In the second year, subjects (chiefly narrative and descriptive) are given out, at the beginning of each term, and the instructor makes

suggestions as to the mode of treatment, etc. Each essay is read and criticised with its author, and the instructor can thus adapt his instruction to the differing needs of the students.

During the third year all students in the general courses and in Agriculture, are required to take the course of two hours a week in advanced rhetoric. This consists of lectures and text-book instruction with the writing of themes. Students are required to choose their own subjects, (which must be generally of an argumentative or oratorical character), and such subjects are especially recommended as are in the line of their regular work. Each essay, or dissertation, or oration, is read and criticised by the instructor, with its author.

II. ELOCUTION AND ORATORY.

In the junior year, the first term is devoted to the study of Mandeville's *Elements of Reading and Oratory*, to special work in vocal gymnastics, and to exercises in articulation and enunciation. The second and third terms are devoted to the practical application of the elements of reading and oratory, and to instruction in general delivery.

In the senior year, each student electing the work is required to write orations as the professor may direct. Each oration is read and criticised with the writer, who is then instructed as to its proper delivery. To give the students experience before audiences, there are weekly oratorical exercises, which are open to all students and visitors who may wish to attend.

III. THE ENGLISH LANGUAGE.

The English language is studied in its historical development from the Anglo-Saxon period to the nineteenth century.

Anglo-Saxon grammar, and the Anglo-Saxon literature from King Ælfred's period down to the last year of the Anglo-Saxon Chronicle (1140), are made a text-book study, the bearings of the language upon modern English receiving special attention. Instruction in the subsequent language and literature down to the Wycliffite versions of the Bible, and "The Vision of William concerning Piers Plowman," is given through lectures. Chaucer is made a text-book study, and special importance is attached to the pronunciation of his language, chiefly according to that determined by Ellis, in his *Early English Pronunciation*. The greater part of a term is usually devoted to the reading of *The Canterbury Tales*, and to lectures on Chaucer's England, and on the current of the subsequent language down to the Elizabethan period.

Several lectures are given on Elizabethan English, and, in addition thereto, the language of this period is studied, in class, on the basis of a number of plays of Shakespeare (usually the three Roman Plays and *The Winter's Tale*), and Bacon's Essays.

Such features of the language as have been subsequently developed, are treated, as occasion offers, in the lectures on the literature of the seventeenth, eighteenth and nineteenth centuries.

A course of lectures (two hours a week) is also devoted to the history of the language, considered from a more strictly philological point of view. It has to do especially with the phenomena of English speech in its various phases as the result of development out of precedent types, and investigates the sources of its vocabulary, and the laws of its growth in sound, in force and in syntax.

IV. ENGLISH LITERATURE.

In the sophomore year a general survey is made of English prose through Minto's "*Manual of Prose Literature*," which is supplemented, in various respects, by the talks of the instructor.

In the junior and senior years lectures are given on English literature, from the fourteenth to the nineteenth century, inclusive, the principal courses, or groups, being, 1. On Wycliffe, the Vision of William concerning Piers Plowman, Chaucer, and Gower. 2. On Shakespeare. This embraces about forty lectures, which are specially devoted to the dramatic art, the action, and the moral proportion of about fifteen plays, representing the poet's early, middle, and late work. Additional lectures are given on Shakespearian bibliography, and on the language-shaping of the plays as a chronological test. In connection with the latter subject, several lectures are given on the æsthetics of English verse, in which analyses are presented of the most important English stanzas, from Chaucer to Tennyson. 3. On Milton's poetical and prose works. 4. On the Drama of the Restoration, and on the subsequent drama to Goldsmith and Sheridan. This course includes a special treatment of Dryden, as the central literary figure of the period, and of the "*Collier Controversy*." 5. On Pope and the principal contemporary poets and prose writers. 6. On the Revival in English poetry; the Ossian controversy; Bishop Percy's *Reliques of Ancient English Poetry*; Burns; Cowper. 7. Wordsworth's protest against the artificial school of Pope; the *Lyrical Ballads*; the influences of the French Revolution upon the English literature of the period; the poetry of Wordsworth, Coleridge, Shelley, and Byron, and its relation to the French Revolution. 8. The reaction against the

revolutionary spirit, first distinctly indicated in "Poems chiefly Lyrical," by Alfred Tennyson, 1830 ; the poetry of Tennyson, the Brownings, Rossetti, and Matthew Arnold, and that of their several disciples.

It is made a leading purpose in these lectures to present the literature, in its *essential* character, rather than in its historical, though the latter receives attention, but not such as to set the minds of students especially in that direction. It is considered all important that students should first attain to a sympathetic appreciation of what is *essential* and *intrinsic*, before the adventitious features of literature—features due to time and place—be considered.

Much importance is attached to the vocal interpretation of literature ; as students are by this means brought into a more sympathetic appreciation of the subtler elements of poetry and impassioned prose. To this end a course of readings from the great poets and dramatists and prose writers is given, at intervals, during the year. These readings are given in the evening, in the Botanical Lecture Room, Sage College, and are open to all students and others who may wish to avail themselves of them.

Seminary Work.—The literary seminary is confined to prose authors. Certain classical works are proposed, by the instructor, as subjects of study, from which each student makes a selection. This he studies carefully, first, in its essential, intrinsic character, and, secondly, in its accidental and historical character, and afterwards embodies the result of his studies in a paper, which is read in the Seminary, and discussed by the several members, each member having been required to read, in advance, the work in question. In this way the student acquires a knowledge of a large body of the higher prose literature and in addition thereto, is trained in the formulation of his impressions, and in the principles of literary criticism.

V. JOURNALISM.

In the belief that certain parts of newspaper work can be taught in the class-room, both by lectures and by actual experiments in reporting, preparing copy for the printer, editing copy and the like ; and that such instruction by a journalist of experience may be made of decided advantage to students who desire to enter the profession of journalism, a course is offered in the beginnings of newspaper work.

After a few lectures on, How newspapers are made ; Characteristics of leading newspapers of the United States ; Chances of success in journalism ; and kindred topics ; the class is organized as though it were the city staff of a large newspaper, with the professor as editor in

charge. It is thought that after a year in the course, the average student will be prepared to begin actual newspaper work, far in advance of the new reporter who has not had such a course.

It should be understood, however, that there is no department of journalism in the University, but simply a course of instruction of two hours a week, open to such juniors, seniors, and graduate students as intend to devote themselves to journalistic work.

The daily, weekly and monthly publications of the students will be utilized as far as practicable in carrying out this plan.

PHILOSOPHY.

The study of philosophy begins in the sophomore year, with a prescribed course of three hours a week in physiology, psychology, and logic, throughout the year. Thereafter the work is altogether elective. In the junior year the courses offered aggregate from three to eight hours a week. Thus, students who completed last year the courses in physiology, logic, and psychology, may elect this year a three-hour course on the history of philosophy, a two-hour course on ethics, and a three-hour course on epistemology; and there will be offered next year a three-hour course on ethics, and a course on physiological psychology. For seniors and graduates who have completed these courses, there is a course in the philosophy of Kant,—the portion taken up this year being his ethical treatises,—a course on post-Kantian German philosophy, and a course on the philosophy of to-day. During the Winter term there will also be given a general course, open to all students, on the philosophy and history of religion. A more detailed characterization of these courses will be found under "Courses of Instruction."

The department is manned by a professor and an instructor. It has a seminary-room (with chairs, tables, and a select collection of books), reserved for the exclusive use of advanced students (seniors and graduates), who are engaged in investigation and writing. The library contains complete sets of the leading American, English, French, and German philosophical periodicals.

THE SCIENCE AND ART OF TEACHING.

Believing that a need exists for more thoroughly equipped teachers in our higher educational institutions, the University has made recent provision for supplying this want, both by the establishment of a professorship of the science and art of teaching, and by such additions to

some of the chief lines of university study as seem best adapted to fit students to teach them successfully. The lectures of the Professor of Teaching are given in two courses, each of which continues a year : (1) a course of three hours a week on the general theory of education, the art of instruction with its application to various branches, and the organization, management, and administration of schools ; and (2) a course of two hours a week on the history of education, with a discussion of the views of eminent writers on education. The lectures are supplemented by conferences for the discussion of educational topics, for the special investigation of important educational questions, and for reports on visits to schools ; and, to students who have completed either of the courses mentioned above, there is offered a seminary for the examination of some advanced German work on pedagogy.

Arrangements have also been made in several departments of the University, by special classes and by seminaries, to give extended instruction to those who intend to teach, in the best methods of presenting the branches of study to which these departments are devoted.

Certificates of scholarly fitness to teach will, upon application on or before June 1, be given to such graduates as have successfully pursued the course of the Professor of Teaching, numbered (1) above, or that portion of it which relates to the general theory of education, together with the course on the history of education, and have besides attained marked proficiency in at least five hours of advanced work for two years, in each subject for which the Teacher's Certificate is given, in such courses as offer five or more hours of such work

HISTORY AND POLITICAL SCIENCE.

Instruction in history and political science has three distinct purposes in view. The first is to furnish the general information that is necessary for intelligent citizenship ; the second to give such training as will be valuable to students intending to go into the profession of the law, into journalism, into the civil service, or into active political life ; and the third to provide for such special and advanced training as will qualify students for higher degrees, and for the subsequent teaching of history and political science as a profession. The first of these ends is sought by means of text-books, examinations, and lectures ; the second and third by means of lectures, examinations, and the careful investigation of special subjects carried on in the seminaries of history and political science.

In General History the courses (all of one year each), offer facilities for a comprehensive and somewhat careful study of the whole period

from the beginning of Greek civilization to the present time. A course of two hours a week is devoted to the social and political history of Greece and Rome. This course can be followed in the sophomore year by a course of three hours a week on European history, from Barbaric Invasions to the Renaissance, and this in turn in the junior year by one of three hours a week on the period from the Renaissance to the French Revolution. In the senior year students may appropriately take the course of three hours on the period from the French Revolution to the Franco-German War of 1870. English History is represented by two courses, one on the political and social development of England, and one on the development of English constitutional history and constitutional law. In American History a course of three hours a week is devoted to the social, political and constitutional development of the colonies, and a course of two hours a week to the development of constitutional history and constitutional law, since the Revolution. Seminaries in general history, as well as in the history of England and of America, are organized for the prosecution of advanced work.

In Political Economy provision is made for the following courses: (1) a general course of three hours a week in the elements of political economy; (2) an advanced course of three hours on unsettled problems in political economy and finance; (3) a seminary of two hours for the examination of special problems. After the present year additional courses on the historical development of different economic and financial systems may be expected. Within the wider scope of Political Science, the following are given, viz.: A course of two hours a week on the history of political and municipal institutions; a course of one hour a week on international law and diplomacy; a course of one hour a week on the literature of political science, and a course of one hour a week on the leading principals of Roman law. The advanced courses offer special facilities for graduate students of this and of other universities.

No course of study in History and Political Science is laid down; but the various courses offered in the list of Courses of Instruction are open to election by all candidates for the degrees of Bachelor of Arts, Bachelor of Philosophy, Bachelor of Letters, or Bachelor of Science; and students in the course in Philosophy who, in the last two years, elect continuously not less than nine hours in history and political science may receive the degree of Bachelor of Philosophy in History and Political Science. Candidates for either of these degrees desiring to make a specialty of historical studies, are advised to elect from the more elementary courses in the sophomore year. In the junior and

senior years, as nearly all studies are purely elective, there is ample opportunity for selecting the work that may be desired.

Graduate studies may be carried on with advantage during two years after the baccalaureate degree is taken. The general seminary-room contains some three thousand volumes of works selected with special reference to the needs of advanced students of history and political science, and this room is open to such students from nine o'clock in the morning to the same hour at night. The alcoves of the General Library, which is specially rich in historical literature, are also freely accessible to this class of students, whenever they are carrying on investigations in special subjects. The White Library of History, containing about thirty thousand volumes and ten thousand pamphlets, though not yet placed in one of the University buildings, is, for the most part, upon the University grounds, and, through the carefully prepared catalogue kept in the University Library, is made available to all advanced students.

The number of professors and other teachers devoted to this work, the character and range of the instruction given, as well as the facilities offered by the seminaries and libraries, afford peculiarly favorable opportunities for the prosecution of a thorough and comprehensive course of historical training.

MATHEMATICS AND ASTRONOMY.

The instruction offered by this department is directed toward three ends : (1) To aid in developing certain powers and habits needed by every true student and good citizen : namely, of sustained, exact, candid, independent reasoning, even when the subject-matter becomes general or abstract ; of imagination, to grasp as a whole a complex geometric or other concept, or an extended scheme of thought ; of applying theory to practical problems ; and of precision and clearness in stating one's own convictions and the grounds of them. (2) To present the fundamental relations of space, number and sequence, and the structure of the system of worlds, in which we live. (3) To meet the special needs of students doing the higher technical and scientific work, and of those intending to be teachers and investigators.

It is hoped that the courses offered give enough in each of the chief branches of pure mathematics, and in some of the applications, to exhibit the fundamental ideas and characteristics of each branch, and to meet its fundamental difficulties ; so that the student's further studies may not require a teacher. This is the more desirable, as the educational uses of these various lines of study differ somewhat in kind ;

but it sometimes requires that, to save time, problems collateral to those examined be deferred until the whole shall come to be reviewed, or until later studies, at the University or elsewhere, shall call for them or throw new light upon them.

In presenting the different topics, the endeavor is to cultivate the powers of insight, judgment, and origination, rather than to rely very much upon memory. Attention is given to the criticism and choice of methods, and to the detection of their motives; and the methods most naturally suggested by general considerations are oftenest preferred. Students are encouraged to think both with and without the aid of symbolic language; to give concrete interpretations of important steps as well as of results; and, on the other hand, to see how far the symbols with their laws of combination can be separated from the particular subject-matters, and to make free use of symbolic methods.

PURE MATHEMATICS.

The courses prescribed, in whole or in part, for all candidates for baccalaureate degrees comprise a year of solid and projective geometry, algebra, and trigonometry, and a year of analytic geometry and calculus; making up about the usual college curriculum of pure mathematics. These are supplemented by problems in geometry, algebra, and trigonometry (elective, 2 hours a week); and by the elective advanced work in algebra, including determinants, imaginaries, and theory of equations (2 hours), in trigonometry (1 hour), in plane and solid analytic geometry (3 hours), and in calculus (6 hours); thus forming a tolerably full course in these subjects, which a good student can complete before commencing his senior year, and which gives a good preparation for most of the courses that follow. Among the books used in the elective work are Burnside and Panton's *Theory of Equations*, Todhunter's *Plane Trigonometry*, Salmon's *Conic Sections*, and selections from his *Higher Plane Curves* and *Analytic Geometry of Three Dimensions*, Williamson's *Calculus*, and (for reference) Bertrand's *Calcul*.

Related to the above work from Salmon are two other courses, of three hours each, viz.: (a) In synthetic geometry, which gives the theories of transversals, of reciprocal polars, and of projection, thus showing the fundamental distinction between graphic and metric geometry, with the point-and-plane dualism that runs through the former, and training the imagination to see by ordinary perspective the chief properties of all conic sections in those of the circle. (b) In quantics, including the theories of elimination, of canonical forms, and of such relations among functions or values as persist when varia-

bles are linearly transformed or the corresponding geometric figures are deformed as by perspective.

Two principal lines of further calculus study are offered, each of them for three hours a week, and sometimes running through two years, viz. : differential equations, and the theory of functions. Perhaps the first of these is specially important as an introduction to the higher physical applications of calculus ; and the second, as leading up to some of the largest of modern analytical concepts. The work at first is based upon the treatises of Forsyth, and of Briot and Bouquet, respectively.

For the sake of the practical applications, there is instruction in finite differences or in spherical harmonics, usually in alternate years. The elements of vector analysis, or of non-Euclidean and hyper-geometry, or of probabilities and least squares with sociological applications, including some recent work of Galton, are also usually taught if desired. In either of these subjects, the lectures are two per week.

The theory of numbers (3 hours) is taught in alternate years with molecular dynamics. It is based upon Dedekind's Dirichlet's *Zahlentheorie*, but gives a new theory of determinately combining ideals.

ASTRONOMY AND MECHANICS.

There is yearly a three-hour course in descriptive and physical astronomy ; and in alternate years one in celestial mechanics. The first course considers the phenomena of the heavenly bodies and their probable conditions and histories ; the class investigating for themselves various questions bearing upon these points. The second course deals mainly with the figures of the planets, the tides, the elliptic motion and perturbations ; the latter being treated geometrically as well as by the usual analytic method. Neither course takes up practical astronomy, which is taught by the department of civil engineering.

There is also a three-hour course in rational statics, and another in rational dynamics ; and students are strongly advised to take these or their equivalents before commencing celestial mechanics. They are based upon the treatises of Minchin and of Williamson.

The course in molecular dynamics (3 hours, every other year), is based upon Sir William Thomson's Baltimore lectures, and is given by one who reported them, and, with the lecturer, prepared them for the press.

SEMINARY WORK, ESSAYS, FACILITIES.

An inquiry into the powers employed and the objects to be sought in the study of mathematics, and into the best ways of securing those

objects in teaching, is conducted by essays and discussions in a weekly seminary.

Besides the theses for graduation, provision is made for the writing and criticism of mathematical essays, in order to cultivate a neat and clear style of mathematical writing, and as far as may be, to stimulate originality.

In preparing essays and theses, students are encouraged to follow up special inquiries by aid of the University Library, which now contains some five thousand volumes on mathematics and the allied sciences, including many of the most important mathematical journals, and transactions of many scientific societies. A collection of models is also begun, which will be very useful in the study of surfaces, of functions, and of hyper-geometry.

PHYSICS.

LECTURE COURSES IN ELEMENTARY PHYSICS.

The instruction in the elements of Physics is by means of lectures given twice a week throughout the year. In these lectures the general laws of mechanics and heat, electricity and magnetism, and acoustics and optics, are presented. The very large collection of lecture-room apparatus possessed by the department, makes it possible to give experimental demonstrations of all important phenomena. The course of lectures is supplemented by weekly recitations, for which purpose the class is divided into sections of about twenty members each.

Two courses are given, one of which is intended for students in Science, Letters, Agriculture, and the course preparatory to Medicine; the other for students in Civil, Mechanical, and Electrical Engineering, Architecture, and Chemistry. The ground covered in these courses is essentially the same, but the methods of treatment differ, being adapted in each case to the needs and previous training of the class of students for which the course is designed. The successful completion of the freshman mathematics is in all cases a prerequisite for admission to these courses.

COURSES OF LABORATORY INSTRUCTION.

The first year of laboratory work is devoted to the experimental verification of physical formulæ, to practice in the use of instruments of precision and to the attainment of some knowledge of the simpler methods of physical manipulation.

In Mechanics, the student is taught the proper use of the microscope and of various forms of the micrometer, cathetometer, dividing en-

gine, comparator, analytical balance, and chronograph ; and of other instruments for the measurement of length, mass, and time. In Heat the course includes methods of testing thermometers, the use of the calorimeter and thermopile, and practice determinations, by various methods, of melting and boiling points, of specific heat and the heat of fusion and vaporization. In Optics the elementary laboratory instruction embraces the use of the spectroscope and spectrometer, the determination of wave-lengths, the measurement of lenses and prisms, and of indices of refraction ; together with a variety of other experiments calculated to familiarize the student with the fundamental principles of the subject. In Electricity the work consists of the adjustment and calibration of galvanometers, of the verification of the principles upon which the measurements of current, electromotive force and resistance are based, the use of the electrometer, and the performance of such other experiments as offer the best preparation for advanced work in electricity. In Magnetism practice determinations are made of the magnetic dip and of the horizontal intensity and variations in the direction and intensity of the earth's magnetism ; and the student makes a preliminary study of the methods of measuring the magnetic field.

Advanced students make a more extended study of various physical constants. They learn the use of standard instruments, make electrical and magnetic determinations in absolute measure, test the efficiency and determine the characteristics of dynamo machines. The opportunities afforded for advanced work in electricity are unusual.

Every encouragement is offered to advanced students for the carrying on of original investigations, and every opportunity is taken to stimulate a spirit of scientific inquiry. Courses of reading are suggested to such students, in connection with their experimental work ; and they are brought together informally at frequent intervals for the discussion of topics of scientific interest. It is the aim of the department to furnish every possible facility for research in physics on the part of students qualified to do original work.

CHEMISTRY.

I. DESCRIPTIVE AND THEORETICAL CHEMISTRY.

To students in the general courses, and others who can devote but little time to the study of chemistry, instruction is given by a course of lectures and recitations on the principles of the science and the general study of the chemistry of inorganic substances.

Students who propose to take up subsequently analytical and organic chemistry are given a distinct course of lectures and recitations, and in addition are required to perform in the laboratory an extended series of simple experiments illustrating the principles discussed in the lectures. They are thus brought into close contact with the phenomena to be studied, and the impression produced by the principles stated is greatly deepened.

The instruction in theoretical chemistry is continued by lectures and recitations in chemical philosophy, and also, in connection with laboratory work, in organic and analytical chemistry.

II. ANALYTICAL CHEMISTRY.

Elementary Qualitative Analysis.—The course in elementary qualitative analysis occupies about two terms of from seven to ten hours a week of actual practice, the work in the laboratory being supplemented by lectures and recitations. It is the purpose of this class-room work—of which practice in writing chemical equations explanatory of the operations and reactions of the actual analytical work forms an important feature—to give the student some acquaintance with the chemical principles upon which that work is based, so that he may carry it out more intelligently and successfully than if he blindly follows the directions in the text-book.

Blowpipe Analysis and Determinative Mineralogy.—A course of instruction in qualitative blowpipe analysis and determinative mineralogy is given during one term. This is designed to enable the student to avail himself of the simple and effective means afforded by the blowpipe in determining the nature of minerals and unknown chemical substances.

The work in determinative mineralogy comprises the identification of minerals by observation of their physical properties and blowpipe reactions, and constitutes a necessary preparation for the study of systematic mineralogy and lithology. This course is followed by one term of the study of systematic mineralogy, comprising lectures, conferences, and the study of specimens. The subject of crystallography forms an important part of this course, and includes lectures illustrated by a complete set of glass models, as well as laboratory practice in the identification of crystalline forms, from blocks and actual specimens.

Exceptional advantages for the study of mineralogy are offered by the well-known Silliman collection of minerals, which is accessible to students at all times. A complete and carefully selected students' collection affords abundant material for work in determinative mineralogy. Special attention is given to the more important metallic ores as a preparation for the study of economic geology and metallurgy.

Students who have completed the above course are prepared to take up the work of lithology, petrography, and advanced crystallography, for which abundant facilities are offered in the department of geology.

Elementary Quantitative Analysis.—This course extends for all students through at least one term of ten hours of actual practice, and comprises a small number of simple gravimetric and volumetric determinations, together with some required study of the chemistry of the operations involved. Beyond this the work of each student is adapted to the particular purpose for which it is taken.

Agricultural Chemistry.—Students in the course in Agriculture have practice in the analysis of fertilizers and feeding materials, of foods, of dairy products, and of waters used for the household.

Engineering Chemistry.—The student in the course of Mechanical Engineering may, if he can give more time to chemical practice than is prescribed for his course, work on the analysis of iron and steel, and of other materials used in the mechanic arts.

Medical Chemistry.—Practice is given to students in the Medical Preparatory course in the analysis of urine, milk, and drinking water, in the separation of mineral and vegetable poisons from animal matter, and their identification, and the assay of medicinal preparations.

Pharmaceutical Chemistry.—Students in the School of Pharmacy will take practice in all the kinds of analysis mentioned in the preceding course, and also in the assay of the crude materials used in the manufacture of drugs and medicinal preparations.

Sanitary Chemistry.—The student of sanitary science takes practice in the examination of drinking water, of air (in connection with the study of the ventilation of rooms), of illuminating oils, and the detection of injurious adulterations of foods and beverages, or the injurious qualities of other articles in common use.

The Full Course in Quantitative Analysis in the Wet Way.—The student in the course in Chemistry, besides taking all work above mentioned, is drilled also in the methods of analysis of ores, the useful metals in their commercial condition—especially iron and steel—of alloys, and of gaseous mixtures; in the use of the polariscope and spectroscopic, so far as they can be profitably applied in chemical analysis, the analysis of technical products, the examination of articles of food and drink for adulterations of commercial as well as sanitary significance, etc.

To these students lectures are given on the recent literature of chemical analysis; and readings are held in German chemical journals, for the purpose of giving such a familiarity with technical German that the abundant and important literature of the subject in that language can be consulted with facility.

Assaying.—In assaying students are required to determine the values of gold, silver, and other metals contained in ores, sufficient in number to make them familiar with the most approved methods in use in the West and in European mining regions. The assay of gold and silver bullion, as practiced in the national mints, forms a part of the course. The assay laboratory is equipped with every requisite for work in this branch.

III. ORGANIC CHEMISTRY.

The elements of organic chemistry are taught by a course of laboratory practice with frequent recitations, by which the student is trained not only to recognize, but also to prepare and purify, the typical members of most of the series of organic compounds. In this course the work is arranged in accordance with the well-known text-book of Professor Remsen. After its completion, students are given further practice in following out reactions of special theoretical interest, in the course of which constant reference is made to the original memoirs, published in the leading German and French periodicals. As soon as the necessary proficiency in manipulation and theoretical knowledge is attained, the student is given every encouragement to devote himself to original investigation, for which organic chemistry offers an especially promising field. A special laboratory of organic chemistry has recently been completed, and equipped with an unusually complete stock of materials and apparatus.

IV. APPLIED CHEMISTRY.

This subject is taught by a course of lectures, continuing throughout the year, on the principles of chemical manufacture and the important chemical industries. The course is supplemented and continued by special work in the analytical and organic laboratories, by which the student is trained in the special determinations and operations of the particular industry to which he may intend to devote himself.

V. METALLURGY.

During the winter term of the junior year three lectures a week are devoted to metallurgy. These lectures are intended to give the students in the technical courses a general idea of fuels, ores, and the most important methods of extracting the metals which are especially used in construction, the metallurgy of iron naturally claiming the most attention.

For description of the chemical laboratories, museum, and equipment, see "Material Equipment."

NATURAL HISTORY.

This title embraces Botany (including horticulture and arboriculture) ; Geology (including paleontology and mineralogy) ; Invertebrate Zoology (including entomology) ; Vertebrate Zoology (including physiology and hygiene, human and comparative anatomy, histology and embryology). Veterinary Science is presented under Agriculture.

Collectively, the branches named above form a large part of the four-year course, leading to the degree of Bachelor of Science in Natural History, which is specially adapted to those who intend to become teachers or investigators of natural history, or to pursue the study of medicine.

The University lays special stress on the desirability of thorough studies in natural history as a preliminary to the study of medicine. Accordingly, a special course known as "The Two-Year Course Preparatory to the Study of Medicine" is provided for those who desire such preparatory work, but for some reason are unable to take the full course of four years.

Nearly all the branches in natural history are required in the course in Agriculture. In all the general courses physiology is a prerequisite to psychology ; course 1 in botany is required in the courses leading to the degrees of Bachelor of Letters and Bachelor of Science, and in the courses in Architecture and Civil Engineering. In the two courses last named geology and mineralogy are also required.

The instruction in the branches named above is either general (*e. g.*, courses 1 in botany, physiology, and invertebrate zoology, and 2 in geology), or special (*e. g.*, course 9 in botany, fungi ; course 4 in geology, historical paleontology ; course 3 in entomology ; and course 3 in vertebrate zoology, the morphology of the brain). The special courses consist largely, or in some cases wholly, of laboratory practice. The general courses are abundantly illustrated by specimens, diagrams and experiments, and include practical exercises of the class in sections. The natural history instruction, as a whole, is therefore eminently direct, objective, and practical.

I. BOTANY.

In this department are offered eleven different courses, some of them, however, in alternate years. The general and introductory course (1), and the introductory laboratory course (2), given in the spring term, are required as preparatory to all the other courses. These latter present the following subjects : systematic and economic botany ; arbori-

culture ; pharmaceutical botany ; exotics ; plant physiology ; histology of plants ; higher cryptogams ; fungi ; special advanced work on phænogams and cryptogams.

The spacious green-houses and the large collections of the very rich flora native to the region about Ithaca should be mentioned as an important part of the means for successfully carrying on botanical studies. These are more fully described in connection with the botanical museum and laboratory.

II. GEOLOGY.

The instruction in geology is arranged so that students wishing to make a thorough study of the subject may take the courses 1, 2, 3, or 1, 2, 4, in order according as they make a special study of the mineralogical or the biological aspects of the subject. These courses occupy the first year. A second year of advanced study is provided in courses 5, 6, 7, and 9.

Courses 1 and 2 are required of students in Civil Engineering, and course 8 is prepared specially for those in Architecture.

Besides diagrams and models the means of instruction include museum series of fossils and minerals, and a collection of economic materials with microscopic sections for the study of rocks ; also selections from the Newcomb collection of shells.

III. INVERTEBRATE ZOOLOGY AND ENTOMOLOGY.

The general course in invertebrate zoology, in the fall term, consists of two lectures a week and one practical exercise, at which specimens and preparations of representative forms are examined by the students, with the aid of compound microscopes when necessary. A more special course on entomology occurs in the spring. During both of these terms there is laboratory practice in entomology and invertebrate zoology, and practical work in the apiary.

An important feature of this department is the "Summer Course in Entomology and General Invertebrate Zoology," consisting of lectures, field work and laboratory practice, at the season of the year most favorable for the study of insect life. Particular attention is paid to the habits of insects and their relations to agriculture ; and there are large series illustrating the life histories of interesting and economically important forms, in addition to the collections elsewhere described.

IV. VERTEBRATE ZOOLOGY.

Under this department are offered two general and six special courses. The former are : 1. Physiology, illustrated by painless experiments

upon animals, and giving special reference to the structure and functions of the brain. 2. Zoology. In courses 1 and 2 one-third of the exercises are practical, the students examining under direction the viscera and the brain of the cat, the heart of the sheep, microscopic preparations of the various tissues, and alcoholic examples of representative vertebrates.

Courses 4 and 5 consist of weekly lectures on anatomical and histological methods with corresponding laboratory work. In courses 6 and 3 are set forth the elements and methods of embryology and the morphology of the brain, with appropriate laboratory work. Courses 7 and 8 consist of advanced work in human or comparative anatomy or systematic zoology of vertebrates, and vertebrate histology.

In the lectures constant use is made of diagrams and models, and of specimens from the museum, which has been formed and arranged with particular reference to its educational purpose.

THE COLLEGE OF AGRICULTURE.

The distinctive work of the College of Agriculture embraces instruction in General Chemistry, in Agricultural Chemistry, in Botany, in Horticulture, in Zoology, in Entomology, in Veterinary Science, and in the various branches of Theoretical and Practical Agriculture.

All students are required to work five hours each week for one year, under the direct supervision of the Professor of Agriculture, in the farm workshop, in the barns, or in the fields. Nearly as much time is spent in the fields and barns under the Professors of Veterinary Science, Botany, Horticulture, Geology, and Entomology. Students receive no pay for this or any other educational work. The field-work supplements the lectures and recitations in such a way that the application and value of the principles taught may be thoroughly understood and remembered by the student. Students in agriculture are divided into two classes: those who desire a complete course of four years, and are candidates for a degree; and those who desire to take a special course, embracing instruction in such studies only as have a direct bearing on practical agriculture.

THE COMPLETE COURSE.

Students in the four-year course are presumed at the time of their admission to be fairly familiar with all of the rudimentary operations of the farm. If they are not, they can acquire this knowledge and practice either at the University farm, or under the eye of some good farmer, during their first summer vacation.

Visits are made from time to time to the best farms and herds in New York and Canada, in order that the students may have opportunities for a wide range of study and comparison, and may come into direct contact and relations with the best class of farmers. These visits give the students the best of opportunities for studying the results of science and practice combined.

SPECIAL COURSE.

There is a large number of farmers' sons who would be willing to spend one or two years at the University pursuing studies in applied agriculture, of whom the four-year course demands too much in the way of preparation, as well as of time and expense. To accommodate this class a special course has been provided, the only requirements of which are that students must possess a fair knowledge of English, and must select at least three-fourths of their studies in subjects pertaining to agriculture, as elsewhere prescribed. The student is able, even in one year, to attend the courses of lectures given by the Professors of Agriculture, Veterinary Science, Agricultural Chemistry, Botany, Entomology, and Horticulture; and he may thus gain a systematic and practical knowledge of those branches that will be of most service to him. Special students, during the time they are in the University, enjoy equal advantages in all respects with students who are studying for a degree.

ARCHITECTURE.

The instruction is given by means of lectures and practical exercises. Its object is not merely to develop the artistic powers of the student, but to lay that foundation of knowledge without which there can be no true art. Drawing is taught during the first two years, and afterward thoroughly used and applied in mechanics, stereotomy, and designing.

Architectural mechanics occupies a part of each term for one year. The lectures are each supplemented by at least two hours of work on problems. In developing the subjects and in solving problems, analytical methods are used; but for practical use special attention is paid to the application of graphical statics.

The study of the history of architecture and the development of the various styles runs through five terms. The lectures are illustrated by photographs, engravings, drawings, casts and models, of which the supply for the use of the department is very large. A lantern of the most approved pattern for the purpose of throwing architectural views upon a screen before the class is in constant readiness for the use of the lecturer.

Proper attention is paid to acoustics, ventilation, heating, decoration, contracts, and specifications. The whole ground of education in architecture,—practical, scientific, historical, and æsthetic,—is covered as completely as is practicable in a four-year course.

For collections and equipments, see "Material Equipment."

CIVIL ENGINEERING.

The several courses of preparatory and professional studies have been planned with a view to laying a substantial foundation for the general and technical knowledge needed by practitioners in civil engineering; so that our graduates, guided by their theoretical education and as much of engineering practice as can be taught in schools, may develop into useful investigators and constructors.

The aim of this department is mainly to make its pupils cultured and well balanced professional men, trained to meet the actual demands of American engineering science and practice, without losing sight of the necessity of fostering professional progress.

The prominent characteristic of the organization of this department is the care exercised in the choice of its officers of instruction. The advanced mathematics, which have a prominent place in all the courses; the graphics, field operations, economics of engineering, and investigations in the library and laboratories of the department are, with only two exceptions, in charge of a body of instructors who are specialists in their respective branches, and who join to a long training as teachers the professional experience derived from active service in charge of construction for periods ranging between nine and twenty-five years; they are thus competent to judge of the needs and best methods for promoting the usefulness of this school. It is the duty of these officers to study closely, and to contribute to the advancement of their several specialties; and through their acquaintance with the engineering problems of the day and consultation with the Dean of the department, to secure a proper balance between the various elements which enter into the technical education of the civil engineer. As the result of this system of administration, and of the success met in years past by heeding the growing tendency to specialize, within the means at our disposal at present, it has been necessary to add to the general training of the undergraduate course, five additional one-year courses for graduates. These graduate courses are constantly growing in strength and attracting a steadily increasing number of resident graduates. Under certain restrictions, as to the number of students, the graduate courses are open to civil engineers of this or other institutions having undergradu-

ate courses similar to our own, and offer courses of advanced and special studies in the following departments: Bridge Engineering, Railroad Engineering, Sanitary and Municipal Engineering, Hydraulic Engineering, and Geodetic Engineering. The object of these courses is to provide the young graduate with the means of prosecuting advanced investigations after such experience in professional life as may lead him to decide in the choice of a specialty. Lectures in the museum and laboratories are given to these students for the purpose of directing and aiding their original researches. All graduate work may alternate with a limited number of elective studies in other professional schools, or in history, literature and general science; but the choice of electives implies suitable preparation for their prosecution, and must, besides, meet with the approval of the Dean of this department.

The work of the students in the undergraduate course is based upon an extended course on the mechanics, and the graphics and economics of engineering. There are no elective studies in this course. The object aimed at is to give as thorough a preparation as possible for the general purposes of the profession in the following subjects: The survey, location, and construction of railroads, canals, and water works; the construction of foundations in water and on land, and of superstructures and tunnels; the survey, improvements, and defenses of coasts, rivers, harbors and lakes; the astronomical determination of geographical co-ordinates for geodetic purposes; the applications of mechanics, graphical statics, and descriptive geometry to the construction of the various kinds of right and oblique arches, bridges, roofs, trusses, suspension and cantilever bridges; the drainage of districts, sewerage of towns, and the reclaiming of lands; the design, construction, application and tests of wind and hydraulic motors; air, electrical, and heat engines, and pneumatic works; the preparation of plans and specifications, and the proper inspection, selection, and tests of the materials used in construction. An elementary course of lectures is given in engineering and mining economy, finance and jurisprudence. The latter subject deals only with the questions of easements and servitudes, as digested from Washburn, and to the ordinary principles of the laws of contracts and riparian rights.

The facilities for instruction and for advanced investigations are believed to be thorough and efficient. Laboratory work is required of the students, in chemistry, mineralogy, geology, physics, and civil engineering; for which purpose all the libraries, collections, and laboratories of the University are open to the students of this department.

A detailed statement of the studies of all the courses of study of this department, and the time devoted to each subject, will be found under the head of "Courses of Study in Civil Engineering."

The organization of this department is correlated with that of others through some of its departments of instruction, and with great mutual advantage. Thus, this department teaches descriptive geometry to all students in the courses in Civil Engineering, Architecture, Electrical and Mechanical Engineering ; and this subject may be elected by students in some of the general and scientific courses, and by special students. The theory of the arch and stone cutting, with its corresponding laboratory work, is taken by students in Architecture and Civil Engineering. Land surveying is obligatory for students in Civil Engineering, and may be elected by students in various other courses. The entire course in mechanics, hydraulics, and hydraulic motors, is taken by the civil engineering students ; and the electrical and mechanical engineering students have the first three terms, or the mechanics of engineering of solids. The higher mathematical studies and the purely professional studies may be elected by any graduates having the necessary preparation.

The material equipment of this department is already very large, as may be seen, somewhat in detail, elsewhere in the Register. The value of this equipment is constantly enhanced by means of an adequate yearly appropriation, which, owing to the liberal policy of the governing body, has kept pace with the growth of the large resources of the University.

For a description of the special museums and laboratories of this department, see "Material Equipment."

For additional information as to the details of this course, address "The Dean of the Department of Civil Engineering."

THE SIBLEY COLLEGE OF MECHANICAL ENGINEERING AND THE MECHANIC ARTS.

This college was founded and endowed by the liberal gifts of the late Hon. Hiram Sibley, of Rochester, who, in the year 1870, gave about thirty thousand dollars for the erection of a suitable building for the department of mechanic arts. He also gave ten thousand dollars for increasing its equipment of tools, machines, etc., and afterward made a further gift of fifty thousand dollars for the endowment of the Sibley professorship of practical mechanics and machine construction. During the years 1883 to 1887 he gave more than seventy-five thousand dollars for the purchase of models, the extension of the Sibley College buildings, and the building and equipping of a complete set of workshops. The total amount thus presented to Cornell University is nearly one hundred and fifty thousand dollars.

SIBLEY COLLEGE is the School of Mechanical Engineering and of Mechanic Arts, of Cornell University. The college is divided into four principal departments: that of Mechanical Engineering, including a laboratory, in which experimental work and investigations are conducted; a department of Electrical Engineering; a department of Mechanic Arts, or shopwork; and a department of Drawing and Machine Design. The first named is presided over by the Director, who is also the Professor of Mechanical Engineering.

REGULAR COURSES.

Sibley College, founded as a college of mechanic arts, is intended by the Trustees of the University to be made not only a school of arts and trades, but a college of mechanical engineering also, in which schools of the mechanic arts and of the various branches of mechanical engineering shall be developed, as rapidly and extensively as the means placed at the disposal of the Trustees of the University, and a demand for advanced and complete courses of instruction, shall allow.

I. DEPARTMENT OF MECHANICAL ENGINEERING.

The department of mechanical engineering is divided into two principal sections: that of theoretical engineering and that of experimental engineering, or the mechanical laboratory.

(1) *Section of Theoretical Engineering*:—The lecture-room course of instruction consists of the study, by text-book and lecture, of the materials used in mechanical engineering; the valuable qualities of these materials being exhibited in the mechanical laboratory by the use of the various kinds of testing machines, as well as by examination of specimens of all the most familiar grades, of which samples are seen in the cases of the museums and lecture-rooms. The theory of strength of materials is here applied, and the effects of modifying conditions—such as variation of temperature, frequency and period of strain, method of application of stress—are illustrated. This course of study is followed, or accompanied, by instruction in the science of pure mechanism or kinematics, which traces motions of connected parts, without reference to the causes of such motion, or to the work done, or the energy transmitted. This study is conducted largely in the drawing-rooms, where the successive positions of moving parts can be laid down on paper. It is illustrated, in some directions, by the set of kinematic models known as the Reuleaux models, a complete collection of which is found in the museums of Sibley College.

The study of machine design succeeds that of pure mechanism, just described. This study also is largely conducted in the drawing-rooms,

and is directed by an instructor familiar, practically as well as theoretically, with the designing and proportioning of machinery.

The closing work of the course consists of the study, by text-book and lecture, of the theory of the steam engine and other motors. The last term of the regular four-year course is devoted largely to the preparation of a graduating thesis, in which the student is expected to exhibit something of the working power and the knowledge gained during his course. A *graduating piece* is demanded, also, of each student, both in the drawing-room and the workshop, which shall show proficiency in those departments.

(2) *Section of Experimental Engineering, or Mechanical Laboratory Instruction*:—The work in this department will be conducted by an instructor familiar with its apparatus and with the best methods of work, and who will plan a systematic course of instruction intended to give the student not only skill in the use of apparatus of exact measurement, but to teach him also the best methods of research, and to give him a good idea of the most effective methods of planning and of prosecuting investigations, with a view to securing fruitfulness of result with minimum expenditure of time and money.

II. DEPARTMENT OF ELECTRICAL ENGINEERING.

The student at the end of the third year may, if he chooses, substitute the special work in electrical engineering for the engineering of the regular course. Thus, it will be seen, the two courses are identical during the first three years, comprising drawing, mathematics, mechanics, mechanism, machine design, the elementary study of physics, and preliminary practice in the use of electrical and other physical instruments. The special work of the fourth year for electrical engineers comprises the study, under the direction of the Professor of Electrical Engineering, of prime-movers, the theory and construction of electrical machinery, the study of the problems involved in the distribution of the electric light and the electrical transmission of power, besides practice in every variety of electrical measurement and testing, as applied to the erection and maintenance of electric lighting and power plants and telephone and telegraph lines and cables, and to the purposes of investigation; while work in the department of physics is continued with special reference to the needs of the practical electrician.

Graduates in the course of Electrical Engineering are given a degree as in other regular courses, and a statement that the student has paid special attention to electrical work is introduced into his diploma.

Electricians unfamiliar with engineering may secure special work.

III. DEPARTMENT OF MECHANIC ARTS, OR SHOPWORK.

The aim of the instruction in this, the department of practical mechanics and machine construction, is to make the student, as far as time will permit, acquainted with the most approved methods of construction of machinery.

(1) *Section of Woodworking and Pattern-making* :—This course begins with a series of exercises in woodworking, each of which is intended to give the student familiarity with a certain application of a certain tool ; and the course of exercises, as a whole, is expected to enable the industrious, conscientious, and painstaking student easily and exactly to perform any ordinary operation familiar to the carpenter, the joiner, and the pattern-maker. Time permitting, these prescribed exercises are followed by practice in making members of structures, joints, small complete structures, patterns, their core-boxes, and other constructions in wood. Particular attention will be paid to the details of pattern-making.

(2) *Section of Forging, Moulding and Foundrywork* :—These courses are expected not only to give the student a knowledge of the methods of the blacksmith and the moulder, but to teach him also how to use the tools, and to give him that manual skill in the handling of tools which will permit him to enter the machine shop, and there quickly to acquire familiarity and skill in the manipulation of the metals, and in the management of both hand and machine tools, as used in the working of such metals.

(3) *Section of Ironworking* :—The instruction in the machine shop, as in the foundry and the forge, is intended to be carried on in substantially the same manner as in the woodworking course, beginning by a series of graded exercises, which will give the student familiarity with the tools of the craft and with the operations for the performance of which they are particularly designed, and concluding by practice in the construction of parts of machinery, and, time permitting, in the building of complete machines which may have a market value.

IV. DEPARTMENT OF INDUSTRIAL DRAWING AND ART.

(1) *Section of Freehand Drawing and Art* :—Instruction in this department begins with freehand drawing, which is taught by means of lectures and general exercises from the blackboard, from flat copies, and from models. The work embraces a thorough training of the hand and eye in outline drawing, elementary perspective, model and object drawing, drawing from casts, and sketching from nature.

The course in freehand drawing may be followed by instruction in industrial art, in designing for textiles and ceramics, in modeling, and in other advanced studies introductory to the study of fine art.

(2) *Section of Mechanical Drawing* :—The course of instruction in mechanical drawing is progressive, from machine sketching and geometrical drawing to designing of machinery and making complete working drawings.

The course begins with freehand drawing, as above ; and in the latter part of this work considerable time is expected to be given to the sketching of parts of machines and of trains of mechanism, and later, working machines. The use of drawing instruments is next taught, and, after the student has acquired some knowledge of descriptive geometry and the allied branches, the methods of work in the drawing-rooms of workshops and manufacturing establishments are learned. Line-drawing, tracing, and blue printing, the conventional colors, geometrical construction, projections, and other important details of the draughtsman's work, are practiced until the student has acquired proficiency.

The advanced instruction given the upper classes includes the tracing of curves and cams, the study of kinematics on the drawing-boards, tracing the motions of detail-mechanism, and the kinematic relations of connected parts. This part of the work is accompanied by lecture-room instruction and the study of the text-book, the instructors in the drawing-rooms being assisted by the lecture-room instructor, who is a specialist in this branch. The concluding part of the course embraces a similar method of teaching machine design, the lecture-room and drawing-room work being correlated in the same manner as in kinematics or mechanism. The course concludes, when time allows, by the designing of complete machines, as of the steam engine or other motor, or of some important special type of machine.

INDUSTRIAL ART.

A four-year course of instruction in industrial art is arranged for students having a talent for such work, and desiring to devote their whole time to this subject. No degree is conferred, but a certificate of proficiency may be given at the end of the course. This course is given additional interest by occasional general and public lectures on the history of art and the work of great artists.

GRADUATE COURSES.

Electrical Engineering.—A graduate course is arranged for students in mechanical engineering who desire further instruction in electrical engineering, and for graduates in the course in electrical engineering.

Marine Engineering.—At the request of the University, an officer of the engineer corps of the United States Navy has been detailed for the purpose of giving instruction in Mechanical and Marine Engineering. Special work in this subject may therefore be taken by such students as desire it. This instruction is usually given in a graduate or fifth-year course, after the student shall have completed the regular course in Mechanical Engineering or obtained its equivalent elsewhere.

Chemical Engineering.—In all the great chemical industries, such as the manufacture of illuminating gas, of sulphuric acid, the refining of petroleum, the making of soda, etc., the success of the business depends chiefly upon the correct arrangement of the mechanical details of the plant, and the skillful design and proportioning of machinery. The chemical reactions involved are generally simple. It is becoming a well recognized fact that there are few directions in which scientific work and a good preparation are more remunerative than in this field. Those of our leading manufacturers who have done most to build up the great industries of the country very generally owe their success to their early training in engineering, quite as much, at least, as to their knowledge of chemistry. The Director of Sibley College and the Professor of Applied Chemistry are at all times ready to give such advice and assistance as may be asked by graduate students of this or other institutions who may be desirous of entering upon a course of study and work of this kind, uniting chemistry with engineering.

Mining Engineering.—Although mining engineering courses have not been formally established, the main instruction required by the mining engineer is now given, as follows: the professor of civil engineering and his associates lecture on tunneling and on such constructions as are common to the professions of civil and mining engineering; the professor of mechanical engineering and his associates offer instruction in mining machinery; the professors of chemistry give instruction in metallurgy, assaying, chemical analysis, and cognate subjects; the professors of geology and paleontology give instruction in the theory and classification of ores and in those branches relating to chemical geology.

Steam Engineering.—Special instruction in steam engineering is provided for advanced students and educated practicing engineers. The course of instruction is an extension of the work of the senior year in mechanical engineering, and includes the study of steam engines and boilers and their accessory apparatus, for the purpose of learning the theory and practice of engineering as applied to this class of motors.

Railroad Machinery.—This department is intended to prepare the same class of students for special work in railroad shops, and especially

in the division of the organization of railways placed in charge of superintendents of motive power, and of master mechanics.

"Special" or Artisan Course.—All special students are expected to follow as closely as possible a course of instruction in the mechanic arts planned with reference to the needs of such students, and of young men, not candidates for a degree, who are able to enter on the optional list, passing the necessary examinations.

Non-resident Lecturers.—A room for a lyceum is fitted up for the use of students enrolled in Sibley College, in which debates may be carried on.

Supplementing the regular course of instruction, lectures are delivered from time to time by the most distinguished men and the great specialists of the profession. Annual "Inspection Tours" are made to the great cities and manufacturing establishments during the spring vacation.

The recent enlargement of Sibley College renders it possible to make the number admitted into the freshman class one hundred; while twenty-five or more may be admitted into the upper classes and the advanced courses of post-graduate instruction. Should more apply, preference will be given to those best prepared. Students unable to register in the Sibley College courses leading to a degree, may enter any other courses for which they may have sufficient preparation.

Persons desiring more information in regard to any subject connected with Sibley College, should address THE DIRECTOR OF SIBLEY COLLEGE.

OPPORTUNITIES FOR GRADUATE STUDIES.

An inspection of the ensuing courses will show that the amount of instruction offered is greatly in excess of the amount which any person can avail himself of while an undergraduate student. Though all of the courses are open to undergraduates who have prepared themselves by taking the necessary preliminary electives, a large number of courses are especially adapted to the wants of graduate students. No sharp line of demarcation, therefore, separates the two classes. Graduates and advanced undergraduates are taught together; but in all cases the necessary prerequisite work must have been taken. In nearly or quite every branch of study, the advanced courses of lectures and the seminars and laboratories afford abundant opportunities for carrying on profitable work of a high grade during two or three years after the baccalaureate degree has been taken. The facilities thus afforded commend themselves especially to graduates of those colleges which do not offer a large range of electives during the undergraduate course. Stu-

dents are admitted to graduate study after having taken a baccalaureate degree in this University, or on presenting a diploma giving evidence that an equivalent degree has been taken elsewhere. Courses appropriate for graduate students and leading to advanced degrees are provided in the following departments : Ancient Classical Languages and Literatures, Modern European Languages and Literatures, English Literature, Comparative Philology, History and Political Science, Philosophy, Mathematics, Chemistry and Physics, Natural History, The Science and Art of Teaching, Civil Engineering, Mechanical Engineering and Agriculture.

The graduate courses in Civil and Mechanical Engineering are fully described elsewhere in the Register.

In the list of Courses of Instruction courses will be found designated as specially adapted to the wants of graduate students.

Among the special advantages offered to graduate students in this University may be mentioned the following :

1. The greater part of such work is carried on in laboratories and seminaries, in which the student, with the aid and under the intimate personal guidance and direction of the professor, is encouraged in the prosecution of original investigation of an advanced nature. In all the graduate work the aim is to surround the student with an atmosphere of earnest devotion to the cause of the advancement of knowledge and to excite a true scholarly spirit.

2. Graduate students who are not candidates for a degree, as well as those who are, are required to work under the general direction of a committee of the Faculty, appointed for the special purpose of supervising and directing their work. All graduate students are at liberty to attend any of the exercises of the University ; but under the guidance of the appropriate committee every such student must take an amount of work not less than the minimum required of undergraduates during the senior year.

3. Graduate students have access to the alcoves of the library, as well as to the special collections in the seminary-rooms, and thus have exceptional opportunities for prosecuting advanced work.

4. Eight Fellowships, with stipends of four hundred dollars each, are annually given to such graduate students as may be selected by the faculty for the superiority of their scholarship.

5. Tuition is free to such graduate students as, having been duly admitted by the proper authorities as candidates for a second degree, are regularly pursuing the courses of study leading to such degree in accordance with the prescribed requirements of the proper faculty. The only payments required of such students by the University are those for materials actually consumed in the laboratories.

COURSES OF INSTRUCTION.

[Unless otherwise indicated each course runs through the year. Courses enclosed in brackets will not be given in 1889-90, but may be expected in 1890-91.]

COMPARATIVE PHILOLOGY.

[1. General Introduction to the Science of Language.

The chief principles of the life and growth of language ; outlines of the science of phonetics ; history of the science of comparative philology ; historical and ethnological results of the science ; classifications of languages ; salient characteristics of the various branches of the Indo-European family of languages ; methods of investigation. S., 11. Professor WHEELER.]

2. Comparative Grammar of the Indo-European Languages. Fall term, the history of sounds (*Phonology*) in the various branches of the Indo-European family ; Winter term, Greek grammar from the comparative point of view, chiefly with reference to the history of sounds and inflections ; Spring term, Latin grammar. T., Th., 11. Professor WHEELER.

3. Sanskrit. The first twenty-five lessons of Perry's Sanskrit Primer ; the essentials of the grammar, given in the form of lectures ; reading of selections from Lanman's Reader. T., Th., 12. Assistant Professor BRISTOL.

4. Advanced Sanskrit. Reading of selections from the Rig-Veda. Grammatical discussions. Lectures upon the private and religious antiquities of the ancient Hindoos. F., 2.30. Professor WHEELER.

5. Gothic. Braune's Gothic Grammar. Reading of selections. Lectures on the relation of the Germanic languages to the Indo-European parent-speech. S., 11. Professor WHEELER.

6. Philological Seminary. See under Greek, courses 8 and 9. Professor WHEELER.

GREEK.

A. Elementary Greek. The essentials of the grammar. Simple exercises in composition. The reading of selections from the *Cyropædia*, *Anabasis*, and *Memorabilia* of Xenophon. M., W., F., 8. Mr. BRONSON.

This course is designed for students who wish to acquire, by extraordinary effort in one year, the ability to read Attic prose. It cannot be counted for graduation in the course in Arts.

1. Freshman course. First section. Reading of selected orations of Lysias, accompanied by a careful review of the Attic inflections and syntax. Six books of Homer's *Odyssey*. Selections from Herodotus and Thucydides. Greek composition throughout the year. T., Th., S., 10. Assistant Professor BRISTOL.

Second section. Reading of selected orations of Lysias, as in first section. Three books of Homer's *Odyssey*. Selections from Herodotus. Greek composition throughout the year. T., Th., S., 10. Mr. BRONSON.

The class will be divided into sections on the basis of scholarship at the beginning of the winter term.

2. Sophomore course. The *Philippics* of Demosthenes; Plato's *Apology* of Socrates. The *Antigone* of Sophocles and the *Alcestis* of Euripides. The *Frogs* of Aristophanes. Greek composition throughout the year. Outline lectures upon the history of Greek literature. M., W., F., 9. Professor WHEELER.

[3. The Greek Drama. One play each of Aeschylus and Sophocles, two plays of Euripides, and a comedy of Aristophanes. Lectures upon the Greek theatre and drama. M., W., F., 10. Assistant Professor BRISTOL.]

4. History and Oratory. Thucydides, Books VI and VII. Andocides on the Mysteries. Isocrates' *Panegyricus*. Aeschines against Ctesiphon. Demosthenes on the Crown. Lectures on the history of Athens during the Peloponnesian war, and on the characteristics of Attic oratory. M., W., F., 10. Assistant Professor BRISTOL.

[5. Greek Philosophy. The *Phaedo* and *Republic* of Plato. The *Nicomachean Ethics* of Aristotle. Lectures upon the history of Greek philosophy. W., F., 9. Assistant Professor BRISTOL.]

6. Greek Poetry. *Anthologia Lyrica* (Bergk). Selections from Pindar. Selections from Theocritus. Lectures and Recitations. W., F., 9. Assistant Professor BRISTOL.

[7. The Private, Political and Legal Antiquities of the Greeks. The first two terms will be devoted to a study of the private life of the Greeks, with illustrations (by lantern views, photographs, etc.) from ancient monuments and remains. The third term will be given to a review of the political and legal institutions of Athens and Sparta. T., Th., 11. Professor WHEELER.

See History and Political Science, course 2.]

8. New Testament Greek. Reading of selected passages from the New Testament. Lectures on the characteristics of Hellenistic Greek. T., Th., 8. Mr. BRONSON.

[9. Philological Seminary. The Greek dialects, particularly the Lesbian, Doric and North Greek, studied from the inscriptions. Introduction to the critical study of Homer. Preparation and discussion of papers by members of the Seminary. W., 2.30—4.30. Professor WHEELER.]

10. Philological Seminary. The Attic dialect, studied from the inscriptions. Phases of the Attic dialect in literary use. Preparation and discussion of papers by members of the Seminary. W., 2.30—4.30. Professor WHEELER.

11. Greek Grammar. Historical treatment in lectures. See under Comparative Philology, course 2.

For lectures on Greek art, see under Latin, course 10.

For Greek history, see under History and Political Science, course 1.

LATIN.

Courses 1 and 2 cover the required work for freshmen in Arts and Philosophy. Courses 3 and 4 the required work for sophomores in those courses.

1. Rapid Reading of Easy Latin (Nepos). The De Senectute of Cicero. Livy. Translation at sight. The writing of Latin. In two sections. M., W., F., 9. Mr. BRONSON. M., W., F., 11. Acting Assistant Professor ELMER.

2. Rapid Reading of Easy Latin (Nepos). The De Senectute of Cicero. Livy. Translation at hearing. The writing of Latin. M., F., 10. Acting Assistant Professor ELMER. W., 10. Professor HALE.

The purpose of this course, which is arranged for students who have given evidence at the entrance examinations of more than average knowledge and ability, is to prepare them to read ordinary Latin with ease and speed. A methodical study of the structure of the Latin sentence, in connection with syntax, is made in the class-room, and a written exercise in translating at first hearing, with formal questions set for written answers at one point after another in the progress of the sentence, is given weekly by the professor in charge of the department, the aim being to lead the student to grasp the thought in the order in which the Roman sentence develops it, with the final result of his gaining power to read continuous pages of Latin of moderate difficulty, and understand, without translating, as he reads.

3. The *Germania* of Tacitus. The *Phormio* of Terence. Translation at sight. Horace : Selections from the Epodes, Satires, Odes, and Epistles. Collateral reading upon the history of Rome during the period covered by the life of Horace. T., Th., S., 9. Acting Assistant Professor ELMER.

Open to students who have completed course 1.

4. The *Germania* of Tacitus. The *Phormio* of Terence. Horace : Selections from the Epodes, Satires, Odes, and Epistles. Translation at sight. Collateral reading upon the history of Rome during the life of Horace. The History of Roman Literature. T., S., 8. Acting Assistant Professor ELMER. Th., 8. Professor HALE.

Open to students who have completed course 2.

[5. Practice in Speaking and Writing Latin. Professor HALE.

The course is open to students who have completed course 1 or course 2, and is specially recommended to those who may be planning to elect Latin later.]

[6. Selections from the Republican Literature : Plautus, Lucretius, Catullus. Cruttwell's and Teuffel's Histories of Roman Literature. T., Th., S., 9. Professor HALE.]

Courses 6 and 7 are given in alternate years.

7. The Literature and History of the Early Empire (to 180 A. D.) : Pliny the Younger, with brief selections from Martial, Aulus Gellius, and Fronto. Juvenal, with brief selections from Persius. Selections from Tacitus, with brief selections from Valerius Maximus, Velleius Paterculus, and Suetonius. Cruttwell's and Teuffel's Histories of Roman Literature ; Capes's Early Empire and Age of the Antonines, and Merivale's History of the Romans. T., Th., S., 9. Professor HALE.

Courses 6 and 7 are given in alternate years.

[8. Early Latin : Allen's Remnants of Early Latin, and Inscriptions (partly in facsimile), with special reference to syntax. Fall and Winter terms. Professor HALE.]

For lectures on Latin grammar see under Comparative Philology, course 2.

[9. Teacher's Seminary. Introductory lectures on the relation of preparatory and university work in Latin, and on the order of arrangement and methods of work in the former. Brief survey of Latin syntax, with reference to the needs of young students at various stages in their preparation. Practical illustrative work in Cæsar and Cicero, conducted by the instructor and by members of the seminary. T., Th., 11. Spring term. Professor HALE.]

10. The Private Life of the Romans. A systematic treatment, with illustrations (by lantern views, photographs, etc.) from the remains of

ancient art, and in particular from the results of excavations in Pompeii, Herculaneum, and Rome. W., F., 11. Fall and Winter terms.

Greek and Roman Art; pottery, coins, engraved gems, painting, sculpture. An introductory course, illustrated with lantern views, photographs, casts, etc. Lectures. W., F., 11. Spring term. Professor HALE.

See under History and Political Science, course 3. Open to students of the sophomore, junior and senior years.

Courses 8 and 9 alternate with course 10.

11. Latin Seminary. Unsettled problems in Latin Syntax: Investigations. Lectures, and preparation of papers by members of the Seminary. Th., 2.30-4.30. Professor HALE.

Open to graduates, and, with the consent of the instructor, to undergraduates of special attainments, who desire the course in addition to the other elective courses of the year.

For Roman History, see under History and Political Science, course 1.

THE GERMANIC LANGUAGES.

1. German Grammar. Translation from English into German. Reading easy stories, poems, and novels. Committing short poems to memory. Daily ex. S., 8, 9. Mr. ———. For students in technical courses. Daily ex. S., 8, 9, 10. Mr. ———. For students in Latin courses. M., W., F., 10, 11. Mr. ———.

2. Minna von Barnhelm. Wilhelm Tell. Goethe's Prosa. Advanced grammar. Writing selected stories from dictation. German composition. Translation at sight. Exercises in the etymology and synonyms of German words. M., W., F., 8, 9. T., Th., S., 8, 9. Professors HEWETT and WHITE.

3. Lectures on the History of German Literature from the period of the Reformation to Goethe's death. Continuation of the course of 1888-9. M., W., 11. Professor HEWETT. This course will be accompanied by views illustrating the literary history, art and social life of the time. [In 1890-91, lectures on the German literature and language from the earliest period to the Reformation. T., Th., 11. For general students of German literature, but all students are requested if possible to elect Middle High German, course 9.]

4. The lyric poems of Goethe, Schiller, and Heine. T., Th., 10. Professor WHITE. [In 1890-91, Heine's life and prose writings.]

5. The classical period of German literature. Nathan der Weise. Select works of Goethe and Schiller. Ballads of German history. T., Th., 9. Professor HEWETT.

[In 1890-91, the classical period of German literature continued: Faust; historical dramas of Goethe and Schiller. T., Th., 9.]

6. Middle High German. Das Nibelungenlied. Der arme Heinrich. Poems of Walther von der Vogelweide. M., W., 9. Professor WHITE.

[In 1890-91, Luther's life and works.]

7. Behaghel's *Die Deutsche Sprache*. The principles of the German language. German pronunciation, etymology, and synonyms. This course is intended for advanced students and teachers. All who elect it are advised to take also course 2 in Comparative Philology. S., 9. Professor HEWETT.

[The original Faustbuch in Seminary. Fall, 1890-91. In the Winter and Spring terms, Wolfram von Eschenbach's Parzival. Songs of the Minnesinger. S., 9. Professor HEWETT.]

8. Advanced German composition. Selections from American classics, accompanied by essays. S., 10. Counting as a one or two hour course. Professor WHITE. [In 1890-91, the history of German literature from the Reformation.]

THE ROMANCE LANGUAGES.

Course 1 covers the required freshman work; course 2 the required sophomore work.

1. Whitney's French Grammar. Super's French Reader. Tableaux de la Révolution Française. Luquien's French Prose of Popular Science (for students in the Technical courses). Daily except S., 8, 9. Mr. LAPHAM. 9. Mr. LANGDON. 10. Mr. MANNING. 8, 10, 11. Mr. RUYTER.

For students in Latin courses. M., W., F., 9. Mr. MANNING. 10. Mr. LANGDON. T., Th., S., 8. Mr. MANNING. 11. Mr. LAPHAM.

2. Corneille's Horace. Le Romantisme Français. Hernani. French composition, and lectures on literary history. M., W., F., 8. Mr. LANGDON. 9, 10. Professor CRANE. 12. Mr. LAPHAM. T., Th., S., 9. Mr. MANNING.

3. La Société Française au Dix-Septième Siècle. Molière's Les Précieuses Ridicules and Les Femmes Savantes. T., Th., 9. Professor CRANE.

4. The Novel of the Romantic School. Hugo, Dumas, Balzac, Mérimée, Gautier, and Sand. T., Th., 10. Mr. LANGDON.

5. French Philology and Old-French Literature: Chanson de Roland, Aucassin et Nicolette, etc. T., Th., 10. Professor CRANE.

Course 5 is open only to students who have had courses 1, 2, and Latin.

6. Advanced French composition. Intended specially for teachers. S., 10. Mr. LANGDON.

7. Italian reading. Dante's *Inferno*. Selections from Boccaccio and Petrarch. T., Th., 11. Professor CRANE.

8. Italian grammar and reading. T., Th., 8. Mr. LANGDON.

9. Spanish grammar and reading. W., F., 8. Mr. MANNING.

10. Methods and fields of study in the Romance literatures. Popular tales, ballads and drama. Lectures. S., 9. Professor CRANE.

ENGLISH LANGUAGE AND LITERATURE, RHETORIC AND ORATORY.

1. Freshman Rhetoric. Qualities of style. Diction. Figurative language. Recitations one hour per week. Essay writing. M., W., 11. T., Th., 11. Mr. ELLIOTT. M., W., 12. T., Th., 12. Mr. EMERSON. Required of all freshmen throughout the year, and counting for two hours.

2. Sophomore Essays. Narrative and descriptive composition. Each essay read and criticised with its author by special appointment. Acting Assistant Professor HALE, Acting Assistant Professor BROWN, and Mr. WOODRUFF. Required of all sophomores except Mechanical and Electrical Engineers. Of Civil Engineers only during the Spring term. Counts for one hour.

3. Junior Themes. Each production read and criticised with its author by special appointment. Lectures and recitations on advanced rhetoric. Sec. I., T., 8. Sec. II., S., 10. Mr. WOODRUFF. Required of all juniors in Arts, Philosophy, Science, Letters, and Agriculture, and counting for two hours.

4. Journalism. Lectures on different phases of journalism ; practical instruction in the beginning of newspaper work ; reporting ; treatment of the different classes of news ; preparing copy for the printer ; and much of the detail that is usually slowly picked up by the reporter in the newspaper office. The professor, who has had experience in metropolitan journalism, organizes the class on the plan of the city staff of a large newspaper, and the student is set at practical work. For seniors and graduates, and such juniors as have editorial positions on any of the University journals. T., Th., 10. Associate Professor BRAINARD G. SMITH.

5. Elocution. Mandeville's *Elements of Reading and Oratory* ; instruction in breathing, management of the voice and gesture ; general delivery ; declamation in class ; public speaking. Designed for juniors, seniors, and graduates. M., W., F., 9, 10, 11. Associate Professor BRAINARD G. SMITH.

6. Oratory. Orations, speeches, and addresses. Each production read and criticised with the author. Weekly public oratorical exercises. Designed for those who have had course 5 or its equivalent. Fall and Winter terms. T., 3.30. Other hour as assigned. Counting two hours. Associate Professor BRAINARD G. SMITH.

7. English Prose Literature. A particular study of the works of De Quincey, Macaulay, Carlyle, and Ruskin, with an historical review of English Prose from the time of Mandeville. Lectures and recitations. T., Th., 11. Acting Assistant Professor HALE.

8. The History of the English Language. Lectures and recitations dealing with the phenomena of English speech in its various phases as the result of development out of precedent types. It outlines the characteristics of the language at the most important stages of its history, discusses its relations to the Germanic dialects of the Continent, and investigates the sources of its vocabulary, and the laws of its growth in sound, in form, and in syntax. Th., S., 8. Acting Assistant Professor Brown.

9. Seminary in English Literature. The direct study of English prose masterpieces. The subjects for 1889-90 will be taken chiefly from the English humorists, essayists and novelists. Open only to seniors and graduates, except with the consent of the professor. S., 11-1. Acting Assistant Professor HALE.

10. Anglo-Saxon. Grammar and reading. W., F., 11. Acting Assistant Professor BROWN.

11. English Poetry of the 17th, 18th, and 19th Centuries. Lectures. M., W., F., 10. Acting Assistant Professor HALE.

12. English Poetry of the 14th, 15th, and 16th Centuries. Lectures. T., Th., 10. Acting Assistant Professor BROWN.

PHILOSOPHY.

No course in Philosophy can be taken by freshmen. Course 1 is required of all sophomores, except those in the technical departments. The remaining courses are elective, but they are open only to juniors, seniors, and graduates, who have completed course 1.

1. Logic and Psychology. Two hours a week. Lectures, T., 11. Professor SCHURMAN. Recitations in eight sections, M., W., Th., F., 10, 11. Mr. CREIGHTON.

[2. Physiological Psychology. An account of the structure and functions of the nervous system, including the functions of the brain; the psychology and pathology of speech and writing; the development of the organs of the special senses; the methods of psychical

measurement; and the psychology of hallucination, hypnotism, insanity, and other abnormal mental states: the whole leading to a psycho-physical conception of the mind.]

3. History of Philosophy. An outline of speculative systems, from the rise of reflection among the Greeks down to our own day, in their relation to the development of the sciences and the progress of civilization. Lectures, with discussions and occasional essays. M., W., F., 12. Professor SCHURMAN.

Course 3 is open to all who have taken course 1.

[4. Ethics. The contents of the moral consciousness of man, savage and barbarous as well as civilized; the philosophical interpretation and implication of these facts in the light of a historico-critical survey of previous ethical theories, Greek, Roman, Christian, and modern (especially the evolutionary); and the application of the principles thus established to the regulation of life,—individual, family, and social,—including an examination of current questions in practical ethics. Lectures, discussions and essays. M., W., F., 12. Professor SCHURMAN.]

Course 4 and course 3 are given in alternate years.

5. Ethics. Aristotle's *Ethics* (in English); Sidgwick's *Methods of Ethics*. Examinations and discussions. T., Th., 9. Mr. CREIGHTON.

Course 5 is open to all who take, or have taken course 3 or course 4.

6. Epistemology. A critical study of Hume's *Enquiry concerning Human Understanding*, and Kant's *Critique of Pure Reason*, with introductory lectures on Locke and Berkeley. M., W., F., 9. Mr. CREIGHTON.

Course 6 is open to all who take or have taken course 3.

7. Ethics. A detailed study of the ethical works of Kant. Essays and discussions. T., 12. Professor SCHURMAN.

Course 7 is open to seniors and graduates who have taken courses 4 and 6, and to no others without special permission.

8. Metaphysics. In 1887-8, Hegel's *Wissenschaft der Logik*. In 1888-9, Hegel's *Philosophie der Religion*. In 1889-90, Lotze's *Metaphysics*. Th., 12. Professor SCHURMAN.

Course 8 is open to those who have completed the preceding courses.

9. The Philosophy of to-day. Abstracts by students of articles in the philosophical periodicals, and of new books, and discussions thereon. (The library has complete sets of the leading philosophical magazines, American, English, French, and German). Monday evening, 8-10. Professor SCHURMAN and Mr. CREIGHTON.

Course 9 is open only to students who have completed, or are com-

pleting, all the preceding courses, and are making a specialty of philosophy.

10. The Philosophy and History of Religion. A course of weekly lectures on the outlines of the Philosophy of Religion open to all students of the University, may be expected during the winter term from Professor SCHURMAN.

THE SCIENCE AND ART OF TEACHING.

[These courses are open to juniors, seniors, and graduates.]

1. The science of education. Philosophic basis ; aims ; methods ; means. School instruction : application of methods to various branches ; recitations ; art of questioning and examining ; illustration and exposition. Organization and management of schools : classification ; courses of study ; supervision ; school buildings and appliances ; school hygiene ; school economy, etc. Lectures. M., W., F., 2.30. Professor S. G. WILLIAMS.

Weekly exercises in class instruction will be given during the last half of the year in course 1.

2. Seminary. Discussion and essays on educational topics, and reports on visits to schools. Th., 3.30. Professor S. G. WILLIAMS.

Course 2 is open only to students who have taken or are taking course 1.

3. History of education in various ages and countries. Comparative education ; theories of writers on education ; eminent educators, etc. Lectures. T., Th., 2.30. Professor S. G. WILLIAMS.

4. Pedagogic Seminary. Examination of Waitz's "Allgemeine Pädagogik." Professor S. G. WILLIAMS.

Course 4 is intended only for students who have completed course 1, or its equivalent, and a good knowledge of German is indispensable.

HISTORY AND POLITICAL SCIENCE.

1. The History and Civilization of Greece and Rome. Fall term, Greece. Winter and Spring terms, Rome. T., Th., 9, 11. Mr. MILLS. Designed for freshmen and required of all candidates for the degrees of A.B. and Ph.B.

[2. Private, Political, and Legal Antiquities of the Ancient Greeks. The first two terms will be devoted to the study of the private life of the Greeks, assisted by lantern views, illustrative of ancient monuments. The third term will be given to a discussion of the political and legal institutions of Athens and Sparta. T., Th., 11. Professor WHEELER. Courses 2 and 3 will be given in alternate years.]

3. Private Life of the Romans. A systematic treatment, with illustrations by lantern views, photography, etc., from the remains of ancient art, and in particular from the results of excavations in Pompeii, Herculaneum, and Rome. Fall and Winter terms. W., F., 11. Professor HALE. Courses 2 and 3 will be given in alternate years.

4. The Political and Social History of Europe during the Middle Ages. Lectures and examinations. M., W., F., 9. Assistant Professor BURR. Designed for sophomores and juniors, and may be taken either before or after course 5. Required of sophomores in Philosophy.

[5. The Political and Social History of Europe from the Renaissance to the French Revolution. Lectures and examinations. T., Th., S., 9. Assistant Professor BURR. May be taken either before or after course 4.]

6. The Political and Social History of England from the Saxon Invasion to the close of the Napoleonic Wars. Lectures and examinations. Designed for sophomores and juniors. T., Th., S., 9. Assistant Professor BURR.

7. The Political, Social and Constitutional History of Europe from the beginning of the French Revolution of 1789 to the Franco-German War of 1870. Lectures and examinations. T., Th., S. 12. Assistant Professor BURR. While the greater part of the instruction in this course will be given by Professor BURR, several lectures on special subjects connected with the course may be expected from ex-President WHITE and from President ADAMS.

8. Palæography and Diplomatics, (the reading of historical manuscripts and the interpretation of historical documents, especially those of the Middle Ages). A seminary for the critical study of the materials of Mediæval and Modern History in their original form. The course will be progressive by centuries and based upon actual study of the manuscripts and fac-similes in the possession of the University. A knowledge of Latin is an indispensable prerequisite to this course. Winter term, counting for two hours. W., 4.30-6. Assistant Professor BURR.

9. American History from the Earliest Discovery to the End of the War for Independence. Lectures and recitations. T., Th., 3.30. Professor TYLER. Designed for sophomores and juniors, and open only to those who have taken, or are taking, course 4, or course 6.

10. American History from the End of the War for Independence to the End of the War for the Union. Lectures and recitations. M., W., 3.30. Professor TYLER. This course is designed for sophomores and juniors, and for those who have taken, or are taking, course 4, or course 6.

11. American Historical Seminary for juniors. The investigation of historical subjects by study of the sources. M., 7.30-9 P. M. Professor TYLER. Designed for students taking course 9 or course 10.

12. American Constitutional History, and American Constitutional Law. Lectures and recitations. F., 3.30. Professor TYLER. Designed for those who have had course 9, and also for seniors in the School of Law.

13. American Historical Seminary for seniors and graduates. The original investigation of subjects in American Constitutional History. T., 7.30-9 P. M. Professor TYLER. Designed for advanced students, and open only to those who, on application, evince proper qualifications.

14. History of Institutions. Lectures. Fall term, General Principles of Political Organization; Winter term, Growth of the English Constitution; Spring term, Methods of Municipal Administration. M., W., F., 11. Professor TUTTLE.

15. International Law and Diplomacy. Lectures. T., 11. Professor TUTTLE. Designed for juniors and seniors. Required of seniors in the School of Law.

16. The Literature of Political Science. Lectures. Th., 11. Professor TUTTLE.

[17. Historic Achievements in Statesmanship. Lectures. Th., 11. Professor TUTTLE. This course will be given alternately with course 16.]

18. General Seminary. The examination of obscure political and historical questions. Th., 4.30-6. Professor TUTTLE.

19. The Elements of Political Economy. Lectures and examinations. Fall term, Economic Theory; Winter term, Money and Banking; Spring term, History of Economic Thought. M., W., F., 8. Assistant Professor HODDER.

20. The Principles of Public Finance and Financial History of the United States. Lectures and topical studies. Fall term, State Industries and Public Debts; Winter term, Principles of Taxation; Spring term, History of Tariff Legislation in the United States. T., Th., 8. Assistant Professor HODDER.

24. General Economic Seminary. For the study of difficult problems in applied economics. Open to students who have taken political economy one year. Two hours a week. M., 4.30-6. Assistant Professor HODDER.

26. Social Science, including the History and Management of Charitable and Penal Institutions. T., 4.30. Professor COLLIN.

27. Roman Law. Its growth; its characteristic features; its influence on modern legal systems, and its contributions to the principles

of comparative jurisprudence. Lectures and examinations. Required of seniors in the School of Law, and open to other properly qualified students M., 3.30. Professor BURDICK.

BIBLIOGRAPHY.

Introductory survey of the historical development of the book, illustrated by examples of manuscripts and incunabula; explanation of book sizes and notation; systems of classification and cataloguing; bibliographical aids in the use of the Library. Winter and Spring terms. Lectures. M., 11. Mr. HARRIS.

MATHEMATICS AND ASTRONOMY.

I. PRESCRIBED WORK.

1. For students in Arts and Philosophy.

Two sections: M., W., F., 12; T., Th., S., 12. Mr. STUDLEY.

(a) Fall term, Solid Geometry.

(b) Winter term, Algebra.

(c) Spring term, Plane Trigonometry.

2. For students in Science, in Letters, in Chemistry, and in Agriculture. (See also Course 10, below.)

Four sections. M., W., F., 8, 9, 10, 11. Mr. ———.

(a) Fall term, Solid Geometry and Conic Sections.

(b) Winter term, Algebra, including the Theory of Equations.

(c) Spring term, Plane Trigonometry.

3. For students in Architecture and in Civil Engineering.

Three sections, daily ex. S., 8, 9, 10. Mr. FOWLER.

(a) Fall term, Algebra, including the Theory of Equations.

(b) Winter term, Plane and Spherical Trigonometry.

(c) Spring term, Analytic Geometry.

4. For students in Sibley College courses.

Three sections, daily ex. S., 8. Mr. HATHAWAY; 9. Mr. MCMAHON; 11. Assistant Professor JONES.

(a) Fall term, Algebra.

(b) Winter term, Algebra continued.

(c) Spring term, Plane and Spherical Trigonometry.

6. For students in Architecture.

Daily ex. S., 8. Mr. MCMAHON.

Fall term, Differential and Integral Calculus.

7. For students in Civil Engineering.

Daily ex. S., 9. Associate Professor WAIT.

(a) Fall term, Differential Calculus.

(b) Winter term, Integral Calculus.

8. For students in Sibley College courses.

Three sections, daily ex. S., 8. Assistant Professor JONES and Associate Professor WAIT ; 9. Mr. HATHAWAY.

(a) Fall term, Analytic Geometry.

(b) Winter term, Differential Calculus.

(c) Spring term, Integral Calculus.

II. ELECTIVE WORK.

[For these courses hours will be arranged by the Professors to suit the members of the class. Any course not desired at the beginning of the Fall term by at least five students, properly prepared, may not be given.]

10. Additional freshman work in Applied and Pure Mathematics. T., Th. Mr. MCMAHON.

11. Geometric, Algebraic, and Trigonometric Problems, with Applications ; including something of Probabilities and Insurance, and of Spherical Astronomy. 2 hours. Assistant Professor JONES.

12. Advanced work in Algebra, including Determinants and the Theory of Equations, 2 hours. Associate Professor WAIT.

13. Advanced work in Trigonometry, 1 hour. Associate Professor WAIT.

[The equivalents of courses 8, 12, and 13 are necessary, and course 11 is useful, as a preparation for most of the courses that follow.]

14. Advanced work in Analytic Geometry of two and three Dimensions, viz :--

(a) First year, Lines and Surfaces of First and Second Orders. 3 hours. Assistant Professor JONES.

(b) Second year, General Theory of Algebraic Curves and Surfaces. 3 hours. Mr. MCMAHON.

15. Modern Synthetic Geometry, including Projective Geometry. 2 hours. Assistant Professor JONES.

16. Descriptive and Physical Astronomy. Mr. STUDLEY.

(a) Descriptive Astronomy, requiring but little Mathematics. 1 hour.

(b) Physical and Mathematical Astronomy, requiring the equivalents of courses 3 or 4 and 7 or 8, and of course 1 or 2 in Physics. 2 hours.

19. Advanced work in Differential and Integral Calculus. Associate Professor WAIT and Mr. MCMAHON.

(a) In Differential Calculus. 3 hours.

(b) In Integral Calculus. 3 hours.

20. Quantics, with Applications to Geometry. Requires courses 8,

12, 14 (*a*), and preferably also 11, 13, 19. May be simultaneous with 14 (*b*). 3 hours. Mr. MCMAHON.

21. Differential Equations: to follow course 19. 3 hours. Mr. HATHAWAY.

24. Spherical Harmonics and the Potential Function. 2 hours.

26. Rational Statics. 2 hours. Associate Professor WAIT.

28. Molecular Dynamics; *or*, 29, Theory of numbers. [28 is based on Sir Wm. Thomson's Baltimore lectures, as printed from Mr. HATHAWAY'S notes; 29 is based on Delekind's Dirichlet's *Zahlen-theorie*, but gives a new theory of determinately-combining ideals] 3 hours. Mr. HATHAWAY.

30. Quaternions and Vector Analysis. 2 hours.

31. Theory of Probabilities and of Distribution of Errors, including some sociologic applications. 2 hours. Assistant Professor JONES.

41. Mathematical Optics, including Wave Theory and Geometric Optics. 2 hours.

42. Mathematical Theory of Heat and Thermodynamics. 3 hours.

43. Mathematical Theory of Sound. 3 hours. Mr. MCMAHON.

44. Mathematical Theory of Electricity and Magnetism. Associate Professor WAIT and Mr. MERRITT.

In most of the above branches of Pure Mathematics, an additional year's instruction, 1 or 2 hours per week, may be given if desired.

PHYSICS.

1. Mechanics and Heat. Electricity and Magnetism. Acoustics and Optics. Two lectures a week. T., Th., 12; Professor NICHOLS. One recitation on Friday or Saturday by the class in sections, at hours to be arranged. Assistant Professors MOLER and RYAN.

Course 1 is intended to meet the needs of students in Architecture, Civil Engineering, Mechanical Engineering, and Electrical Engineering. This course requires a knowledge of plane trigonometry.

2. (*a*) Mechanics (1 term), Electricity and Magnetism (2 terms). Two lectures a week. M., W., 12. Professor NICHOLS. One recitation on Friday or Saturday by the class in sections at hours to be arranged. Mr. SNOW.

[(*b*) Heat (1 term), Sound and Light (2 terms). Two lectures a week. M., W., 12. Professor NICHOLS. One recitation on Friday or Saturday by the class in sections at hours to be arranged. Mr. SNOW. May be expected in 1890-91.]

Course 2 is intended to meet the needs of students in the general courses. Parts (*a*) and (*b*) will be given in alternate years and either (*a*) or (*b*) will be accepted as the required work in Physics in the

courses in Science, Letters, Agriculture, and Chemistry and in the course preparatory to Medicine. Students in the above courses will have an opportunity to complete the subject as elective work in the junior year. Such students may, however, substitute course 1 for (2*a*) or (2*b*); and students of whom course 1 is required may substitute for it the whole of course 2.

Course 2 demands a knowledge of plane trigonometry.

3. Physical Experiments. Theory and methods of physical measurements. 3 hours, selected by the students from afternoons ex. S., 2-6. Assistant Professor MOLER and Mr. SNOW.

Course 3 includes laboratory experiments illustrating general laws in all branches of physics, and instruction in the adjustment and use of instruments of precision for measurements in mechanics, heat, light and electricity. It is open only to students who have passed satisfactorily in courses 1 or 2. All students desiring this course are strongly advised to prepare themselves by first taking courses in analytical geometry and calculus. Each student usually devotes to the course two afternoons each week, and pursues it in such order as the appointments of the laboratory may require. ●

Students in Mechanical Engineering and Electrical Engineering are required to take the equivalent of two hours a week only.

4. Electrical Measurements. Tests of electrical instruments and determination of constants. Theory and experimental study of dynamo machines, including tests of efficiency. Electric lighting. Photometric and electrical tests of electric lamps. One hour lecture, F., 12. Professor NICHOLS. Five hours laboratory work, selected by the student from afternoons ex. S., 2-6. Assistant Professor RYAN.

Course 4 is designed for seniors in Electrical Engineering but it is open to all students who have completed course 3.

5. A shorter course in Electrical Measurements for students in Mechanical Engineering. Three hours laboratory work, selected by the student from afternoons ex. S., 2-6. Assistant Professor RYAN.

Students taking course 5 are advised to attend also the lectures announced under course 4.

6. Special laboratory practice in general Physics for undergraduates who have completed course 3. This course is preparatory to graduate courses 18, 19, and 20. It is intended to meet the wants of those who expect to teach experimental physics and may occupy from three to six hours a week. Professor NICHOLS and Assistant Professor MOLER.

7. Thesis work in Physics and Applied Electricity (during the Spring term). (Seniors in Electrical Engineering devote the equivalent of twelve hours a week to this course.) Professor NICHOLS.

9. Practical Photography, counting one hour a week, during the Spring term. Assistant Professor MOLER.

Course 9 is open only to students who have the requisite knowledge of chemistry, and those wishing to take it must bring a certificate from the head of some department to the effect that it is needed in their course of study.

Courses 11 to 20 are open (1) to graduate students, (2) to undergraduates of exceptional advancement.

11. Dynamo-Electric Machinery, 2 hours. Lectures, supplemented by recitations upon Thomson's Dynamo-Electric Machinery. M., F.,

12. Assistant Professor RYAN.

12. Theory of Heat, 2 hours, at times to be arranged. Assistant Professor MOLER.

14. Physiological Optics and the Science of Color. 3 hours. One lecture a week and laboratory practice. Professor NICHOLS.

15 Kinematics and Dynamics (based upon MacGregor's "Kinematics and Dynamics"). 2 hours, at times to be arranged. Mr. SNOW.

17. Readings and Discussions ; 2 hours. Critical reading of the standard periodical literature relating to Physics. One evening a week. Professor NICHOLS, Assistant Professors MOLER and RYAN, and Mr. SNOW. Undergraduates taking elective work in Physics, and seniors in Electrical Engineering, will be admitted to this class upon special application.

18. Absolute Measurements in Electricity and Magnetism ; 3 hours. Laboratory practice in the determination of current, electromotive force, resistance, electric capacity and the magnetic elements in absolute measure. Professor NICHOLS and Assistant Professor RYAN.

19. Thermometry and Calorimetry ; 3 hours. Laboratory practice, including the study of the thermometer as an instrument of precision, methods of measuring temperatures and thermal capacities, influence of temperature upon various physical constants. Professor NICHOLS and Assistant Professor MOLER.

20. Advanced Spectroscopy ; three hours. Laboratory practice, devoted to the use of the spectrometer and spectrophotometer. Professor NICHOLS and Mr. SNOW.

Other courses of laboratory instruction will be arranged to meet the individual needs of graduate students.

CHEMISTRY, METALLURGY, AND PHARMACY.

1. Inorganic Chemistry. Lectures. Fall and Winter term. Section I. M., W., 12; Section II. T., Th., 12. Acting Professor NEWBURY.

Recitations, Fr., in sections, by appointment. Dr. ORNDORFF and Mr. ———.

2. Introductory Laboratory Practice in Inorganic Chemistry. One afternoon per week, by appointment. Acting Professor NEWBURY and Mr. ———.

This course is required, in addition to course 1, for all students who propose to take up later the studies of qualitative and quantitative analysis.

3. Agricultural Chemistry. Lectures. M., W., F., 9. Professor CALDWELL.

4. Qualitative Analysis. Laboratory work. Daily ex. S., 9-5. Professor CALDWELL, and Messrs. PRESWICK and SNYDER.

Lectures and Recitations. Once weekly for each member of the class, in sections, by appointment. Professor CALDWELL.

Course 4 is open only to those who have had course 2.

5. Blowpipe Analysis. Spring term. Daily ex. S., 2-5. Professor NEWBURY and Dr. ORNDORFF.

Course 5 is open only to those who have had course 1.

6. Quantitative Analysis. Laboratory work. Daily ex. S. Professor CALDWELL and Messrs. MILLER and SNYDER.

Course 6 is open only to those who have had course 4.

7. Quantitative Methods. W., 4.30. Professor CALDWELL and Mr. MILLER.

Course 7 is open only to students in course 6.

[8. Chemical Philosophy. T., Th., 4.30. Professor CALDWELL.

Course 8 is open only to those who have had course 1. It is given in alternate years with course 9, and may be expected in 1890-91.]

9. Applied Chemistry. Lectures. T., Th., 9. Acting Professor NEWBURY.

10. German Chemical Readings. M., 4.30. Professor CALDWELL.

Course 10 is open only to advanced students in course 6.

11. Organic Chemistry. Lectures and recitations. W., F., 9. Acting Professor NEWBURY.

Laboratory practice, daily, ex. S., 9-5. Acting Professor NEWBURY and Dr. ORNDORFF.

Open only to those who have had courses 1, 2, and 4.

11a. Special Chapters in Organic Chemistry. Lectures, one hour per week, by appointment. Dr. ORNDORFF.

Open to those who have had course 11.

12. Chemical Journals. One hour per week. Required of seniors in course in Chemistry. Professors and Instructors of the Department.

13. Metallurgy. Lectures. Winter Term. M., T., W., 11. Mr. —.

14. Assaying. Laboratory work. Spring term. Daily, ex. F. and S., 2-5. Acting Professor NEWBURY and Mr. —.

15. Practical Pharmacy. Lectures. T., Th., S., 9. Mr. VIALI.

16. Practical Pharmacy. Laboratory. Juniors. M., 2.30-5. Mr. VIALI.

17. Practical Pharmacy. Laboratory. Seniors. M., W., F., 8.30-1. Mr. VIALI.

18. Materia Medica. T., Th., 12. Mr. VIALI.

19. Pharmacognosy, at hours to be assigned. Mr. VIALI.

BOTANY AND ARBORICULTURE.

1. Botany. Introductory and general course. Spring term. Lectures. M., W., F., 11. Professor PRENTISS.

2. Botany. Introductory laboratory course. Spring term. 2 or 3 hours per week. Recitations from Gray's Lessons, M., W., F., 2.30; first part of term; laboratory work and excursions, latter part of term. Mr. ROWLEE.

Course 2 is supplementary to course 1; both are required of all students before admission to subsequent courses.

3. Systematic and Economic Botany. 2 or 3 hours per week. Lectures. M., W., 10; laboratory work by appointment. In the Fall term Taxonomy, with a study of the orders Compositae and Graminae. Winter term, representative natural orders, and groups of economic plants. Spring term, field and laboratory work; a special study of the structure, affinity, distribution and economy of some one natural order. Professor PRENTISS and Mr. ROWLEE.

4. Arboriculture. In the Fall term, trees, and their cultivation; forests and forest economy; elements of forestry. Winter term, landscape gardening; parks and ornamental grounds; care and management of the surroundings of suburban and rural houses. Spring term, a field study of trees and shrubs. Lectures, F., 10. Professor PRENTISS.

Course 4 may be extended to two hours per week by electing reading and seminary work which will be specially arranged with each student.

5. Pharmaceutical Botany. Spring term. 2 or 3 hours. Laboratory and field study of indigenous medical plants. Mr. ROWLEE.

Course 5 is specially arranged for students in pharmacy, and may be substituted for the third term of course 3.

6. Exotics. A study of the plants growing in the conservatories ; their cultivation and propagation ; construction and management of plant-houses ; practical green house work. Subjects and hours arranged by appointment. Professor PRENTISS and Mr. SHORE.

7. Histology of Plants. Fall term ; 3 hours per week. Lectures, T., 10. Laboratory work by appointment. Assistant Professor DUDLEY.

8. Higher Cryptogams. Fall term ; 2 or 3 hours per week. (*a*) Mosses and Liverworts. (*b*) Ferns and other Vascular Cryptogamia. Lectures, Th., 10. Laboratory work by appointment. Assistant Professor DUDLEY.

(*a*) and (*b*) are given on alternate years (*a*) may be expected in 1889-90.

9. Fungi. Spring term ; 4 hours per week. Lectures, T., Th., 10. Laboratory work by appointment. Assistant Professor DUDLEY.

Courses 1 and 2, or their equivalent, are required of a student before entering on 7 and 8 ; and course 7 before taking up 9.

Courses 7 and 8 may be pursued during the same term.

10. Special advanced laboratory work ; investigations and theses. For graduate and advanced students. Phænogams and the physiology of plants. Professor PRENTISS. Cryptogams and the histology of plants. Assistant Professor DUDLEY.

ENTOMOLOGY AND GENERAL INVERTEBRATE ZOOLOGY.

1. Invertebrate Zoology. General course. Fall term. Lectures, M., W., F., 11. During the greater part of the term there will be only two lectures a week, and one practical exercise by the class in sections, at hours to be arranged. Professor COMSTOCK.

2. Invertebrate Zoology. Special laboratory course. Fall and Spring terms. Daily ex. S., 8-5. Professor COMSTOCK.

3. Entomology. Lectures on the characteristics of the orders, sub-orders, and the more important families, with special reference to those of economic importance. Spring term, T., Th., 9. Professor COMSTOCK.

4. Entomology. Laboratory work, insect anatomy, determination of species, and the study of the life-history of insects. Fall and Spring terms. Daily ex., S., 8-5. Professor COMSTOCK.

SUMMER COURSE.

5. Summer Course in Entomology and General Invertebrate Zoology. Lectures, M., W., F., 9 ; field-work, T., Th., 8.30-1 ; laboratory work, daily ex. S., 8-5. Professor COMSTOCK.

The laboratory and field work is arranged with reference to the needs and attainments of each student. After completing an elementary course in either general zoology or entomology, the student may select some subject in systematic zoology, economic entomology, or insect anatomy for special investigation. It is planned to have the work of each student, as far as possible, an original investigation. The chief object of the course is to give training in methods of natural history work. All persons desiring to enter this course should make application to Professor Comstock as early as June 1st.

PHYSIOLOGY AND VERTEBRATE ZOOLOGY.

1. Physiology, through the year. Thirty-one lectures, demonstrations and practicums. Saturday, in two or more sections. Professor WILDER.

2. Vertebrate Zoology. Winter term. Twenty lectures, M., W., 11 ; ten practicums, T., 2.30. Professor WILDER.

Course 2 must be preceded or accompanied by course 1.

3. Morphology of the Brain. Spring term. Eighteen lectures, T., Th., 2.30 ; nine practicums, T., 3.30-6. Professor WILDER.

Course 3 must be preceded by course 2 and preceded or accompanied by course 1.

4. Anatomical Methods and Gross Anatomy. Fall term. Three hours per week. Laboratory work, with a weekly recitation or lecture, Th., 4.30. Associate Professor GAGE.

Course 4 must be preceded or accompanied by course 1 and freehand drawing.

5. Microscopical Methods and Histology. Winter term. Three hours per week. Laboratory work, with a weekly lecture or recitation, Th., 4.30. Associate Professor GAGE.

Course 5 is open only to students who have taken freehand drawing, and the first term of course 1. Course 4 is also desirable.

6. The Methods and Elements of Embryology. Spring term. Three hours per week. Laboratory work, with a weekly lecture or recitation, Th., 4.30. Associate Professor GAGE.

Course 6 is open only to students who have taken courses 2, 4, 5, and the first two terms of course 1.

7. Human or Comparative Anatomy, or Systematic Vertebrate Zoology. Laboratory work, daily throughout the year. Professor WILDER and Associate Professor GAGE.

Course 7 is a continuation of either courses 1 and 2 or 2 and 4, and must be preceded by the courses of which it is a continuation.

8. Vertebrate Histology. Laboratory work daily throughout the year. Associate Professor GAGE.

Course 8 is open only to those who have taken courses 1, 4, and 5.

The laboratory work varies with the needs and purposes of the student, and the extent of his preparation. The preliminary work includes the study of the skeleton, the study and dissection of the muscles, viscera, vascular system, and the brain and nerves of the cat.

GEOLOGY, PALEONTOLOGY, AND MINERALOGY.

1. Mineralogy and Lithological Geology. Fall term. Three hours. (Two hours required for engineers.) T., Th., 2.30; S., 9. Assistant Professor KEMP.

2. Geology, general course. Winter term. Lectures on dynamical and historical geology to follow course 1. (Required for engineers.) M., W., F., 9. Professor H. S. WILLIAMS.

3. Economic Geology. Lectures on the geology of ores, ore deposits and valuable rock material. Spring term. (This course is intended to follow courses 1 and 2). M., W., F., 10. Assistant Professor KEMP.

4. Historical Paleontology. Lectures and conferences, illustrating the history of organisms. Spring term. (This course is intended to follow courses 1 and 2). M., W., F., 9. Professor H. S. WILLIAMS.

5. Paleontology. Laboratory and field work and study of characteristic fossils, with conferences, throughout the year. Professor H. S. WILLIAMS and Mr. MARSTERS. (Intended to follow courses 1 and 2; laboratory open 9-5.)

6. Advanced Mineralogy and Petrography. Crystal measurement, optical properties of minerals and microscopic work on rocks. Lectures and conferences. Requires course 1 or an equivalent. 3 hours. Winter term. Assistant Professor KEMP.

7. Geological Laboratory. Original investigation by advanced students with excursions under the direction of the department. Hours to accommodate students. Assistant Professor KEMP and Mr. MARSTERS.

8. Geology. Special course; required for Architects. 3 hours. Lectures and laboratory work. Spring term. T., Th., F., 11-1.

9. Survey Methods. Lectures and demonstrations on the methods of making, recording and interpreting geological observations. Spring term. Th., 4. Professor H. S. WILLIAMS.

* AGRICULTURE AND HORTICULTURE.

1. Applied Agriculture. The preparation of soils ; general management of stock ; farm buildings ; farm-yard manures ; commercial fertilizers. Farm accounts ; principles of stock-breeding ; races and breeds ; breeding ; feeding and management of cattle ; sheep husbandry. The horse ; farm drainage ; farm implements and machinery ; grains, grasses, and weeds ; business customs, rights, and privileges ; relations of employers and laborers. Lectures. Daily ex. S., 11. Professor ROBERTS.

Dairy Husbandry. Ten lectures and practicums by Professor J. W. ROBERTSON of Guelph, Canada.

Real estate ; three lectures by Professor H. B. HUTCHINS of the Law School. Personal Property and Contracts ; three lectures by Professor F. W. BURDICK of the Law School.

2. Agriculture, field work. T., Th., 2-4. Professor ROBERTS. Inspection tours to points of technical interest throughout the State.

[For Agricultural Chemistry, see Chemistry, course 3 ; for Arboriculture, see Botany, course 4 ; for Economic Entomology, see Entomology, courses 3, 4, and 5.]

3. General Horticulture. Including the science of horticulture, principles of pomology and vegetable gardening, and discussions of forcing and forcing-structures. Opportunities are offered for extra hours of practical work, and for investigation. Fall term, laboratory work once a week. This must be taken before the work in the Winter and Spring terms can be pursued. Winter and Spring terms, lectures and other class work, M., W., F., 12 ; and laboratory work once a week. Professor BAILEY.

VETERINARY SCIENCE.

1. The anatomy, physiology, and hygiene of farm animals ; data for determining age ; principles of breeding, of shoeing, etc. Zymotic, parasitic, dietetic, and constitutional diseases of domestic animals. Veterinary sanitary science and police ; prevention of animal plagues by legislative and individual action. General diseases of the different systems of organs in the domestic animals. Lectures. Daily ex. S., 8. Clinical demonstrations as opportunity offers. Professor LAW.

ARCHITECTURE.

FRESHMAN YEAR.

1. Linear Drawing and Projection. Winter term. Lectures. M., 2-2.30. Drawing, five hours per week. Assistant Professor OSBORNE and Mr. ———

SOPHOMORE YEAR.

2. Building Materials and Construction. Winter term. Lectures by Professor BABCOCK, M., W., F., 9. Drawing, 9 hours per week. Assistant Professor OSBORNE. Spring term. Lectures. W., 10. Drawing, six hours per week. Assistant Professor OSBORNE.

3. Shades, Shadows, and Perspective. Spring term. T., Th., 9. Drawing, six hours per week. Professor BABCOCK.

JUNIOR YEAR.

5. History of Architecture. Fall term. Lectures. M., W., F., 10. Winter term. Lectures. Daily 11. Spring term. Lectures. M., W., F., 9. Drawing, six hours per week. Professor BABCOCK.

6. Designing. Fall term. Lectures, M., W., 2.30. Drawing, fifteen hours per week. Winter and Spring terms. Lectures, W., 3.30. Drawing, twelve hours per week. Assistant Professor OSBORNE.

7. Decoration. Spring term. Lectures. T., Th., 11. Professor BABCOCK.

SENIOR YEAR.

8. History of Architecture. Fall term. Lectures. M., W., F., 11. Winter term. Lectures. M., W., F., 9. Professor BABCOCK.

9. Designing. Occasional lectures. Drawing, Fall term, 21; Winter term, 15; Spring term, 12 hours per week. Assistant Professor OSBORNE.

10. Acoustics, etc., Spring term. M., W., F., 11. Professor BABCOCK.

11. Decoration. Fall term. Drawing, nine hours per week.

12. Thesis. Spring term.

CIVIL ENGINEERING.

FRESHMAN YEAR.

1. Linear Drawing. Winter term. Drawing, six hours per week. M., W., F., 11-1. Mr. VEDDER.

2. Lettering. Winter term. Drawing, four hours per week, T., Th., 11-1. Mr. VEDDER.

SOPHOMORE YEAR.

3. Descriptive Geometry. Recitations, two hours per week. Fall term. M., W., 8. Assistant Professor MARX and Mr. OGDEN; T., Th., 8.

8. Assistant Professor MARX, Mr. VEDDER, and Mr. OGDEN; M., W., 9.

9. Assistant Professor MARX, Mr. VEDDER, and Mr. OGDEN; T., Th., 9.

9. Mr. VEDDER and Mr. OGDEN. Winter Term. M., W., 8. Assistant Professor MARX, Mr. VEDDER, and Mr. OGDEN; T., Th., 8. Mr. VEDDER, and Mr. OGDEN; M., W., 9. Assistant Professor MARX, Mr. VED-

DER, and Mr. OGDEN ; T., Th., 9. Mr. OGDEN. Spring term. M., W., 8. Mr. WEBB, and Mr. OGDEN ; T., Th., 8. Mr. VEDDER, Mr. WEBB, and Mr. OGDEN ; M., W., and T., Th., 9. Mr. OGDEN ; M., W., and T., Th., 10-12. Assistant Professor CRANDALL ; 9-12. Assistant Professor MARX. Original problems. Fall term. M., W., 10-12. Assistant Professor MARX, and Mr. OGDEN ; T., Th., Assistant Professor MARX, Mr. VEDDER and Mr. OGDEN. Winter term. M., W., 10-12. Assistant Professor MARX, Mr. WEBB, and Mr. OGDEN ; T., Th., 10-12. Mr. WEBB, and Mr. OGDEN. Spring term. M., W., 10-12. Mr. WEBB, and Mr. OGDEN ; T., Th., 10-12. Mr. OGDEN.

4. Pen Topography. Fall term. Drawing, six hours per week, M., W., F., 10-12. Mr. VEDDER.

5. Land Surveying. Spring term. Lectures, recitations, and field work, eight hours per week, M., W., F., 8-11. Mr. VEDDER.

6. Colored Topography. Spring term. Drawing, six hours per week, M., W., F., 11-1. Mr. VEDDER ; 12. Mr. OGDEN.

JUNIOR YEAR.

7. Mechanics of Engineering. Lectures and recitations. Fall term, 10, 12 ; Winter and Spring terms, 10, 11, 12. Assistant Professor CHURCH. Fall term, 10, 11, 12 ; Winter and Spring terms, 10, 11. Mr. WING. Fall term, 11 ; Winter and Spring terms, 12. Mr. WEBB.

8. Shades, Shadows, Perspective and Tinting. Fall term. Lectures and drawing, ten hours per week, daily, 8-10. Mr. WEBB.

9. Technical Reading. Winter term. Critical study of foreign technical literature, three hours per week, M., T., W., at 12. French, Italian, Spanish, Professor FUERTES ; German, Assistant Professor MARX ; French, Mr. WING.

10. Structural Details. Winter term. Lectures and drawing, six hours per week, T., Th., 8-10 ; F., 11-1. Assistant Professor MARX.

11. Elementary Designing. Spring term. Lectures, three hours per week. M., W., F., 12. Assistant Professor MARX.

12. Railroad Surveying, Railway Office Practice, and Railway Economics. Lectures, recitations, drawing, and field work. Fall and Winter terms, M., W., F., 11-1. Spring term, T., Th., F., 9. Assistant Professor CRANDALL.

13. Bridge Stresses. Spring term. Lectures and recitations, five hours per week. Daily, ex. S., 8. Assistant Professor CRANDALL.

2a. Round Lettering. Spring term. Drawing, six hours per week. T., Th., F., 11-1. Mr. OGDEN.

14. Topographical practice, etc. Spring term. Two weeks field work in the C. U. Surveys of Central New York, twelve hours per day, and one week office work, six hours per day. Professor FUERTES, Assistant Professors CRANDALL and CHURCH, and Mr. WING.

SENIOR YEAR.

15. Spherical Astronomy. Fall term. Lectures and recitations. Daily, ex. S., 10. Professor FUERTES. Night observations, twice a week, 7-11. Professor FUERTES, Mr. WING and Mr. VEDDER.

16. Stereotomy, and Theory of the Arch. Fall term. Lectures and drawing, six hours per week. M., W., F., 8-10. Assistant Professor CRANDALL.

17. Civil Engineering. Lectures. Winter term. M., W., F., 9. Professor FUERTES.

18. Hydraulics. Fall term. Lectures and recitations. Daily, ex. S., 11. Assistant Professor CHURCH.

13a. Bridge Designing. Fall term. Lectures and drawing, four hours per week. T., Th., 8-10. Assistant Professor CRANDALL.

19. Higher Geodesy. Winter term. Lectures and recitations. Daily, ex. S., 12. Assistant Professor CRANDALL.

20. Theory of Oblique Arches, Masonry Designs, and Stone Cutting. Winter term. Lectures and designs, ten hours per week. Daily, ex. S., 10-12. Professor FUERTES.

21. Hydraulic Motors. Spring term. Lectures and recitations. M., W., 11. Assistant Professor CHURCH.

22. Engineering Economics. Spring term. Lectures. M., W., 10. Professor FUERTES.

23. Hydrographic Mapping and Chart Making. Spring term. Drawing, eight hours per week. M., T., W., Th., 8-10. Mr. WING.

24. Theses. Spring term. The subject to be approved by the Dean of the Department.

14. (a) Geodetical practice, etc. Spring term. Two weeks field work in the C. U. Surveys of Central New York, fourteen hours per day. Office work, one week, five hours per day. Professor FUERTES, Assistant Professors CRANDALL and CHURCH, and Mr. WING.

25. Engineering Laboratory work. Throughout the year. Daily from 9 a. m. to 6 p. m., as assigned. The Professors and Instructors of the department.

26. Sanitary and Municipal Engineering. Fall term. Lectures. T., Th., 12. Professor FUERTES.

28. Hydraulic Engineering. Lectures. T., Th., 10. Professor FUERTES.

MECHANICAL ENGINEERING AND THE MECHANIC ARTS.

1. Kinematics and Mechanism. Juniors. Recitations and lectures. Winter term. Daily, ex. S., 8, 9. Assistant Professor A. W. SMITH.

2. Materials of Construction. Juniors. Recitations and lectures. Fall term. Daily, ex. S., 8, 9. Assistant Professor A. W. SMITH.

3. Machine Design. Fall and Winter terms. Seniors, W., F., S. Associate Professor ROBERTS and Assistant Professor CANAGA. Spring term. Juniors, daily, ex. S., 8, 9. Assistant Professor A. W. SMITH.

4. Steam Engines and other Motors. Thermodynamics and the theory of steam and other heat engines. Fall term. Lectures. Daily, ex. S., 10. Professor THURSTON.

5. Applied Theory of the Steam and other Engines. Winter term. Lectures. Daily, ex., S., 10. Structure and operation. Spring term, T., Th., 10. Professor THURSTON.

6. Steam Generation. Design, construction and operation of the steam boiler. Spring term. M., W., F., 10. Professor THURSTON.

7. Shopwork. (a) Freshmen. Woodworking; use of tools; carpentry; joinery; pattern-making; turning. (b) Sophomores and juniors. Blacksmithing; use of tools; forging; welding; tool-dressing, etc. (c) Juniors and sophomores. Foundry work; moulding; casting; mixing metals; brasswork, etc. (d) Juniors and seniors. Machinist's work; use of hand and machine tools; working to form and to guage; finishing; construction; assemblage; erection. Daily, as assigned, 8-1, 2-6. Professor MORRIS; Messrs. —, WOOD, VANDERHOEF, GRANGER, POLLAY, and SMITH.

8. Freehand Drawing. Daily, ex. S., 10-1, 2-4. Associate Professor CLEAVES, Messrs. GUTSELL, NOYES, and —.

9. Instrumental Drawing. Required of freshmen in Mechanical and Electrical Engineering. Spring term. Daily, ex. S., 11-1. Associate Professor CLEAVES, and Messrs. NOYES and —.

10. Mechanical Drawing. Specials. Daily, ex. S., 8-1. Professor MORRIS, or in classes as assigned.

11. Junior Designing and Drawing as assigned. Mr. H. D. WILLIAMS.

12. Senior Designing and Drawing as assigned. T., Th., 11-1; S., 8-1. Associate Professor —, Assistant Professors CANAGA and —.

13. Mechanical Laboratory. (Steam Engine.) Lectures. Juniors. Standardization of Apparatus, and Tests of Boilers and Prime Movers. Spring term, T., Th., 9. Seniors. Fall and Winter terms. Experimental work in standardization and in tests of boilers and prime movers. Daily, 2-5. Assistant Professors A. W. SMITH and CANAGA, and Mr. BISSELL.

14. Mechanical Laboratory. (Strength of Materials.) Study of methods of testing materials, in course. Juniors. Fall term. Daily, ex. S., 8-9. Experimental work in the laboratory, strength of materials. Winter term. Daily, 2-5. Assistant Professors A. W. SMITH and CANAGA, and Mr. BISSELL.

Advanced work and research, as assigned by the DIRECTOR.

15. Essays and Debates. Mechanical Engineers' Association. All classes. F., 2.30-4.

16. Electrical Engineering. Seniors, as assigned. Associate Professor ROBERTS.

17. Advanced work in special courses and graduate work, as may be assigned by Professor THURSTON, Assistant Professors SMITH, CANAGA and ———.

18. Lectures on various professional subjects, by non-resident lecturers, as announced in the Register, at times to be assigned and announced.

MILITARY SCIENCE AND TACTICS.

1. Infantry drill. School of the soldier. School of the company. School of the battalion. Fall and Spring terms. M., W., F., 4.30. Lieutenant TUTHERLY.

2. Artillery drill. School of the soldier dismounted. School of the battery dismounted for selected detachments. Fall and Spring terms. M., W., F., 4.30. Lieutenant TUTHERLY.

3. Military Signaling, for selected detachments. Fall and Spring terms. M., W., F., 4.30. Lieutenant TUTHERLY.

Students in courses 2 and 3 are selected by the Commandant from those reasonably proficient in course 1.

4. Military Science. Lectures. Winter term. W., F., 4.30. Lieutenant TUTHERLY.

Any member of the cadet corps who has satisfactorily performed all the duties required for the first year, and who is qualified therefor, may be selected for the place of a commissioned officer, if needed. For the performance of his duties as a commissioned officer in the junior or senior year, he is entitled to a credit of 3 recitation hours a week for the Fall and Spring terms; and, at graduation, he may receive a certificate of military proficiency with his diploma, provided he has also completed the course in military science prescribed for the Winter term of the senior year.

HYGIENE AND PHYSICAL CULTURE.

1. Hygiene, and Physical Culture. Required of all freshmen. Lectures. Fall term. Class in two sections. Saturdays throughout the term. Hours to be assigned later. Professor HITCHCOCK.

2. Physical examinations. Students of all classes by special appointment. Gymnasium office. Daily, 10 to 12, and 2 to 4 except Saturdays. Professor HITCHCOCK.

3. Special medical advice to indigent students. Gymnasium office. Daily, from 12 to 1, throughout the year. Professor HITCHCOCK.

4. Gymnastic exercises. Asthenic class, consisting of men who in the judgment of the Director,—which judgment is founded on the physical examination,—are imperatively in need of special physical development. Fall and Spring terms. The work consists of class and squad work, special developing exercises, and exercises prescribed by the Director for individual deformity or immaturity. Daily, ex. S., 5—6. Mr. NELLIGAN.

5. Gymnastic exercises. Winter term. Sophomores. 4.30 to 6. T., F. Freshmen. Same hours on M., and Th. Optional class on W. and S., at 5. Special exercises for individuals during the forenoons at hours to be arranged. Mr. NELLIGAN.

6. Ladies' gymnastic exercise. All classes except seniors. Sage College gymnasium. Throughout the year. Instruction is given in class exercises, with and without apparatus. Daily ex. S., 5. Professor HITCHCOCK.

COURSES OF STUDY.

I. THE GENERAL COURSES.

The special requirements of each of the general courses will be seen below.

While pursuing their elective work, which covers a small part of the sophomore year, and nearly the whole of the junior and senior years, students are urgently advised to proceed upon a carefully formed and clearly defined plan, and to aim at the attainment of special proficiency in certain subjects. The members of the Faculty will be pleased to give advice and assistance in the forming of such plans.

The elective hours of the sophomore year should be used with thoughtful reference to the special studies which the student designs to pursue during the junior and senior years. For example, students who intend to make a specialty of Greek should add to the required work the elective hours in that study which are open to sophomores; students of history and political science should take mediæval history or modern history; candidates for the degree of Bachelor of Arts or Bachelor of Philosophy, who desire to make a specialty of science, should take physics; students of all courses who desire to pursue advanced mathematics should take analytic geometry and calculus; students desiring to take a complete course in natural history with a view to teaching it, or with the intention of the ultimate study of medicine, should elect freehand drawing, invertebrate zoology, vertebrate zoology, and botany.

Students who shall devote at least five hours continuously during the last two years to any single subject, and pass the requisite examinations, may, upon application on or before June 1, receive mention of the fact in their diplomas.

THE COURSE LEADING TO THE DEGREE OF BACHELOR OF ARTS.

<i>Freshman Year.</i>	1st Term.	2d Term.	3d Term.
Latin	3*	3	3
Greek	3	3	3
Mathematics	3	3	3
French	3	3	3
English	2	2	2
Greek history . . .	2	Roman history . .	2
Hygiene	1	—	—
	<u>17</u>	<u>16</u>	<u>16</u>
Military drill . . .	2	Physical training .	2
		Military drill . .	2
<i>Sophomore Year.</i>	1st Term.	2d Term.	3d Term.
Latin	3	3	3
Greek	3	3	3
German	3	3	3
English	1	1	1
Physiology	1	1	1
Psychology and Logic	2	2	2
	<u>13</u>	<u>13</u>	<u>13</u>
Military drill . . .	2	Physical training .	2
		Military drill . .	2
Electives	2-5 each term.		

<i>Junior Year.</i>	1st Term.	2d Term.	3d Term.
Themes	2	2	2

<i>Senior Year.</i>	2d Term.	3d Term.
Thesis	2	2
Military Science	2	

The remaining work of the junior and senior years is elective.

THE COURSE LEADING TO THE DEGREE OF BACHELOR OF PHILOSOPHY.

Students in the course in Philosophy who in the last two years elect continuously not less than nine hours of studies in history and political science will, upon application on or before June 1, receive the degree of Bachelor of Philosophy in History and Political Science.

* The figures indicate the number of University exercises per week.

<i>Freshman Year.</i>	1st Term.	2d Term.	3d Term
Latin	3	3	3
German	3	3	3
French	3	3	3
Mathematics	3	3	3
English	2	2	2
Greek history	2	Roman history	2
Hygiene	1	—	—
	—	—	—
	17	16	16
Military drill	2	Physical training	2 Military drill

<i>Sophomore Year.</i>	1st Term.	2d Term.	3d Term.
Latin	3	3	3
French or German	3	3	3
History	3	3	3
English	1	1	1
Physiology	1	1	1
Psychology and Logic }	2	2	2
	—	—	—
	13	13	13
Military drill	2	Physical training	2 Military drill
Electives	2-5 each term. .		

<i>Junior Year.</i>	1st Term.	2d Term.	3d Term.
Themes	2	2	2

<i>Senior Year.</i>	2d Term.	3d Term.
Thesis	2	2
Military science	2	
The remaining work of the junior and senior years is elective.		

THE COURSE LEADING TO THE DEGREE OF BACHELOR OF LETTERS.

<i>Freshman Year.</i>	1st Term.	2d Term.	3d Term.
Mathematics	3	3	3
French { 3 or 5 }	8	8	8
German { 3 or 5 }			
Mathematics or Ancient history	2	2	2
English	2	2	2
Hygiene	1	—	—
	—	—	—
	16	15	15
Military drill	2	Physical training	2 Military drill

<i>Sophomore Year.</i>	1st Term.	2d Term.	3d Term.
French or German	3	3	3
English	1	1	1
Physics	3	3	3
Chemistry	3	3	Botany 3
Physiology	1	1	1
Psychology and Logic }	. 2	2	2
	<hr/> 13	<hr/> 13	<hr/> 13
Military drill	2	Physical training 2	Military drill 2
Electives	2-5 each term.		

<i>Junior Year.</i>	1st Term.	2d Term.	3d Term.
Themes	2	2	2
<i>Senior Year.</i>		2d Term.	3d Term.
Thesis		2	2
Military science		2	

The remaining work of the junior and senior years is elective, with the condition that students must devote at least nine hours continuously to literary, historical and philosophical subjects.

THE GENERAL COURSE LEADING TO THE DEGREE OF

BACHELOR OF SCIENCE.

Students in the course in Science who in their sophomore year elect freehand drawing, invertebrate and vertebrate zoology, and botany, and who in the last two years elect continuously not less than nine hours in natural history, and pass an examination before the beginning of the senior year in Latin equivalent to four books of Cæsar's Commentaries, and in Greek sufficient to show ability to recognize and analyze scientific technical terms, will, upon application on or before June 1, receive the degree of Bachelor of Science in Natural History.

<i>Freshman Year.</i>	1st Term.	2d Term.	3d Term.
Mathematics	5	5	5
French German { 3 or 5 }	8	8	8
English	2	2	2
Hygiene	1	—	—
	<hr/> 16	<hr/> 15	<hr/> 15
Military drill	2	Physical training 2	Military drill 2

<i>Sophomore Year.</i>	1st Term.	2d Term.	3d Term.
French or German	3	3	3
English	1	1	1
Physics	3	3	3
Chemistry	3	3	Botany 3
Physiology	1	1	1
Psychology and } Logic	2	2	2
	—	—	—
	13	13	13
Military drill	2	Physical training 2	Military drill 2
Electives	2-5 each term.		

<i>Junior Year.</i>	1st Term.	2d Term.	3d Term.
Themes	2	2	2
<i>Senior Year.</i>		2d Term.	3d Term.
Thesis		2	2
Military science		2	

The remaining work of the junior and senior years is elective, with the condition that students must devote at least nine hours continuously to scientific subjects.

II. THE TECHNICAL COURSES.

THE COURSE IN AGRICULTURE.

Leading to the degree of Bachelor of Science in Agriculture.

<i>Freshman Year.</i>	1st Term.	2d Term.	3d Term.
Mathematics	5	5	5
French or German	5	5	5
English	2	2	2
Freehand drawing	3	3	3
Hygiene	1	—	—
	—	—	—
	16	15	15

Military drill 2 Physical training 2 Military drill 2

<i>Sophomore Year.</i>	1st Term.	2d Term.	3d Term.
English	1	1	1
Physics	3	3	3
Invertebrate zoology	3	Vertebrate zoology 3	Botany 3
Physiology	1	1	1
Psychology and } Logic	2	2	2
Anatomical methods	1	Microscopical } methods	1 —

Anatomical lab.	2	Microscopical lab.	2	Botanical lab.	2
Chemistry	3	. . . . .	3	Chemical lab	3
	16		16		15
Military drill	2	Physical training	2	Military drill	2
Electives	2	. . . . .	2	. . . . .	3
Junior Year.	1st Term.	2d Term.		3d Term.	
Themes	2	. . . . .	2	. . . . .	2
Senior Year.		2d Term.		3d Term.	
Thesis . . . . .		. . . . .	2	. . . . .	2
Military science . . . . .		. . . . .	2		

The remaining work of the junior and senior years is elective, with the condition that at least twelve hours must be devoted continuously to studies specially relating to agriculture or horticulture, a list of which is given below (the studies being arranged in the general order in which they should be taken) :

- Agricultural chemistry: lectures ; laboratory work in qualitative and quantitative analysis.
- Botany: compositæ and graminæ ; arboriculture and landscape gardening ; vegetable physiology, vegetable histology ; fungi and algæ, and systematic and applied botany.
- Geology, economic: lectures.
- Entomology: lectures and laboratory practice.
- Horticulture: lectures and field work.
- Veterinary studies: anatomy and physiology ; pathology ; sanitary science ; parasites ; medicine and surgery.
- Agriculture: lectures and field work.
- Land surveying.

THE COURSE IN ARCHITECTURE.

Leading to the degree of Bachelor of Science in Architecture.

FRESHMAN YEAR.

- FALL TERM —French or German, 5 ; algebra, 5 ; rhetoric, 2 ; free-hand drawing, 3 ; hygiene, 1 ; drill, 2.
- WINTER TERM.—French or German, 5 ; trigonometry, 5 ; rhetoric, 2 ; freehand drawing, 3 ; linear drawing, 2 ; physical training, 2.
- SPRING TERM.—French or German, 5 ; analytic geometry, 5 ; rhetoric, 2 ; botany, 3 ; freehand drawing, 3 ; drill, 2.

SOPHOMORE YEAR.

- FALL TERM.—Calculus, 5 ; descriptive geometry, 3 ; mechanics and heat, 3 ; chemistry, 3 ; freehand drawing, 2 ; drill, 2.

WINTER TERM.—Building materials and construction, 6 ; descriptive geometry, 3 ; electricity and magnetism, 3 ; chemistry, 3 ; physical training, 2.

SPRING TERM.—Construction, 3 ; descriptive geometry, 3 ; acoustics and optics, 3 ; blowpipe analysis and determinative mineralogy, 2 ; shades, shadows and perspective, 3 ; geology, 3 ; drill, 2.

JUNIOR YEAR.

FALL TERM.—Mechanics, 5 ; Egyptian, Greek and Roman architecture, 3 ; designing, 5 ; water color drawing, 3.

WINTER TERM —Mechanics, 5 ; Byzantine and Romanesque architecture, 5 : designing, 5 ; structural details, 2.

SPRING TERM.—Gothic architecture, 5 ; decoration, 2 ; photography, 2 ; designing, 8.

SENIOR YEAR.

FALL TERM.—Renaissance architecture, 3 ; stereotomy, 3 ; decoration, 3 ; designing, 8.

WINTER TERM.—Modern architecture, 3 ; stereotomy, 5 ; designing, 7 ; military science, 2.

SPRING TERM.—Heating, ventilation, professional practice, etc., 3 ; modeling, 2 ; designing, 7 ; thesis, 4.

THE COURSES IN CHEMISTRY.

A four-year course, leading to the degree of Bachelor of Science in Chemistry.

<i>Freshman Year.</i>	1st Term.	2d Term.	3d Term.
Mathematics	5	5	5
German	5 or 3	5 or 3	5 or 3
English	2	2	2
Chemistry	3 or 5	3 or 5	3 or 5
Hygiene	1	—	—
	<hr/> 16	<hr/> 15	<hr/> 15
Military drill	2	Physical training	2
Military drill			2
<i>Sophomore Year.</i>	1st Term.	2d Term.	3d Term.
German or Chem.	3	3	3
English	1	1	1
Physics	3	3	3
Physiology	1	1	1
Psychology and Logic }	2	2	2
Chemistry	7	7	7
	<hr/> 17	<hr/> 17	<hr/> 17
Military drill	2	Physical training	2
Military drill			2

<i>Senior Year.</i>	2d Term.	3d Term.
Thesis	2	2
Military science	2	

Candidates for the degree of Bachelor of Science in Chemistry must devote to chemistry not less than twelve hours continuously in the junior and senior years, out of the eighteen which they are at liberty to take.

GRADUATE COURSES IN CHEMISTRY.

Special advantages are offered to graduates of this and other schools of science, who may desire to pursue advanced studies in the department of chemistry, leading to the higher scientific degrees. Graduate courses are offered in analytical, pharmaceutical, organic, and higher theoretical chemistry ; and students pursuing these studies, or engaging in original research, will receive all possible advice and assistance from professors and instructors.

THE COURSES IN CIVIL ENGINEERING.

A four-year course leading to the degree of Civil Engineer.

FRESHMAN YEAR.

FALL TERM.—French or German, 5 ; rhetoric, 2 ; algebra, 5 ; free-hand drawing, 3 ; hygiene, 1 ; military drill, 2.

WINTER TERM.—French or German, 5 ; rhetoric, 2 ; trigonometry, 5 ; lettering, 2 ; linear drawing, 2 ; physical training, 2.

SPRING TERM.—French or German, 5 ; analytic geometry, 5 ; botany, 3 ; lettering, 1 ; rhetoric, 2 ; military drill, 2.

SOPHOMORE YEAR.

FALL TERM.—Calculus, 5 ; descriptive geometry, 3 ; chemistry, 3 ; experimental mechanics and heat, 3 ; pen topography, 2 ; military drill, 2.

WINTER TERM.—Calculus, 5 ; descriptive geometry, 3 ; geology, 3 ; electricity and magnetism, 3 ; chemistry, 3 ; physical training, 2.

SPRING TERM.—Land surveying, 5 ; acoustics and optics, 3 ; descriptive geometry, 3 ; rhetoric, 1 ; blowpipe analysis, 1 ; colored topography, 3 ; military drill, 2.

JUNIOR YEAR.

FALL TERM.—Mechanics of engineering, 5 ; railroad surveying, 3 ; shades, shadows, perspective and tinting, 4 ; physical laboratory work, 3 ; mineralogy, 2.

WINTER TERM.—Mechanics of engineering, 5 ; railway office practice, 3 ; detail drawing, 2 ; technical reading in foreign languages, 3 ; physical or civil engineering laboratory work, 3 ; metallurgy, 2.

SPRING TERM.—Mechanics of engineering, 4 ; elementary designs of engineering structures, 2 ; bridge stresses, 4 ; railway economics, 3 ; topographical practice, two weeks, and office practice, one week, 3.

SENIOR YEAR.

FALL TERM.—Hydraulics, 5 ; spherical astronomy, 5 ; practical astronomy, night observations, 2 ; bridge designing, 2 ; stereotomy and theory of the arch, 3.

WINTER TERM.—Civil engineering, 3 ; hydraulic motors, 2 ; municipal and sanitary engineering, 2 ; higher geodesy, 5 ; stereotomy of the oblique arch, 3 ; laboratory work in stone cutting, 2 ; military science, 2.

SPRING TERM.—Engineering economics, 2 ; hydraulic engineering, 4 ; theory and applications of cartography, 3 ; preparation of thesis, 4 ; astronomical, geodetic and hydrographic practice, two weeks, and office work, one week, 3.

The civil engineering laboratories, as well as the chemical, mechanical and physical laboratories are open throughout the year for students having the necessary preparation.

GRADUATE COURSE IN BRIDGE ENGINEERING.

FALL TERM.—Wood and stone bridges, 3 ; bridge details and design, 3 ; engineering architecture, 3 ; laboratory investigations of materials of construction, 3 ; elective, 6.

WINTER TERM.—Iron bridges, 3 ; bridge details and design, 3 ; hoisting and pumping machinery, 3 ; designs and details of cranes, pumps, etc., 2 ; hydraulic laboratory investigations, 4 ; elective, 4.

SPRING TERM.—Bridge contracts and specifications, 3 ; bridge superintendence and construction, 3 ; special types of trusses, swing and pivot bridges, 3 ; bridge designing, 3 ; thesis, 6.

GRADUATE COURSE IN RAILROAD ENGINEERING.

FALL TERM.—Economics of railway location, 3 ; railway projects, 3 ; structure and efficiency of locomotive engines and railway machinery, 3 ; advanced general and economic geology, 3 ; laboratory investigations of materials of construction, 3 ; elective, 3.

WINTER TERM.—Economics of railway construction, 3 ; projects and designs of track details and accessory works, 3 ; special types of

railway machinery and locomotives, 3 ; hoisting and pumping machinery, 3 ; designs and details of cranes, pumps, etc., 2 ; electrical laboratory practice, 4.

SPRING TERM.—Railway maintenance and management, 5 ; contracts and specifications for railway construction, 3 ; contracts and specifications for railway machinery, 3 ; railway jurisprudence, 3 ; projects and thesis, 5.

GRADUATE COURSE IN SANITARY ENGINEERING.

FALL TERM.—Advanced general and economic geology, 3 ; laboratory investigations of materials of construction, 3 ; water collection and distribution, 5 ; special chemical laboratory practice, 3 ; elective, 4.

WINTER TERM.—Sewerage of cities and towns, 3 ; designs of water-supply systems, 3 ; hoisting and pumping machinery, 3 ; designs and details of cranes and pumps, 2 ; hydraulic laboratory investigations, 4 ; elective, 3.

SPRING TERM.—Drainage and improvement of lands, 3 ; sewerage, and water-supply designs, 3 ; estimates, specifications and contracts, 3 ; administration and management of public works, 3 ; sanitary and municipal legislation, 2 ; projects and thesis, 4.

GRADUATE COURSE IN HYDRAULIC ENGINEERING.

FALL TERM.—Advanced general and economic geology, 3 ; laboratory investigations of materials of construction, 3 ; water collection and distribution, 5 ; motion of water in natural and artificial channels, 3 ; elective, 4.

WINTER TERM.—Construction of canals and improvement of rivers, 5 ; hoisting and pumping machinery, 3 ; designs and details of cranes, pumps, etc., 2 ; hydraulic laboratory investigations, 4 ; study of hydraulic problems, 2 ; elective, 3.

SPRING TERM.—Coast and harbor improvements, 5 ; estimates, specifications, and contracts, 3, administration and management of public works, 3 ; projects and thesis, 6.

GRADUATE COURSE IN GEODETIC ENGINEERING.

FALL TERM.—Advanced general and economic geology, 3 ; advanced astronomical practice, 5 ; geodetic field and laboratory work, 3 ; mineralogy, 3 ; political economy, 3 ; elective, 2 or 3.

WINTER TERM.—Advanced geodesy, 3 ; systematic and applied botany, 3 ; political economy, 3 ; special cartography, 3 ; metallurgy, 2 ; physical laboratory practice, 4.

SPRING TERM.—Geodetic practice, 6 ; political economy, 3 ; magnetic laboratory practice, 3 ; meteorology, 2 ; thesis, 4.

For detailed information as to the qualifications for admission to the above graduate courses, see index, or apply to the Dean of the Department of Civil Engineering.

THE COURSES IN MECHANICAL ENGINEERING.

A four-year course leading to the degree of Mechanical Engineer.*

FRESHMAN YEAR.

FALL TERM.—French or German, 5 ; algebra, 5 ; rhetoric, 2 ; free-hand drawing, 3 ; shopwork, 2 ; hygiene, 1 ; drill, 2.

WINTER TERM.—French or German, 5 ; trigonometry, 5 ; rhetoric, 2 ; freehand drawing and machine sketching, 3 ; shopwork, 2.

SPRING TERM.—French or German, 5 ; theory of equations, 2 ; projective geometry and conic sections, 3 ; instrumental drawing, 3 ; rhetoric, 2 ; shopwork, 2 ; drill, 2.

SOPHOMORE YEAR.

FALL TERM.—Analytic geometry, 5 ; descriptive geometry, 3 ; experimental mechanics and heat, 3 ; chemistry, lectures, 4 ; shopwork, 3 ; drill, 2.

WINTER TERM.—Differential calculus, 5 ; electricity and magnetism, 3 ; chemistry, lectures, 4 ; descriptive geometry, 3 ; shopwork, 3.

SPRING TERM.—Integral calculus, 5 ; acoustics and optics, 3 ; descriptive geometry, 3 ; chemical laboratory, 4 ; shopwork, 3 ; drill, 2.

JUNIOR YEAR.

FALL TERM.—Mechanics of engineering, 5 ; kinematics, 5 ; designing and drawing, 2 ; physical laboratory, 2 ; chemistry, laboratory, †4 ; shopwork, 3.

WINTER TERM.—Mechanics of engineering, 5 ; materials of engineering and mechanical laboratory work, 6 ; physical laboratory, 2 ; designing and drawing, 2 ; shopwork, 3.

SPRING TERM.—Mechanics of engineering, 5 ; physical laboratory, 2 ; mechanical laboratory, 2 ; designing and drawing, 2 ; machine design, 5 ; shopwork, 3.

* All elections to be approved by the Director. Students will report for instructions. Number received limited by capacity ; at present, to 100 in Freshman, or about 300 in all classes. Students are advised and encouraged to take shop practice in vacation. Three hours in the shop, or two and a half in the laboratory or drawing room, count as one in the schedule.

† Should the laboratory be crowded, this work may be deferred, and shopwork substituted in time.

SENIOR YEAR.

FALL TERM.—Steam engine and other motors, 5 ; physical laboratory, 2 ; mechanical laboratory, 2 ; machine design, 3 ; designing machinery, 3 ; shopwork, 3.

WINTER TERM.—Steam engine and motors, 5 ; physical laboratory, 2 ; mechanical laboratory, 2 ; machine design, 3 ; machinery, 3 ; shopwork, 3.

SPRING TERM.—Thesis ; designing ; mechanical laboratory investigations ; shopwork : (time divided optionally, but subject to approval of head of the department*), 12 ; elective, 5 to 8.

UNDERGRADUATE COURSE IN ELECTRICAL ENGINEERING.†

The freshman, sophomore, and junior years are identical with the course in Mechanical Engineering ; in the senior year, laboratory work is increased, the time being taken from that devoted to shopwork.

SENIOR YEAR.

FALL TERM.—Physics, lectures and laboratory work (testing of instruments and determination of constants), 5 ; steam engine and other motors, 5 ; mechanical laboratory, 2 ; electrical engineering, 5 ; shopwork, 2.

WINTER TERM.—Physics, lectures and laboratory work (dynamo machines and electric motors, tests of efficiency), 5 ; steam engine and motors, 5 ; mechanical laboratory, 2 ; electrical engineering, 5 ; shopwork, 2.

SPRING TERM.—Physics, lectures and laboratory work, photometry, efficiency tests of electric lamps, tests of telegraphic instruments, lines and cables, 5 ; thesis (laboratory work, reading, etc., in connection with preparation of thesis), 12 ; elective, 0 to 3.

GRADUATE COURSE IN ELECTRICAL ENGINEERING.

ONE YEAR.

FALL TERM.—Structure and theory of electrical apparatus and machinery, 3 ; experimental work in laboratory, 5 ; contracts and specifications, 3 ; electives, 4 to 6.

WINTER TERM.—Construction, erection, and management of lines and plant, 3 ; laboratory, 5 ; contracts and specifications, 3 ; electives, 4 to 6.

* This term is devoted largely to the preparation of a thesis which must be approved by the Director and by the committee on theses. If not otherwise arranged, the student will take shopwork, laboratory work, and drawing, 3 each.

† Students taking this course receive the degree of M. E., and the statement that they have given special attention to electrical work is engrossed on their diplomas.

SPRING TERM.—Designing dynamo-electric machinery and establishments, 5 ; experimental work, 3 ; preparation of reports or thesis, 3 ; electives, 4 to 6.

Choice of elective studies, as well as of the special courses of engineering, is subject to the approval of the Director.

GRADUATE COURSE IN MARINE ENGINEERING.

ONE YEAR.

FALL TERM.—Structure and efficiency of marine engines and machinery, 3 ; experimental work in mechanical laboratory, 3 ; contracts and specifications, 3 ; chemical or physical laboratory work, 3 ; electives, 3 to 6.

WINTER TERM.—Naval architecture (resistance and speed of vessels, as effected by size, form, material of surfaces and power), 3 ; mechanical laboratory, investigations, 3 ; chemical or physical laboratory, 3 ; contracts and specifications, 3 ; elective, 6 to 9.

SPRING TERM.—Designs of marine machinery, etc., 3 ; investigations in mechanical laboratory, 3 ; chemical or physical laboratory, 3 ; preparation of reports or thesis, 3 ; elective, 6 to 9.

GRADUATE COURSE IN STEAM ENGINEERING.

ONE YEAR.

FALL TERM.—Structure and efficiency of steam boilers, 3 ; experimental work, 3 ; contracts and specifications, 3 ; chemical or physical laboratory, 3 ; elective, 6 to 9.

WINTER TERM.—Structure and efficiency of steam engines, 3 ; investigation in the mechanical laboratory, 3 ; chemical or physical laboratory, 3 ; contracts and specifications, 3 ; elective, 6 to 9.

SPRING TERM.—Designing steam engines and boilers, 3 ; experimental investigation, 3 ; chemical or physical laboratory, 3 ; preparation of reports or thesis, 3 ; elective, 6 to 9.

GRADUATE COURSE IN RAILWAY MACHINERY.

ONE YEAR.

FALL TERM.—Structure and efficiency of locomotive engines, and railway machinery, 3 ; civil engineering, 3 ; experimental work, 3 ; contracts and specifications, 3 ; chemical or physical laboratory, 3 ; elective, 3 to 6.

WINTER TERM.—Study of special types of locomotive engines and railway machinery, their structure and proportions, 3 ; civil engineer-

ing, 3 ; laboratory investigation, 3 ; chemical or physical laboratory, 3 ; contracts and specifications, 3 ; elective, 3 to 6.

SPRING TERM.—Designing railway machinery and apparatus, 3 ; civil engineering, 3 ; experimental investigation, 3 ; chemical or physical laboratory, 3 ; elective, 6 to 9.

COURSE IN INDUSTRIAL ART.

A four-year course not leading to a degree.

FRESHMAN YEAR.

FALL TERM.—French or German, * 5 ; algebra, 5 ; rhetoric, 2 ; outline drawing, 3 ; hygiene, 1 ; drill, 2.

WINTER TERM.—French or German, 5 ; trigonometry, 5 ; rhetoric, 2 ; outline and ornamental drawing, 3 ; physical training, 2.

SPRING TERM.—Drawing, from casts and figures, 3 ; analytical geometry, 5 ; instrumental drawing, 4 ; botany, 3 ; theory of color, 1 ; drill, 2.

SOPHOMORE YEAR.

FALL TERM.—Calculus, 5 ; descriptive geometry, 3 ; chemistry, 3 ; experimental mechanics and heat, 3 ; composition, 1 ; studies in anatomy, 1 ; drill, 2.

WINTER TERM.—Cast and figure drawing, 4 ; electricity and magnetism, 3 ; chemistry, 3 ; elementary coloring, 1 ; principles of design, 3 ; descriptive geometry, 3 ; physical training, 2.

SPRING TERM.—Plant forms, 2 ; coloring, 3 ; modeling and potter's wheel, 3 ; acoustics and optics, 3 ; freehand drawing, 3 ; descriptive geometry, 3 ; drill, 2.

JUNIOR YEAR.

FALL TERM.—Æsthetics, 2 ; drawing, 4 ; moulding and modeling, 4 ; geology, 3 ; physiology, 1 ; psychology and logic, 2 ; coloring and designing, 1.

WINTER TERM.—History of fine arts, 1 ; coloring, 4 ; physiology, 1 ; psychology and logic, 2 ; descriptive astronomy, 3 ; drawing from casts, 4.

SPRING TERM.—Woodworking, 2 ; photography, 2 ; history of art, 2 ; building materials and construction, 3 ; physiology, 1 ; psychology and logic, 2 ; drawing from nature, decoration and coloring, 4.

SENIOR YEAR.

FALL TERM.—Stereotomy, 3 ; English literature, 3 ; history of industrial arts, 2 ; modeling in clay, 2 ; wood-carving, 2 ; designing in color, 3.

* Choice to meet approval of the Director.

WINTER TERM—History of art, 3 ; coloring from nature, 2 ; etching, 3 ; designing, 5 ; military science, 2.

SPRING TERM.—Designing in form and color, 4 ; working stone, 2 ; painting from nature, 3 ; graduating work and thesis.

A TWO-YEAR COURSE PREPARATORY TO THE STUDY OF MEDICINE.

Not leading to a degree.

FIRST YEAR.

FALL TERM.—French or German, 5 ; freehand drawing, 3 ; anatomical methods, 3 ; chemistry, 4 ; physiology, 1 ; hygiene, 1 ; military drill, 2.

WINTER TERM.—French or German, 5 ; microscopical methods and histology, 3 ; vertebrate zoology, 3 ; chemistry, 4 ; physiology, 1.

SPRING TERM.—French or German, 5 ; botany (lectures, 3, laboratory work, 2), 5 ; embryology, 3 ; chemistry, 4 ; physiology, 1 ; military drill, 2.

SECOND YEAR.

FALL TERM.—Systematic and economic botany, 3 ; physics, 3 ; chemistry, 3 ; logic and psychology, 2 ; invertebrate zoology, 3 ; advanced anatomy or histology, 3.

WINTER TERM.—Systematic and economic botany, 3 ; physics, 3 ; chemistry, 4 ; logic and psychology, 2 ; advanced anatomy or histology, 5.

SPRING TERM.—Systematic and economic botany, 2 ; physics, 3 ; chemistry, 3 ; logic and psychology, 2 ; fungi, 4 ; morphology of the brain, 3.

Upon the completion of this course, or its equivalent, the student is, upon application on or before June 1, entitled to a certificate countersigned by the professor of physiology.

THE PRESIDENT WHITE SCHOOL OF HISTORY AND POLITICAL SCIENCE.

By action of the Board of Trustees, the courses of instruction in History and Political Science have been reorganized with the purpose of making them more comprehensive and efficient. While the Faculty does not rigidly prescribe any definite succession of courses, it earnestly recommends that students desiring to make themselves proficient in this general branch of study, early mark out their work in accordance with a systematic plan. During the freshman year there are weekly two hours of work in history prescribed for all students who are candidates for the degrees of A.B. or Ph.B. In the sophomore year candidates for the degree of Ph.B. are required to take three additional hours. With these exceptions, all work offered is elective.

Students in the course of Philosophy who elect nine hours of work continuously in History and Political Science during the third and fourth years of the course, and pass satisfactorily the examinations in the same, will receive the degree of Bachelor of Philosophy in History and Political Science. Other students who elect five hours of history, or five hours of political science, or five hours of each, continuously in the third and fourth years of their courses, and pass satisfactorily the examinations in the same, will, upon application on or before June 1, receive mention of that fact in their diplomas.

In order to encourage definiteness of purpose on the part of students when making their elections, the following is offered as a suitable scheme of study. For full details in regard to the courses, the library, etc., see p. 65.

FRESHMAN YEAR.

Course 1. History and Civilization of Greece and Rome. Required of all candidates for A.B. and Ph. B. T., Th., 9 or 11.

SOPHOMORE YEAR.

(From two to five hours of elective work may be taken.)

Course 4. The Political and Social History of Europe during the Middle Ages. Required of all candidates for Ph.B. M., W., F., 9.

[Course 5. The Political and Social History of Europe from the Renaissance to the French Revolution. T., Th., S., 9.]

[Course 2. Private, Political, and Legal Antiquities of the ancient Greeks, including a careful account of the political institutions of Athens and Sparta. W., F., 11]

Course 3. Private Life of the Romans. This course is given in alternate years with course 2. Either of them may profitably be taken by those candidates for the degree of Ph.B., who in addition to course 4, desire five hours of elective work in history. W., F., 11.

Course 6. The Political and Social History of England from the Saxon Invasion to the close of the Napoleonic Wars. T., Th., S., 9.

JUNIOR YEAR.

Courses 2, 3, 4, 5, and 6. (When not taken in the sophomore year.)

Course 9. The Social and Political History of America, from the Discovery to the end of the Revolution. T., Th., 3.30. An optional seminary connected with this course is held on M. at 7.30, for which a credit of two hours is given.

Course 10. American History from the end of the War for Independence to the end of the War for the Union. Designed for those who have taken, or are taking, course 4, or course 6.

Course 14. History of Institutions. Designed for students who have taken course 4, and who take or have taken course 5. M., W., F., 11.

Course 19. The Elements of Political Economy. Required as a prerequisite to all the advanced courses in this subject. M., W., F., 8.

Course 15. International Law and Diplomacy. T., 11.

Course 16. The Literature of Political Science. Th., 11.

[Course 17. Historic Achievements in Statesmanship. Th., 11. Alternating with course 16.]

SENIOR YEAR.

Courses 10, 14, 15, 16, 17, in case they have not been taken in the junior year.

Course 7. General History of Europe from the beginning of the French Revolution to the War of 1870. T., Th., S., 12.

Course 11. The Development of American Constitutional History and Constitutional Law from the Revolution to the Civil War. F., 3.30.

Course 13. Seminary in American History. Designed for seniors specially prepared and for graduates. T., 7.30-9 P. M. Credit, two hours.

Course 20. The Principles of Public Finance and the Financial History of the United States. T., Th., 8.

Course 18. General Seminary. Advanced course for the examination of obscure political and historical questions. Adapted specially to the needs of Fellows and other graduate students, and open to those

undergraduates only who have already taken a large amount of historical work. Th., 4.30-6. Credit, two hours.

Course 24. Economic Seminary. For the study of difficult problems in applied economics. M., 4.30-6. Open to students who have taken Political Economy one year.

Course 26. Social Science, including the History and Management of Charitable and Penal Institutions. T., 4.30.

Course 27. Roman Law and Comparative Jurisprudence. M., 3.30.

GRADUATE STUDENTS.

The courses above offered during the junior and senior years, so far as they may not be taken before the baccalaureate degree is received, are open to graduates of this or other institutions. An inspection of the courses will show that they cannot all be taken before graduation, even if no other branches of study are elected. The seminary courses are specially exacting, and with the other courses offered, will ordinarily afford abundant opportunity for advanced work during two years of graduate study. To students pursuing graduate work, the books of the seminary rooms and the general library are at all times immediately accessible. To students taking the advanced courses, the degrees of Master of Arts and Doctor of Philosophy are offered on conditions elsewhere explained. The History and Political Science Association holds frequent meetings and affords opportunity for bringing before the whole body of teachers and students interested in this field of study the results of any special investigations that may be deemed important.

SCHOLARSHIPS, FELLOWSHIPS, AND PRIZES.

STATE SCHOLARSHIPS.

Under the Law of the State the Superintendent of Public Instruction is empowered to award annually a number of free scholarships in Cornell University equal to the number of Assembly districts in the State. These Scholarships entitle the holder to free tuition for four years. For particulars in regard to the scholarships, application should be made to the Superintendent of Public Instruction, at Albany.

The Law provides that "any State student who shall make it appear to the satisfaction of the President of the University that he requires leave of absence for the purpose of earning funds with which to defray his living expenses while in attendance, may, in the discretion of the President, be granted such leave of absence, and may be allowed a period not exceeding six years from the commencement thereof for the completion of his course at said University." Under this provision of the charter the President of the University will, for the purpose indicated therein, give extension of scholarships to students who have acquitted themselves creditably during a residence in the University of at least one year.

UNIVERSITY SCHOLARSHIPS.

Pursuant to the action of the Trustees, described elsewhere, there will annually be thrown open to competition for all members of the freshman class who are registered in courses leading to degrees, at a special examination held directly after the September entrance examinations, six scholarships, of the value of two hundred dollars each.

Each of these scholarships will be continued for four years, provided the student maintains throughout his course the same high standing with which he enters; and the total amount received by each successful competitor will thus be eight hundred dollars. Students of high ability from the State of New York will have the additional advantage of being able to secure State scholarships, as there is nothing in the University statutes to prevent a student from holding both a State scholarship and a University scholarship.

The rules laid down by the Trustees and Faculty provide that the name of every successful competitor for these scholarships shall be inserted in the annual Register of the University, together with the name of the school at which he or she was fitted for college, and the name of the principal of the school; and that these names shall remain in the Register as long as he or she retains the scholarship.

It has also been thought best to give the scholarships to the candidates passing the best examinations, regard being had to ability and attainments alone. It is believed that in this way only can the bestowal of the scholarships be put on the proper footing; but the experience of Trustees and Faculty leads them to believe that a system based on merit alone, will inure mainly to the benefit of students of small means, since the great majority of the best scholars come, not from the wealthy class, but from those whose circumstances have forced them to feel the need of thrift and energy.

Of the University scholarships, not less than two, and not more than three, as the Faculty may determine, are awarded to students of either sex entering the freshman class, in any course leading to a degree, who, while maintaining a good standing in the other studies required for admission to the Arts course, pass the best examination in the Latin and Greek required for admission to that course; and the remainder—that is to say, not more than four and not less than three of the said University scholarships—are awarded to those students entering any course leading to a degree, who, while having a good standing in the other studies required for admission to the course, pass the best examination in the various branches of mathematics required for entrance, namely, in arithmetic, algebra, and geometry.

Samples of examination papers given to applicants for scholarships will be found in the appropriate place below.

In case a student who has been appointed to any scholarship shall forfeit it by reason of bad conduct or insufficient progress in the studies of his course, or for any other cause, the scholarship may be awarded for the remainder of the four years to another student in the same class.

The scholarships are paid at the office of the Treasurer of the University in six equal payments, on November 1, December 1, February 15, March 15, May 1, and June 1.

UNIVERSITY FELLOWSHIPS.

The fellowships, eight in number, are known as the Cornell Fellowship, the McGraw Fellowship, the Sage Fellowship, the Schuyler Fellowship, the Sibley Fellowship, the Goldwin Smith Fellowship,

the Erastus Brooks Fellowship, and the President White Fellowship. Each of these yields to the successful candidate the sum of four hundred dollars for one year, or in cases of remarkable merit, for two years.

They are intended to offer to young men and women of exceptional ability and decided purposes the opportunity for advanced study of a high character.

The holders must have taken a baccalaureate degree, and will ordinarily be recent graduates of this or other institutions ; but it is hoped that in occasional cases they will be students who have been for some years graduated, and who, whether as teachers or as professional workers, have felt the need of larger opportunities than they have yet enjoyed. And similarly, it is believed that holders of these fellowships who are preparing themselves for any profession to which the work of the University leads, will bring to that profession, in consequence of advanced study and research, a range and grasp in their chosen subjects which will lead them to exceptional usefulness and success.

The Fellows are required to reside at the University, and to engage in work leading to a higher degree, with the immediate supervision and assistance of the professors concerned in their respective specialties ; and, as the most conspicuous members of the student body, and representatives of the most advanced instruction given, they are expected, by high character and high intellectual aims, to exert an influence upon the entire life of the University.

Every fellowship shall be subject to such general and special rules as to residence and conduct as the Faculty may prescribe with the sanction of the Executive Committee. And in view of the fact that practical University instruction or some other form of work in the administration will be of use in training the said fellows for future usefulness, each shall be liable to render service to the University in instruction or in conducting examinations, to the extent of six hours per week. The distribution and assignment of this work shall be decided by the Faculty.

The application of the candidate for a fellowship should contain a full statement of the branches of study he intends to carry on, if appointed ; and if he has produced any literary or scientific work that could be put in evidence for him, a copy should accompany his application. Those candidates who are graduates of other colleges or universities than Cornell should submit recommendations from the instructors best acquainted with their ability and attainments in the specialties they desire to pursue. It should be borne in mind by such applicants that information cannot be too exact or full in the case of

students not personally known to the appointing body. The list of applicants is large, and the Faculty desires to be aided in every way in making its selections.

In exceptional instances, a competitive examination may be resorted to as a means of discriminating among several candidates.

The appointments are made in part or wholly at the close of the academic year, shortly before Commencement. The applications must be given or sent to the President or Registrar as early as May 15, to enable the Faculty to obtain any additional information that may be desired.

Payments on Fellowships are made at the same time and place as the payments on Scholarships.

PRIZES.

I. THE WOODFORD PRIZE.

The Woodford Prize, founded by the Hon. Stewart Lyndon Woodford, and consisting of a gold medal of the value of one hundred dollars, will be given annually for the best English oration, both matter and manner being taken into account.

The prize may be competed for under the following conditions, but it will not be conferred unless the successful competitor completes his course, and takes his degree at the Commencement next following the contest :

1. Any student registered as senior in one of the four-year courses leading to a degree may be a competitor, provided he has taken at least one course of instruction in Elocution.

2. Every competitor is required to submit an original oration upon a subject which shall have previously been approved by the Professor of Rhetoric.

3. The competing orations must be limited to fifteen hundred words ; must be written with a type-writer ; must be signed with a fictitious name ; must be accompanied with a sealed envelope containing the fictitious name of the writer without, and the real name within ; and must be deposited in the box on the door of the Registrar's office at or before noon of the first Monday of the spring term.

4. From the orations submitted, a committee of the Faculty will select not more than six for the public competition.

5. The orations selected for competition shall be permanently deposited in the University Library. All orations not conforming with these requirements will be returned to the writers without consideration.

II. THE '86 MEMORIAL PRIZE.

A public contest of speakers appointed from the junior class will be held in May of each year, and the successful competitor will be awarded the '86 Memorial Prize in Declamation, being the income of a sum of money left as a memorial by the class, and amounting to about thirty dollars annually. The conditions of the contest are as follows, viz.:

1. The Associate Professor of Rhetoric and Oratory is empowered to select from the students in course 4 of Rhetoric and Oratory, twelve members of the junior class whose general excellence in that course, in his judgment, warrants their competing for the prize.

2. The announcement of this selection is to be made not later than the middle of the third term.

3. The contest for the prize takes place on the evening of the second Friday preceding the beginning of examinations in the Spring term, under the direction of the Associate Professor of Rhetoric and Oratory.

4. The prize is awarded by a committee appointed by the President of the University.

III. THE HORACE K. WHITE PRIZES.

These prizes, established by Horace K. White, Esq., of Syracuse, are awarded annually to the most meritorious students in the Department of Veterinary Science, as follows: To the first in merit, twenty dollars; to the second in merit, ten dollars.

IV. SIBLEY PRIZES IN MECHANIC ARTS.

Under the gift of the late Hon. Hiram Sibley, made in 1884, the sum of one hundred dollars will be annually awarded to those students in the Sibley College who shall in the opinion of the Faculty of that institution show the greatest merit in their college work.

V. THE MRS. A. S. BARNES SHAKESPEARE PRIZE.

A prize of sixty dollars, to be given annually, is offered by Mrs. A. S. Barnes, for the best essay on some subject connected with the Plays of Shakespeare, written by a student of Cornell University. The essays must be written with a type-writer, must be completed and deposited with the Registrar on or before the first day of June, and must bear, in every case, a fictitious signature, accompanied with the name of the writer in a sealed envelope.

The subject of the Barnes Shakespeare Prize Essay, for 1889-90, will be ; The Elizabethan Masque, and the Masque character of Shakespeare's Tempest, and A Midsummer Night's Dream.

VI. THE NEW SHAKSPERE SOCIETY PRIZE.

The prize offered by "The New Shakspeare Society" of London, consisting of a number of valuable publications of the Society, is awarded to the student passing the best general examination on the Shaksperian work of the year.

ADMISSION AND CLASSIFICATION.

CONDITIONS OF ADMISSION.

Candidates must be at least *sixteen* years of age, or, if women, *seventeen*. They must have certificates of good moral character, and students from other colleges or universities are required to furnish from those institutions certificates of honorable dismissal.

Candidates for admission must file their credentials and obtain permits for examination at the Registrar's office. The results of the examinations may be ascertained from the Registrar.

ENTRANCE EXAMINATIONS.

Examinations in all the subjects required for admission to the University are held twice in the year, as follows: 1. In June, at the end of the Spring term; 2. In September at the beginning of the Fall term. No examination of candidates for admission will be held at any other time. Further information in regard to the time of examinations may be found on pp. 10 and 147.

ADMISSION ON EXAMINATION.

I. THE PRIMARY ENTRANCE EXAMINATIONS.

All candidates for admission, except those provided with certificates or diplomas as specified below, are examined first, as follows:

1. In *English*. The candidate will be required to write a short English composition,—correct in spelling, punctuation, grammar, division by paragraphs, and expression,—upon one of several subjects announced at the time of the examination. * In 1890 the subjects will be drawn from one or more of the following works: Shakespeare's *Julius Cæsar* and *A Midsummer Night's Dream*, Coleridge's *Ancient Mariner*, Longfellow's *Evangeline*, Macaulay's *Essay on Lord Clive*, Thackeray's *English Humorists*, Webster's first *Bunker Hill Oration*, Scott's *Quentin Durward*, George Eliot's *Silas Marner*, Hawthorne's *House of the Seven Gables*. Every candidate is expected to be familiar with all the books in this list.

* Teachers already at work with the lists formerly announced for 1890 need not change their plan.

The candidate will also be required to correct specimens of bad English set for him at the time of the examination.

[The works prescribed for the examinations of 1891 and 1892 are the following :

For 1891 : Shakespeare's Julius Cæsar and Merchant of Venice, Coleridge's Ancient Mariner, Longfellow's Evangeline, Macaulay's Essay on Lord Clive, Webster's first Bunker Hill Oration, Irving's Alhambra, Scott's Old Mortality, George Eliot's Silas Marner, Hawthorne's House of the Seven Gables.

For 1892 : Shakespeare's Julius Cæsar and As You Like It, Scott's Marmion, Longfellow's Courtship of Miles Standish, Addison's Sir Roger de Coverley papers, Macaulay's second Essay on the Earl of Chatham, Webster's first Bunker Hill Oration, Irving's Alhambra, Scott's Talisman, George Eliot's Scenes from Clerical Life, Hawthorne's House of the Seven Gables.]

It is the special aim of the examination to test the candidate's practical, rather than his theoretical, knowledge of English, though the latter is taken due account of.

No student markedly deficient in English will be admitted to any of the courses in the University.

[An examination is held at the opening of the year, in September, for those who desire to pass up first year Rhetoric. The standard is Genung's Practical Elements of Rhetoric, pp. 1-325 ; or McElroy's Structure of English Prose, pp. 1-296.]

2. In *Geography*, political and physical ; as much as is contained in Harper's School Geography or in Warren's Common School Geography.

3. In *Physiology and Hygiene* ; the equivalent of Martin's "The Human Body" (briefer course), and of Wilder's "Health Notes" and "Emergencies."

4. In *Arithmetic*, including the metric system of weights and measures ; as much as is contained in the larger text-books.

5. In *Plane Geometry* ; as much as is contained in the first five books of Chauvenet's Treatise on Elementary Geometry, or in the first five books of Wentworth's Elements of Plane and Solid Geometry, or in the first six books of Newcomb's Elements of Geometry, or in the first six books of Hamblin Smith's Elements of Geometry.

6. In *Algebra*, through quadratic equations, and including radicals and the theory of exponents ; as much as is contained in the corresponding parts of the larger treatises of Newcomb, Olney, Ray, Robinson, Todhunter, Wells, or Wentworth, or in those parts of Oliver, Wait, and Jones's Treatise on Algebra that are indicated below, with

the corresponding examples at the ends of the several chapters : chapters I, II, III ; chapter IV, except theorems 4, 5, 6 ; chapter V, except §§ 3, 5, and notes 3, 4, of problem 2 ; chapter VII, § 11 ; chapter VIII, §§ 1, 2, the first three pages of § 8, and § 9 ; chapter XI, except § 9, problem 9 of § 12, and §§ 13, 17, 18.

[In Arithmetic, and in the fundamental operations of Algebra, such as multiplication and division, the management of brackets, the solving of numerical and literal equations of the first and second degrees, the combining and simplifying of fractions and radicals, the interpretation and use of negative quantities, and of 0 and ∞ , the putting of problems into equations—the student should have distinct notions of the meaning and the reason of all that he does, and be able to state them clearly in his own language ; he should also be able to perform all these operations, even when somewhat complex, with rapidity, accuracy, and neatness ; and to solve practical problems readily and completely. In his preparatory study he is advised to solve a great many problems, and to state and explain the reasons for the steps taken. In Geometry he should learn the definitions accurately, whether in the language of the text-book or not, and in proving a theorem or solving a problem he should be able to prove every statement made, going back step by step till he rests upon the primary definitions and axioms. He should be able to apply the principles of geometry to practical and numerical examples, to construct his diagrams readily with rule and compass, and to find for himself the solutions of simple problems and the demonstrations of simple theorems. To cultivate this power of origination, he should always, before reading the solution or proof given in his text-book, try to find out one for himself, making use, if necessary, of his author's diagram ; and if successful, he should compare critically his own work with his author's, and see wherein either is the better. Besides oral recitation, he is advised to write out his demonstrations, having regard both to the matter and to the form of his statements ; and when written he should carefully study them to make sure, first, that he has a complete chain of argument, and secondly, that it is so arranged that without defect or redundancy one step follows as a logical consequence of another.]

7. In *American History*, Eggleston's History of the United States, or its equivalent.

II. ADVANCED EXAMINATIONS FOR ADMISSION TO THE VARIOUS COURSES.

For admission to the various courses of study examinations *in addition to the Primary Entrance Examinations* are required as follows :

To the Course leading to the degree of Bachelor of Arts:

1. In *Greek*; candidates are expected to have read at least one hundred pages of Attic prose and three books of Homer.

2. In *Latin*; candidates are examined (1) in the following authors, with questions on subject-matter, constructions, and the formation and inflection of words: Cæsar, four books of the Gallic war; Virgil, the Eclogues and six books of the *Æneid*, with the prosody; Cicero, six Orations, including the four against Catiline; Sallust's Catiline; (2) in the translation at sight of passages of average difficulty from Cæsar and Cicero; and (3) in the translation into Latin of a piece of connected English based upon the principles and vocabulary contained in the first forty lessons of Allen's Introduction to Latin Composition. Teachers who are preparing students in Latin for the University should aim to fit them to be admitted to course 2. The Professor of Latin will be glad to be of assistance, whether by correspondence or by personal interview, to any one who may desire to consult him upon methods of work in teaching the language. The hours after 11 o'clock on Saturday can be counted upon for any engagement that may be made by letter.

[The following pronunciation is recommended to students preparing for the University;

Long

a as in *father*.
e " *they*.
i " *machine*.
o " *dole*.
u " *rule*.

Short

a as in *Cuba*.
e " *them*.
i " *pin*.
o " *obey* (not as in *sob*.)
u " *full*.

Æ like *ay*, *æ* like *oy*, *au* like *ow* in *now*, *ei* as in *rein*, *eu* somewhat as in *few*, but with the first element pronounced with stress and instantly left, *qu* as in English *queen*, *bs* like *ps*, *v* like *w*, *j* like *y*, *c* and *g* always hard as in *cot* and *get*, *s* always as in *sing*. Every consonant should be fully and clearly pronounced, two sounds being distinctly heard in the case of doubled consonants. Care should be taken to give the true quantity of unaccented vowels (*e. g.* the second vowel in *verebatur*, *amabatur*, etc., should be pronounced long, not short, as commonly), and not to lengthen final short *a* as is commonly done (*e. g.* in *arma*).

3. In *Grecian and Roman History*, and the outlines of ancient geography; Fyffe's Primer of Greece, Creighton's Primer of Rome, and Tozer's Primer of Classical Geography will indicate the amount and method of study required.

To the Course leading to the degree of Bachelor of Philosophy :

1. In *French*, or *German*, or *Mathematics*, as below. 2. In *Latin*, as above. 3. In *Grecian* and *Roman History*, as above.

To the Courses leading to the degrees of Bachelor of Letters and Bachelor of Science, including the courses in Agriculture and Chemistry.

In two of the three subjects following :

1. In *French* ; the whole of Whitney's Practical French Grammar or its equivalent, the translation of French at sight, the translation of English into French, and the equivalent of two of Bôcher's modern French plays and Crane and Brun's Tableaux de la Révolution Française.

2. In *German* ; the whole of Whitney's German Grammar, the translation of German at sight, the translation of English into German, and one hundred pages of Whitney's Reader, including two of the longer prose extracts or an equivalent.

3. In *Mathematics* ; Solid Geometry and Elementary Conic Sections, as much as is contained in Newcomb's Elements of Geometry ; Advanced Algebra, as much as is contained in those parts of Oliver, Wait, and Jones's Treatise on Algebra that are read at the University (a list is sent on application to the Registrar) ; and Trigonometry, Plane and Spherical, as much as is contained in the unstarred portions of Oliver, Wait, and Jones's Treatise on Trigonometry.

To the Courses in Engineering and Architecture :

In *Mathematics*, Solid Geometry, as above, with the exception of conic sections ; and (in and after 1891) in *French* or *German* as above. Candidates for the course in Architecture may substitute for the French or German required, *Latin* to the amount of four books of Cæsar's Gallic War, and Sallust's Catiline, or an equivalent.

To the Two-Year Course Preparatory to the Study of Medicine :

1. In *Latin* ; four books of Cæsar's Commentaries or an equivalent, with a good knowledge of the grammar. 2. In *Greek* ; so much as will enable the student to recognize and analyze scientific terms, (Goodell's The Greek in English furnishes the amount required). 3. In *Plane Trigonometry*, as much as is contained in the unstarred portions of Oliver, Wait and Jones's Treatise on Trigonometry. 4. In *French* or *German* as above.

Optional Students.—Students who have passed the examinations required for admission to any of the general courses may register as optional students, and elect such work as may be open to them.

III. TIME AND CONDITIONS OF THE EXAMINATIONS.

The examinations are held in the following order. The dates may be found in the calendar on p. 10.

First Day.—2 P. M., Arithmetic ; 4 P. M., Geography.

Second Day.—9 A. M., English ; 11.30 A. M., Plane Geometry ; 2.45 P. M., Physiology.

Third Day.—9 A. M., Algebra ; 11.30 A. M., American History ; 2.45 P. M., Grecian and Roman History.

Fourth Day.—8 A. M., Solid Geometry ; 10.30 A. M., German ; 2.45 P. M., Latin.

Fifth Day.—8 A. M., Greek and Advanced Algebra ; 10.30 A. M., French ; 2.45 P. M., Trigonometry.

Candidates for admission to the University, instead of passing the entire examination at one time, may present themselves at different times under the following conditions :

1. For the purposes of the division the examinations in June and September of the same year may count as one, the applicant, at his option, taking a part in June and a part in September.

2. Candidates are required at their first presentation to take all the six prescribed subjects of the primary or English entrance examinations.

3. No account will be taken of the result of such examinations unless at least four out of the six elementary subjects are satisfactorily passed.

4. No applicants will be examined in single advanced subjects until they have first presented themselves for examination in all of the six primary subjects.

Candidates intending to offer Greek at this preliminary examination may present themselves for examination in the Anabasis. Those intending to offer Latin may offer Caesar, and either Virgil or Cicero.

Applicants may be admitted conditionally to the University in spite of deficiencies in some subjects, in case such deficiencies are not so considerable as in the judgment of the Faculty to disqualify them for the performance of the work of the freshman year. Students deficient in subjects required for admission will not be permitted to remove such deficiencies by attending University instruction in those subjects ; but are required to take the necessary instruction outside of the University.

ADMISSION WITHOUT EXAMINATION.**I. ON THE REGENTS' DIPLOMA.**

Diplomas issued by the Regents of the University of the State of New York are accepted in place of examinations in all the subjects required for entrance which are covered by such diplomas, including, upon the recommendation of the University departments concerned, the subjects of French and German.

II. ON CERTIFICATE.

The following rules and regulations have been adopted by the Faculty of Cornell University on the subject of admission by certificate :

1. Certificates of work done in public or private schools, in or out of the State, will not be accepted in lieu of examinations, unless the applicant has completed a full course in the school.

2. The application for the admission of a student by certificate must be made by the principal of a school and not by the candidate himself.

3. The application from the principal must be accompanied by full and specific information with regard to the completeness and thoroughness of the studies and courses in which instruction is given. In case a catalogue or circular is published a copy thereof should also be furnished.

4. The candidate, having received the certificate of a principal, will, however, not be exempted from the entrance examination in any particular subject unless his certificate shows that he has satisfactorily accomplished the full amount of work required in that subject for entrance.

5. The committee having charge of the acceptance of certificates may meet at any time during the collegiate year. To ensure consideration in season to relieve the candidate from any examinations, the certificates should be forwarded to the committee at least as early as the first week in June, or the first week in September.

All communications on this subject and all certificates must be addressed to the Dean of the Faculty, from whom also blank forms of certificates may be obtained.

III. AS SPECIAL STUDENTS.

Persons at least twenty-one years of age may be admitted as special students, without examination, provided they give evidence of ability

to do creditably special work in the University, and are recommended to the Faculty by the professor in charge of the department of study in which they desire to take a large part of their work. Such students may graduate in any of the courses, on condition of passing all the required examinations, including the entrance examinations.

Special students in Agriculture are admitted at the age of eighteen years.

Special students in Sibley College will be expected to work with regular classes wherever practicable, and to pursue a regular mechanic arts course, such as is considered by the Director to be suitable for artisans and other optional students, not candidates for a degree.

ADMISSION TO ADVANCED STANDING.

I. ON EXAMINATION. On presenting evidence of good character, or, in case he comes from another college or university, a letter of honorable dismissal, a candidate may be admitted to any class at the beginning of any term not later than the first of the senior year, provided he appears, on examination, to be well versed in the following subjects :

a. In the studies required for admission to the freshman class of the course which he proposes to enter. But diplomas and certificates will be received for certain of these studies, as stated on page 148.

b. In all the studies already required of the class to which admission is sought, or in accepted equivalents therefor.

In a subject in which examinations are held only at stated times the candidate may, at the option of the department concerned, be required to wait until the first regularly recurring examination.

II. WITHOUT FULL EXAMINATION. Graduates of other colleges and universities, and undergraduates of such institutions who present letters of honorable dismissal, may be admitted provisionally to such standing and upon such terms as the Faculty may deem equitable in each case, regard being had to the applicant's previous course of study, and to the evidence of proficiency exhibited. Every such candidate is required, at the time of making his application, to forward to the Dean of the Faculty, along with a catalogue of the institution in which he has studied, a careful statement, duly certified, of the studies which he has pursued, and the degree of proficiency attained therein.

A student who has thus been admitted provisionally to a class, may, after residence of at least one term, be granted full and regular standing in that class, if, having taken the regular studies of the term, he

give proof, by passing the regular term examinations with a record as high as is required for graduation, that he is able to go on satisfactorily with the class to which he has thus been temporarily assigned. Should he be unable to pass these examinations, special examinations may then be held, and he shall take the position and rank to which he may thereby be found entitled.

In the case of students thus admitted, the amount of work must be equal to fifteen hours a term for each term in the University.

ADMISSION TO RESIDENT GRADUATE STUDY.

Students are admitted to graduate study after having taken a baccalaureate degree in the University, or on presenting a diploma representing the full equivalent of some one of the degrees conferred at this University, or a course approved by the Faculty. For a fuller account of the advantages offered to graduate students, see page 87.

RESIDENCE AND GRADUATION.

REGISTRATION EACH TERM.

At the beginning of every term each student must obtain a Certificate of Registration, and no student, after having once been admitted to the University, will be allowed to register after the close of Registration Day, except by special permission of the Faculty.

REGISTRATION OF STUDIES.

Students in all courses register at the beginning of the collegiate year, on Registration Day, for the work of the whole year. No credit will be allowed for work not so registered. Changes in registration will not be allowed after Friday of the week following Registration Day in the Fall term, except by special permission of the Faculty.

The Faculty regard it as advisable that a student should follow out for the year the plan of study which he has made at the beginning, even though it should seem to him later not to be the best plan conceivable.

EXERCISES OF THE TERM.

In the general courses, students of the freshman year may take sixteen hours; of the sophomore, from fourteen to eighteen hours; of the junior, from twelve to eighteen; of the senior, from ten to eighteen. But no student will be graduated until he has passed successfully examinations in work which, including all the required work of his course, shall amount to an aggregate of fifteen hours a week during the whole of four years.

In the technical courses, the number of hours required each term may be seen in the detailed statements of those courses.

In all courses, two hours and a half of laboratory work, and, in the technical courses, three hours of draughting or shop-work, are regarded as the equivalent of one recitation.

Regular examinations are held at the end of each term. Failure at examination entails forfeiture of position in the class, or exclusion from the course, or, in some cases, from the University.

PAYMENTS TO THE UNIVERSITY.

The fee for tuition for the University year 1889-90 is \$25 a term, payable within ten days after registration. Thereafter the annual tuition fee will be \$125, \$50 to be paid at the beginning of the first term, \$40 at the beginning of the second, and \$35 at the beginning of the third.

Students taking work in Sibley College courses are charged \$5 per term for material and extra expenses.

A fee of \$5, to cover expenses of graduation, degrees, etc., is charged to each person taking the baccalaureate degree. This fee must be paid before the degree is conferred.

The fee charged for an advanced degree is \$10, and it must in all cases be paid before the degree is conferred.

Tuition is free to *students with State Scholarships*; to such *resident graduates* as, having been duly admitted by the proper authorities as candidates for a second degree, are regularly pursuing the course of study leading to such degree in accordance with the prescribed requirements of the proper faculty; to students pursuing the prescribed course in *Agriculture*, and *intending to complete* that course; and to *special students in Agriculture*.

Every person taking laboratory work in chemistry, physics, zoology, or entomology, must deposit with the Treasurer security for the materials to be used in the laboratory. Supplies in the chemical and physical departments are furnished at New York list prices. Students residing in the University buildings must pay their room-bills one term in advance. All the members of the University are held responsible for any injury done by them to its property.

EXPENSES OF RESIDENCE.

The following is a fair estimate of the yearly expenses:

Tuition, per year,	-	-	-	-	-	-	\$125.00	\$125.00
Room, board, lights, fuel, and laundry,	-	-					200.00 to	300.00
Text-books, etc.,	-	-	-	-	-	-	25.00 to	75.00
							<hr/>	<hr/>
Total,	-	-	-	-	-	-	\$350.00 to	\$500.00

The additional expenses of a student depend so largely upon his personal tastes that it is difficult to give an estimate.

The expense of living in Ithaca varies, for board, room, fuel, and lights, from \$3 to \$7 a week. By the formation of clubs, students are sometimes able to reduce their expenses to \$3 a week for room and board, and occasionally to even less than that amount.

The cost for board, rent of furnished room, fuel, and lights, at the Sage College, which is exclusively for women, varies from \$5 to \$6.50 a week. A student occupying alone one of the best rooms pays \$6.50 a week. If two occupy such a room together, the price is \$5.75. Those occupying less desirable rooms, with two in a room, pay \$5 a week each. The entire building is warmed by steam, and, in most cases, the sleeping apartment is separated from the study.

GRADUATION.

All the courses leading to the degree of Bachelor and to the corresponding degrees of Civil Engineer and Mechanical Engineer require four years for their completion ; and no student is allowed to graduate in less than four years of actual residence (except in case of admission to advanced standing, as elsewhere provided for) without special permission of the Faculty ; which permission will not be granted until the applicant has been in the University at least one year ; nor will it be granted after the first term of the year in which he proposes to graduate.

Every student, in order to be recommended for a degree, must have passed satisfactorily in at least one hundred and eighty hours of work, including all the required work of the course in which the degree is sought. In the case of students admitted from other colleges the amount of work must be equal to fifteen hours a term for each term in the University.

GRADUATION THESIS.

A graduation thesis is required of every student. This thesis must represent some phase of the student's principal line of work during the later years of his course. The subject of the thesis must receive the approval of the professor in charge of the study to which it appertains, and with such approval must be left with the Dean or Registrar not later than noon of the second Friday of the second term. In order to be acceptable, the thesis must have the character of a scholarly dissertation on the subject chosen, or, in technical courses, usually, actual work in designing or research ; and if finally accepted by the Faculty, it will entitle the writer to a credit of two hours a week for the second and third terms, or, in the technical courses, as specified elsewhere. The merit of the thesis will be judged not only from a technical point of view, but also from the point of view of its literary workmanship ; and its merits, as judged from these two points of view, will be taken into account in determining the standing of the student for graduation.

THE FIRST DEGREES.

The degrees of Bachelor of Arts, Bachelor of Philosophy, Bachelor of Letters, Bachelor of Science, Bachelor of Science in Agriculture, Bachelor of Science in Architecture, Bachelor of Science in Chemistry, and the corresponding degrees of Civil Engineer and Mechanical Engineer, are conferred after the satisfactory completion of the respective courses.

ADVANCED DEGREES.

Courses of graduate study leading to advanced degrees are provided in the following departments : Ancient Classical Languages and Literatures, Modern European Languages and Literatures, Comparative Philology, History and Political Science, Philosophy, Mathematics, Chemistry and Physics, Natural History, Civil Engineering, Mechanical Engineering, and Agriculture.

Candidates for advanced degrees must present themselves for examination in one major and two minor subjects, which must have been determined upon, with the approval of a committee of the Faculty, as early as November 1 of the year in which the degree is expected to be given, if it be the Master's degree, or of the year preceding that in which the degree is expected to be given, if it be the Doctor's degree. The subject of the thesis required must be announced to the Faculty as early as December 1 of the year in which the degree is expected to be given, and the paper in its completed form must be presented as early as May 1.

In case of special distinction attained in the thesis and in the final examination by the candidate for the degree of Master of Arts or Doctor of Philosophy, the degree of merit may be indicated in the diploma by one of the terms *Cum Laude*, *Magna cum Laude*, *Summa cum Laude*.

In case of special distinction attained in the thesis and in the final examination by the candidate for the degree of Master of Science, Master of Civil or Mechanical Engineering, or Doctor of Science, the degree of merit may be indicated in the diploma by one of the terms *With Distinction*, *With High Distinction*, *With the Highest Distinction*.

Successful candidates for the degree of Doctor must print the theses and deposit twenty-five copies in the Library. Successful candidates for the degree of Master must deposit one copy.

The final examinations for these degrees, except in the technical

courses, are to be in charge of a committee of not less than three members, and may be both oral and written.

The special requirements for these degrees will be as follows :

THE DEGREES OF MASTER OF ARTS, OF SCIENCE, OF CIVIL ENGINEERING, OF MECHANICAL ENGINEERING, OF AGRICULTURE.

The degree of Master of Arts or Master of Science is conferred on those who have taken the corresponding baccalaureate degree here, or at some other college or university where the requirements for that degree are equal to those of this University, on the following conditions :

Candidates must spend at least one year at the University in pursuance of an accepted course of study.

The degree of Master of Science is conferred on graduates in Philosophy on the same conditions as on graduates in Science.

The degree of Master of Civil Engineering, Master of Mechanical Engineering, or Master of Science in Agriculture is conferred on candidates who have received the corresponding first degree, upon presenting a satisfactory thesis and passing the required examination as above, (1) after one year of resident study, or (2) after two years of professional practice and study *in absentia*.

THE DEGREES OF DOCTOR OF PHILOSOPHY AND DOCTOR OF SCIENCE.

The degree of Doctor of Philosophy is conferred on graduates of this University, and of other universities and colleges whose requirements for the baccalaureate degree are equal to those of this University, on the following conditions :

1. In order to become a candidate the applicant must have pursued a course of study equal to that required for graduation in this University in the course of Arts or Philosophy. Graduates holding the degree of Bachelor of Science who shall pass an examination in Latin equivalent to that required for graduation in the course in Philosophy may become candidates for the degree of Doctor of Philosophy.

2. The candidate must spend at least two years at the University pursuing a course of study marked out by the Faculty. In exceptional cases a year of graduate work in a university elsewhere may, by a special vote of the Faculty, be accepted in lieu of a year's work in this University.

3. He must present a thesis of such a character as shall display power of original and independent investigation, and must pass the requisite examinations.

The degree of Doctor of Science is conferred on graduates of this University, and of other universities and colleges whose requirements for the baccalaureate degree are equal to those of this University, on the following conditions :

1. In order to become a candidate the applicant must have a knowledge of Latin and Greek at least equal to that required for graduation with the degree of Bachelor of Science in Natural History ; a knowledge of French and German equal to that required for graduation in Science ; a knowledge of mathematics, of science, of literature, and of philosophy equal to that required for graduation in Philosophy.

2. The candidate must spend at least three years, two of them at this University, in the study of three approved subjects within the departments of Chemistry and Physics, Mathematics, and Natural History.

3. He must present a thesis of such a character as shall display power of original and independent investigation, and must pass the requisite examinations.

THE SCHOOL OF LAW.

FACULTY.

RESIDENT FACULTY.

CHARLES KENDALL ADAMS, LL.D., President.

THE HON. DOUGLAS BOARDMAN, A.M., Dean.

HARRY B. HUTCHINS, PH.B., Professor of Law, and Secretary.

CHARLES A. COLLIN, A.M., Professor of Law.

FRANCIS M. BURDICK, A.M., LL.B., Professor of Law.

MOSES COIT TYLER, LL.D., Professor of American Constitutional History and Law.

HERBERT TUTTLE, A.M., Professor of International Law and of English Constitutional History.

NON-RESIDENT LECTURERS.

THE HON. FRANCIS M. FINCH, LL.D., of the New York Court of Appeals.

THE HON. DANIEL H. CHAMBERLAIN, LL.D., of the New York City Bar.

THE HON. BENJAMIN F. THURSTON, A.M., of the Providence Bar.

GEORGE S. POTTER, of the Buffalo Bar.

ALBERT H. WALKER, LL.B., of the Hartford Bar.

MARSHALL D. EWELL, M.D., LL.D., of the Chicago Bar.

THE HON. ORLOW W. CHAPMAN, of the Binghamton Bar.

THE HON. GOODWIN BROWN, of the Albany Bar.

GENERAL PLAN OF ORGANIZATION.

It is the purpose of the Board of Trustees to furnish through the School of Law such facilities for legal training as will commend themselves to the most favorable judgment of the profession. The Faculty of the School is composed of both resident and non-resident members. The resident members devote themselves regularly to the work of

daily instruction. This is carried on by lectures and examinations, by oral text-book exposition and recitations, and by the study of selected cases. Instruction to the more advanced students by means of the study of cases is made a special feature of the school. An effort is made by the resident instructors, not only to teach with special thoroughness the elements of the law, but also to give such practical training in the different methods of pleading and procedure as shall fit the student for the active work of the profession in any part of the country. With this end in view, moot courts are organized under the immediate direction of the professors, and in these courts special attention is given to the drawing of pleadings and to questions of practice.

The instruction by the non-resident members of the Faculty is by lectures. Provision is made each year for at least six courses of lectures by eminent specialists in the profession, each course consisting of from four to ten lectures, according to the nature of the subject on which the lectures are given.

REQUIREMENTS FOR ADMISSION.

Applicants for admission to the School of Law must be at least eighteen years of age. If the person applying intends to be a candidate for the degree of LL.B. at the end of his course, he must have had a preliminary education equal to that required for registration as a student of law by the rules of the Court of Appeals of the State of New York. This requirement consists of a thorough knowledge of arithmetic, English grammar, geography, orthography, American and English history and English composition. All applicants for admission who are candidates for a degree, except those hereinafter designated, will be required to pass satisfactory examinations in the subjects named. The examinations will be both oral and written, and the papers submitted by the applicants must show an accurate knowledge of English grammar and ordinary facility in English composition. Graduates of universities or colleges, graduates of reputable academies or high schools, and persons who have received the "law student's certificate," issued by the Board of Regents of the University of the State of New York, will be admitted to the school without examination. But in order to be entitled to this privilege, the applicant should present to the Secretary of the School evidence that he comes within some one of the classes named, which should be in the form of a diploma or certificate, or a certified copy thereof.

All applicants who are residents of the State of New York, and are not graduates of a college or university, should procure the "law stu-

dent's certificate," issued by the Board of Regents, before presenting themselves for admission to the school.

It is very desirable that the student of law should have at least an elementary knowledge of the Latin language ; and while the Faculty do not feel that they can at this time require such knowledge as a prerequisite for admission to the school, yet it is their purpose to add such requirement in the near future.

To entitle a person to admission to advanced standing as a member of the senior class, he must be at least nineteen years of age, must have had the required preliminary education, and must pass a satisfactory examination upon the subjects of the junior year or their equivalent. Attorneys at law, however, of any State, are entitled to admission to the senior class without examination, on the exhibition, at the opening of the college year, of their certificates of admission to the bar.

The regular examinations for admission and for advanced standing in the fall of 1890, will take place on Tuesday, September 30, at the Law Lecture Rooms, in Morrill Hall, beginning at nine o'clock in the morning and at two o'clock in the afternoon. Students desiring admission at other times than those mentioned must make special arrangements for examination with the Secretary of the School ; but no student will be admitted after the beginning of the term, unless, on examination, he shall show that, in addition to the requirements for admission, he has an amount of legal knowledge equivalent to what he might reasonably have been expected to acquire had he joined the class at the beginning of the year.

COURSE OF INSTRUCTION.

The course of instruction is a graded one, and extends through two years of nine months each. The following is a statement of the subjects upon which the students of the school receive instruction and are required to pass satisfactory examinations :

JUNIOR YEAR.

Elementary Law¹ (Blackstone). Contracts, including Agency.⁴ Criminal Law and Procedure.³ Torts.³ Domestic Relations.² The Law of Real Property,² (the subject begun). Evidence,⁴ (the subject begun). Common Law Pleading and Practice in Cases at Law.² Civil Procedure under the Codes,³ (the subject begun). English Constitutional History.⁵

SENIOR YEAR.

Private and Municipal Corporations.³ Wills and Administration.³ Mercantile law, including Bills, Partnership, Sales, Suretyship, etc.⁴ Evidence.⁴ The Law of Real Property.² Equity Jurisprudence.² Equity Pleading and Procedure in State and in United States Courts.² Civil Procedure under the Codes.³ Practical Suggestions concerning the Preparation, Trial and Argument of Causes.¹ Roman Law.⁴ International Law.⁴ American Constitutional History.⁵ American Constitutional Law.⁵

COURSES OF SPECIAL LECTURES.

Lectures upon the following subjects are given by the non-resident members of the Faculty :

1. The Statute of Frauds and Fraudulent Conveyances, (two courses).
The Hon. Francis M. Finch, LL.D., of the New York Court of Appeals.
2. The Executive—its Place and Powers—under the Constitution.
The Hon. Daniel H. Chamberlain, LL.D., of the New York City Bar.
3. The Law of Shipping and Admiralty and the Law of Marine Insurance, (two courses).
George S. Potter, Esq., of the Buffalo Bar.
4. The Patent Laws of the United States, (two courses).
The Hon. Benjamin F. Thurston, A.M., of the Providence Bar.
Albert H. Walker, LL.B., of the Hartford Bar.
5. Medical Jurisprudence.
Marshall D. Ewell, M.D., LL.D., of the Chicago Bar.
6. The Law of Life Insurance.
The Hon. Orlow W. Chapman of the Binghamton Bar.
7. Extradition.
The Hon. Goodwin Brown, of the Albany Bar.

AMOUNT OF REQUIRED WORK.

The regular class instruction of the School is at no time less than fifteen hours per week.

¹By the Hon. Douglas Boardman ; ²by Professor Hutchins ; ³by Professor Collin ; ⁴by Professor Burdick ; ⁵by Professor Tyler ; by Professor Tuttle.

THE UNIVERSITY COURT.

A session of the University Court is held, as a rule, each week during the school year. The resident members of the Law Faculty constitute the Court, and sit together for the hearing of causes. All opinions of the Court are in writing, and are placed on file in the Law Library.

The hearings in this Court are conducted upon the hypothesis that certain facts are true, the only questions open to discussion being the principles of law that should be applied to the facts. The student having obtained from the Faculty a statement of facts, is required to prepare pleadings and to draw up a brief in which the principles of law applicable to the case must be clearly stated under appropriate divisions, and sustained by the citation of such authorities as he intends to rely upon in the oral argument. The pleadings are submitted to the professor having in charge the subject pleading and procedure, who calls attention to such errors as may exist, and gives such practical information as he may deem advisable.

The effort of the Faculty is to make *practical* lawyers, to teach both the principles of the law, and how to apply them. To this end, the University Court is made the forum for the discussion of such practical questions as most frequently arise in a professional career at the bar; and, so far as it can be used for that purpose, it is made a means of familiarizing the student with matters of pleading and practice and with the general routine of court work.

ELOCUTION AND ORATORY.

A professor of elocution and oratory is employed by the University, and such of the students of law as may so elect may take advantage of the courses offered.

EXAMINATIONS, THESES, ETC.

At the end of each term the members of both classes are subjected to oral and written examinations upon the work of the term. Promotion of the student to full standing in his class at the subsequent term is dependent upon the manner in which he passes the examinations upon the subjects of the previous term; and the Faculty do not hesitate to drop a student from the rolls at any time during the year on becoming satisfied that such student is neglecting his work and is not complying with the requirements of the School.

Each member of the senior class who is a candidate for a degree, is required to prepare and deposit with the Faculty, at least one month before graduation, a thesis, not less than forty folios in length, upon some legal topic selected by himself and approved by the Faculty. The production must be satisfactory in matter, form, and style ; and the student presenting it is examined upon it.

At the end of the senior year, all candidates for graduation are required to pass satisfactory oral and written examinations on all of the subjects of the course.

PRIZE FUND.

A fund of two thousand dollars has been given by a friend of the School, the income of which is devoted each year, under the direction of the Law Faculty, either for prizes for graduating theses, or for printing theses of special merit, or for both such purposes. The way in which the income is to be applied is determined each year upon the presentation of the graduating theses.

TERMS OF GRADUATION.

Students who have received the full course of instruction, performed all required exercises, and passed the regular examinations, are admitted to the degree of Bachelor of Laws. Students admitted to advanced standing are entitled to all the privileges of the class of which they become members.

CERTIFICATES OF ATTENDANCE.

When a person is connected with the School for a period not entitling him to graduate, he may, on application to the Secretary, receive, instead of a diploma, an official certificate of attendance, which states the time of his attendance and the degree of his attainments.

HISTORY AND POLITICAL SCIENCE.

Special facilities are offered to students desiring to supplement their work in law with studies in history and political science. The instruction given in the President White School of History and Political Science may be taken as elective work by students in the School of Law. The courses of the School embrace instruction in the various branches of constitutional and political history, as well as in the history of political and municipal institutions.

It has been provided by resolution of the Board of Trustees that any student who, in addition to his course in the School of Law, shall pur-

sue studies in history and political science amounting to at least four hours a week during two years, and shall pass creditably the regular examinations in the same, in addition to the required examinations in the School of Law, may, upon the creditable completion of the course in law, and on the recommendation of the Law Faculty and the Professors of History and Political Science, be accorded the degree of Bachelor of Laws, *cum laude*.

GRADUATE INSTRUCTION.

Graduate instruction is offered by the Faculty of the School of Law with a view of giving to the student who is inclined to spend a longer period at a law school than that required for the baccalaureate degree an opportunity to add to his legal acquirements either by further general study or by pursuing special lines of legal investigation. It is believed that graduate work will meet the needs *first*, of those who desire to devote an additional year, under the direction of teachers, to the general study of the law, *secondly*, of those who purpose making a specialty in practice of some particular branch of the law, and who wish to take advanced preparatory work in the line of the specialty chosen, and *thirdly*, of those who have in view the study of the law as a science and who desire to become familiar with the sources and philosophy of our jurisprudence. Provision is made for advanced instruction and study in the following subjects, according to the scheme hereinafter set forth : Contracts ; Mercantile Law ; Corporations ; Railroad Law ; Insurance Law ; The Law of Real Property ; Jurisdiction and Procedure in Equity ; Domestic Relations ; Admiralty ; Roman Law ; American Constitutional History ; American Constitutional Law ; English Constitutional History ; English Constitutional Law ; Comparative Jurisprudence ; General Jurisprudence ; Political and Social Science.

The graduate work is under the immediate supervision of the resident members of the Faculty, and is conducted in substantially the following manner : Each student at the opening of the university year is required to select three subjects to which the work of the year is to be devoted. One of these he will designate as his *major* subject. To this he will be expected to give his best energies, making his investigations therein thorough, comprehensive, and exhaustive. To the other subjects, known as *minors*, he will give such attention as his time will permit. It is expected that his work in the minor lines will be of a more general character, and, although thorough so far as prosecuted, will be less extended than that given to the major subject. By special permission from the Faculty, a student may devote all his

time to one subject. Each student is under the special guidance of the professors in whose departments his subjects lie. He receives from each full instruction as to the questions to be investigated and as to the nature and direction of his work, and also such individual assistance as may be needed from time to time during the progress of his studies. Periodical reports and examinations upon work assigned are required, at which times the professor in charge goes over carefully with the student the ground covered since the last report, making such criticisms and suggestions as may be necessary. In a word, the scheme contemplates independent investigations by the student in the lines chosen, under the immediate direction and supervision of the different members of the Faculty.

In addition to the foregoing, each student is required to prepare a thesis upon some question connected with his *major* subject. This production must be scholarly in character and exhaustive in its subject matter, and the author must be prepared to defend the positions taken therein.

Graduate students are expected to attend all non-resident courses of lectures given before the School, and in making provision for such courses, their needs are kept specially in view.

Graduate instruction covers one year. In order to take advantage of it, the student must be actually in residence at the University during the year.

The work is open to the graduates of this or any law school of recognized standing. Tuition is free.

At the end of the year, each student is examined separately upon all work that has been assigned to him. This examination is both written and oral, and is especially thorough and searching in character.

The degree of Master of Law is conferred upon all who complete in a creditable manner the work of the graduate year.

MATERIAL EQUIPMENT.

For the purposes of the School of Law ample accommodations are provided in Morrill Hall. Besides a sufficient number of lecture-rooms, there are offices for the several professors, and rooms for the Law Library.

The Law Library of the University contains about 7,000 volumes. All sets of reports are kept up to date; and material additions to the collection are constantly being made by way of purchase and gift. The books of this Library are at all times accessible to students of the School. The General Library of the University, which is also open

to use by students of the School of Law, contains about one hundred and three thousand volumes, besides thirty thousand pamphlets. This includes the President White Library of History and Political Science, containing about thirty thousand volumes and ten thousand pamphlets, presented to the University in 1887 by ex-President Andrew D. White.

Students in the School of Law are entitled to the same privileges in the gymnasium as students in the other departments of the University.

FEES AND EXPENSES.

The fees to the University and the expenses of living are the same as those of all other students, and will be found described elsewhere in the Register.

ANNOUNCEMENT.

An announcement giving more detailed information in regard to the School will be sent on application to the Secretary of the Law School.

THE SCHOOL OF PHARMACY.

FACULTY.

CHARLES KENDALL ADAMS, LL.D., President.

GEORGE CHAPMAN CALDWELL, B.S., Ph.D., Professor of Analytical Chemistry.

ALBERT NELSON PRENTISS, M.S., Professor of Botany.

WILLIAM RUSSELL DUDLEY, M.S., Assistant Professor of Botany.

SPENCER BAIRD NEWBURY, E.M., Ph.D., Acting Professor of General, Organic and Applied Chemistry.

WILLIAM ANGELL VIALI, Registered Pharmacist, Instructor in Practical Pharmacy, Lecturer on Materia Medica, and Secretary of the School of Pharmacy.

EUGENE HENRY PRESWICK, B.S., Instructor in Qualitative Analysis.

WILLIAM RIDGELY ORNDORFF, A.B., Ph.D., Instructor in General and Organic Chemistry.

WILLARD WINFIELD ROWLEE, B.S., Instructor in Botany.

WILLIAM BELKNAP NEWBURY, Ph.B., Instructor in General Chemistry.

ARNOLD EILOART, B.S., Ph.D., Instructor in Quantitative Chemistry.

On the 7th of March, 1887, the Trustees of Cornell University established a School of Pharmacy, to be open for the admission of students at the beginning of the fall term of the ensuing year. The object of the establishment of such a school is to provide a kind of instruction of which there seems to be a distinct need in this State: namely, in the sciences of chemistry and botany applied to pharmacy. It is intended that the course of study in these branches shall take equal rank, in point of thoroughness and scientific character, with the other courses in the University, and that the training given shall be such as to prepare students for positions of responsibility as dispensing or manufacturing pharmacists.

With these objects in view, a course of study has been laid out, extending over two full college years, including lectures on theory and practice of pharmacy, chemistry, materia medica, botany, pharmacognosy, and in addition thereto, thorough courses in the laboratories in practical pharmacy, analytical, toxicological and pharmaceutical chemistry, and microscopical botany.

It is believed that students who shall complete this course of study will be prepared to assume duties beyond the ordinary routine work of the pharmacist, and in the practice of this profession will bring to bear resources which are not at the command of those whose knowledge is wholly derived from business experience.

In providing a department of this character, the Trustees of this University have merely followed an example already offered in the leading countries of Europe, where the necessity of a thorough scientific training as a preparation for the practice of pharmacy has long been recognized. In England, France, and Germany, and also in other countries, a course of study similar to that offered at this University is required by law, for the protection of the public, as an essential condition of admission to dispensing practice. It is believed that the establishment of this school will aid, in some degree, in raising the standard of pharmaceutical education in this country.

The general character of the course, and the conditions of admission and graduation, are as follows :

ADMISSION.

1. Applicants who bring diplomas of graduation from standard high schools, or certificates of good standing in institutions of the collegiate grade, are admitted without examination.

2. Applicants who bring evidence of having been engaged in the practice of pharmacy for at least two years may be admitted upon examination in the following studies :

In *English*, *Geography* and *Arithmetic*, as given on pages 142 and 143.

3. Other applicants will be examined in the following branches, in addition to those given above :

In *Plane Geometry*, as given on page 143.

In *Algebra*, through quadratic equations, and including radicals and the theory of exponents ; as much as is contained in the first fourteen chapters of Loomis' Treatise on Algebra, or in Olney's Elementary Course in Algebra, or in the first five sections of Robinson's University Algebra, or in the first twenty-six chapters of Hamblin Smith's Elementary Algebra.

4. Candidates who bring trustworthy evidence of having been engaged in the practice of pharmacy for at least two years may be admitted as *special students* without examination, but they will not be considered candidates for the degree until they shall have passed the regular examination.

GRADUATION.

On the satisfactory completion of the required course of study, the student will receive the degree of Pharmaceutical Chemist.

The student who has had two years' practice, with a competent pharmacist, before entering or after leaving the School, will be allowed to present himself for examination by the New York State Board of Pharmacy, and, upon the satisfactory completion of such examination, he will be admitted as Licensed Pharmacist in the State of New York.

A pamphlet giving full information as to the courses of study, and conditions of admission and graduation will be furnished on application to the Secretary of the School of Pharmacy.

FELLOWSHIPS AND SCHOLARSHIPS.

FELLOWSHIPS FOR 1889-90.

THE CORNELL FELLOWSHIP,

Archibald Angus Freeman, A.B., (Brown University),
History and Political Science

THE MCGRAW FELLOWSHIP,

Arthur Gordon Laird, A.B., (Dalhousie College), *Classics*

THE SAGE FELLOWSHIP,

Harry Waldo Norris, A.B., (Iowa College), *Zoology and Botany*

THE SCHUYLER FELLOWSHIP,

William Alphonso Withers, A.M., (Davidson College),
Agricultural Chemistry

THE SIBLEY FELLOWSHIP,

William Wilberforce Churchill, M.E., *Mechanical Engineering*

THE GOLDWIN SMITH FELLOWSHIP,

Walter Cochrane Bronson, A.B., (Brown University),
English Literature

THE PRESIDENT WHITE FELLOWSHIP,

James Christian Hanson, A.B., (Luther College),
History and Political Science

THE ERASTUS BROOKS FELLOWSHIP,

*Samuel J Saunders, A.B., (University of Toronto),
James Gayford Witton, A.B., (University of Toronto),
Physics and Mathematics

•Resigned.

SCHOLARSHIPS FOR 1886-90.

UNIVERSITY SCHOLARSHIPS.

THE CORNELL SCHOLARSHIP,

Joseph Harrison Root, *Course in Science*
Port Byron Academy—A. W. Morehouse, A.M., Principal.

THE H. B. LORD SCHOLARSHIP,

Kennedy Furlong Rubert, *Course in Arts*
Owego Free Academy—J. F. Tuthill, A.B., Principal.

THE MCGRAW SCHOLARSHIP,

John Ford, *Course in Arts*
Medina Free Academy—C. E. Allen, Principal.

THE SAGE SCHOLARSHIP,

Francis Cary Caldwell, *Course in Arts*
Cascadilla School, Ithaca—L. A. Wait, A.B., Principal.

THE SIBLEY SCHOLARSHIP,

John Eckert Greenawalt, *Course in Electrical Engineering*
Columbia (Pa.) High School—Miss Lillian Welch, Principal.

THE PRESIDENT WHITE SCHOLARSHIP,

Floyd Lucien Robinson, *Course in Architecture*
Cooperstown Union School—J. G. Wight, A.M., Principal.

SAGE SCHOLARSHIPS FOR WOMEN.

Emma Large Gilbert,

Course in Arts
Wellesley School, Philadelphia, Pa.—Miss Cordelia Brittingham,
Principal.

Ida May Hill,

Course in Science
Central Grammar School, Brooklyn—R. F. Leighton, Ph.D.,
Principal.

Anna Helene Palmié,

Course in Philosophy
Packer Collegiate Institute, Brooklyn—Truman J. Backus, LL. D.,
Principal.

SCHOLARSHIPS FOR 1887-91.

UNIVERSITY SCHOLARSHIPS.

THE CORNELL SCHOLARSHIP,

John Henry Tanner, *Course in Science*
Clinton Liberal Institute—Charles V. Parsell, A.M., Principal.

THE H. B. LORD SCHOLARSHIP,

Winifred Ball, *Course in Arts*
Rochester Free Academy—John G. Allen, Principal.

THE MCGRAW SCHOLARSHIP,

James Wallace Beardsley, *Course in Civil Engineering*
Cortland Normal School—James H. Hoose, A.M., Ph.D., Principal.

THE SAGE SCHOLARSHIP,

Frank Crane Bentley, *Course in Arts*
Phillips Andover Academy—C. F. P. Bancroft, Ph.D., Principal.

THE SIBLEY SCHOLARSHIP,

Harrison Haskell Wood, *Course in Electrical Engineering*
Pittsburgh Central High School—C. B. Wood, A.M., Principal.

THE PRESIDENT WHITE SCHOLARSHIP,

Robert James Kellogg, *Course in Arts*
Norwalk (Ohio) High School—Miss N. S. McDonald, Principal.

SAGE SCHOLARSHIPS FOR WOMEN.

Lena Frances Brown,

Course in Science
South New Berlin Union School—S. J. Gibson, B.S., Principal.

Eunice Maria Davis,

Course in Science
Binghamton Central High School—Eliot R. Payson, A.M., Principal.

Annie Florence Moon,

Course in Arts
Clinton Liberal Institute—Charles V. Parsell, A. M., Principal.

SCHOLARSHIPS FOR 1888-92.

UNIVERSITY SCHOLARSHIPS.

THE CORNELL SCHOLARSHIP,

George Wallingford Noyes, *Course in Arts*
Community Academy—F. M. Loomis, A.B., Principal.

THE H. B. LORD SCHOLARSHIP,

Grace Wilmarth Caldwell, *Course in Arts*
Miss Gertrude E. Hale, Ithaca, and Mr. E. D. Wright, A.B., Ithaca.

THE MCGRAW SCHOLARSHIP,

*Walter Scott Harshman, *Course in Science*
Northwestern Ohio Normal School, Ada, Ohio—H. S. Lehr, A.M.,
Principal.

Carolinne Harder Swartout, *Course in Philosophy*
Owego Free Academy—H. A. Balcam, Ph.D., Principal.

THE SAGE SCHOLARSHIP,

Joseph McConnechy Michaelson, *Course in Civil Engineering*
Geneva Classical and Union School—H. K. Clapp, A.M., Principal.

THE SIBLEY SCHOLARSHIP,

Louis Carroll Root, *Course in Arts*
Port Byron Academy—A. W. Morehouse, A.M., Principal.

THE PRESIDENT WHITE SCHOLARSHIP,

Clyde Augustus Duniway, *Course in Arts*
Oregon State University, Eugene City, Oreg.—J. W. Johnson, A.M.,
President.

SAGE SCHOLARSHIPS FOR WOMEN.

Frances Elizabeth Holeman Flint, *Course in Arts*
Rochester Free Academy—John G. Allen, Principal.

Anne R Pearson, *Course in Letters*
Ithaca High School—D. O. Barto, Principal.

Mary Grace Breckinridge, *Course in Philosophy*
Binghamton High School—Eliot R. Payson, A.M., Principal.

* Resigned.

SCHOLARSHIPS FOR 1889-93.

THE CORNELL SCHOLARSHIP,

Wellyn Brayton Clark, *Course in Architecture*
Lowville Academy—W. R. Adams, A.M., Principal.

THE H. B. LORD SCHOLARSHIP,

Arthur Charles Howland, *Course in Arts*
Wyoming Seminary—Rev. L. L. Sprague, A.M., D.D., Principal.

THE MCGRAW SCHOLARSHIP,

Albert Henry Perkins, *Course in Civil Engineering*
Fulton Academy—B. G. Clapp, Principal.

THE SAGE SCHOLARSHIP,

May Ransom Fitzpatrick, *Course in Arts*
Brooklyn Central High School—Calvin Patterson, B.S., Principal.

THE SIBLEY SCHOLARSHIP,

Norman Frank Ballantyne, *Course in Electrical Engineering*
Ottawa (Canada) Collegiate Institute—J. Macmillan, A.B., Principal.

THE PRESIDENT WHITE SCHOLARSHIP,

Clark Sutherland Northup, *Course in Arts*
Hartwick Seminary—Rev. James Pitcher, A.M., Principal.

NOTE.—At a meeting of the Board of Trustees, held October 30, 1889, three additional scholarships were established, to be known as the Horace Greeley Scholarship, the John Stanton Gould Scholarship, and the Stewart L. Woodford Scholarship. These scholarships are of the value of two hundred dollars each, and will be offered for competition, under the rules that govern the awarding of the scholarships already established, in the year 1890-1.

CATALOGUE OF STUDENTS.

GRADUATES.

[All students, except those indicated by a dagger, are resident at the University.]

CANDIDATES FOR ADVANCED DEGREES.

†Alden, George Ira, B.S.,	Mechanical Engineering
Harvard University.	
Banks, Nathan, B.S.,	Invertebrate Zoology
Bassett, Emma Neal, Ph.B.,	History and Latin
Bronson, Walter Cochrane, A.B.,	English
Brown University.	
Brown, Edward Leroy, A.B.,	Natural History
Capital University.	
Calkin, William Sommerville, A.B.,	Chemistry
Dalhousie College.	
Carter, Truman Post, B.S., A.M.,	Science
University of Illinois.	
Chase, Mabel Augusta, A.B.,	Mathematics, Physics and Astronomy
Oberlin College.	
Churchill, William Wilberforce, M.E.,	Mechanical Engineering
Coffin, Victor Edwin, A.B.,	History and Political Science
Dalhousie College.	
Craig, Moses, B.S.,	Botany
Ohio State University.	
Cutter, William Parker, B.S.,	Chemistry
†Davison, George Howard, Ph.B. (Yale University), B.S.,	
	Agriculture and Veterinary Science
Elkin, William Baird, A.B.,	Philosophy
Manitoba College.	
Elliott, Orrin Leslie, Ph.B.,	History and Political Science
Emerson, Oliver Farrar, A.M.,	English and Comparative Philology
Iowa College.	
Fagan, Louise Stephens, A.B.,	Philosophy and German
Vassar College.	
Field, Rosamond Almeda, A.B.,	History
Vassar College.	

- †Flather, John Joseph, Ph.B., Mechanical Engineering
Yale University.
- Freeman, Archibald Angus, A.B., History and Political Science
Brown University.
- Goodwin, William Grant, B.L., Modern Languages
- Hanson, James Christian, A.B., History and Political Science
Luther College.
- Hemphill, Lawrance Alexander, Ph.B., Chemistry and Physics
Wooster University.
- Hicks, Julia, B.S., History
Swarthmore College.
- Hitchcock, John Sawyer, A.B., Natural History
Amherst College.
- Holbrook, Ernest Martin, C.E., Hydraulic Engineering
- Hollister, Jennie, B.L., English Literature, German and Philosophy
- Hotchkiss, Homer James, B.S., C.E., A.B., Electrical Engineering
Allegheny College.
- Howell, Jenny Kirk, Ph.B., Natural History
- Humphrey, Calvin, A.B., Electrical Engineering
Ohio University.
- Kelley, Charles Lester, B.C.E., Civil Engineering
- Laird, Arthur Gordon, A.B., Greek, Latin, and Comparative Philology
Dalhousie College.
- Lamme, William Fenner, A.B., Mathematics and Physics
Wittenberg College.
- Lawrence, Antoinette, Ph.B., Latin, Comparative Philology, and History
- Levy, Arthur Bernard, B.S., Electrical Engineering
College of the City of New York.
- Marks, Louis Benedict, B.S. (College of the City of New York), M.E., Electrical Engineering
- Mishima, Yataro, B.S., Invertebrate Zoology
Massachusetts Agricultural College.
- Moffett, Charles Williams, M.E., Electrical Engineering
Lehigh University.
- Moore, Burton Evans, A.B., Physics and Mathematics
Otterbein University.
- Moss, Frederick Victor, A.B., Physics
Indiana University.
- Nichols, Ernest Fox, B.S., Mathematics and Physics
Kansas Agricultural College.
- Norris, Harry Waldo, A.B., Natural History
Iowa College.
- Pattison, Salem Griswold, A.B., History and Political Science
Wabash College.

Peirce, Leona May, A.B.,	Mathematics, Physics and Philosophy Smith College
Peirce, William Foster, A.B.,	History and Political Science, and Philosophy Amherst College.
Rappleye, Walker Glazier, B.S.,	Electrical Engineering
Rogers, Frederick John, B.S.,	Mathematics and Physics Kansas State Agricultural College.
Rogers, Sara Bulkley, A.B.,	History Columbia College.
Royse, Daniel, B.M.E.,	Mechanical Engineering Purdue University.
Rowlee, Willard Winfield, B.L.,	Botany and Entomology
†St. John, Richard Collier, C.E.,	Civil Engineering
Saunders, Samuel J, A.B.,	Physics and Mathematics University of Toronto.
Shields, William Joshua, A.M.,	Physics and Chemistry Westminster College.
Smith, Charles Mortimer, B.S.,	Mathematics
Studley, Duane, B.S.,	Mathematics and Astronomy
Sutliff, Phebe Temperance, A.B.,	History and Political Science Vassar College.
Tarbell, Ed, B.S.,	Agriculture
Ubsdell, John Arnold, Jr., C.E.,	Marine Engineering Rensselaer Polytechnic Institute.
Whitcomb, Selden Lincoln, A.B.,	English and Philosophy Iowa College.
Wiechardt, August Julius, M.E.,	Mechanical Engineering Lehigh University.
Wing, Henry Hiram, B Ag.,	Agriculture
Withers, William Alphonso, A.M.,	Chemistry Davidson College.
Witton, James Gayford, A.B.,	Physics and Mathematics University of Toronto.
†Wool, Arthur Tennant,	Mechanical Engineering United States Naval Academy.

CANDIDATES FOR BACCALAUREATE DEGREES.

Appleton, Edward Allen, A.B.,	Mechanical Engineering Amherst College.
Burwell, Robert Turnbull, Ph. B.,	Mechanical Engineering University of North Carolina.
Chamberlain, Paul Mellen, B.S.,	Mechanical Engineering Michigan Agricultural College.

Dingle, James Hervey, A.B., Charleston College.	Civil Engineering
Greene, Carleton, A.B., Harvard University.	Civil Engineering
Hatt, William Kendrick, A.B., University of New Brunswick.	Civil Engineering
Hibbard, Herbert Wade, A.B., Brown University.	Mechanical Engineering
Jackson, William, B.S., Ogden College.	Civil Engineering
Knoch, Julius James, B.S., Grove City College.	Civil Engineering
Levy, Lehman, B.S., College of the City of New York.	Electrical Engineering
McConahey, William McConnell, A.B., Washington and Jefferson College.	Electrical Engineering
Rixey, Samuel Francis, B.S., Roanoke College.	Civil Engineering
Waldo, Edward Hardenbergh, A.B., Amherst College.	Electrical Engineering
Wolfe, Joseph Meixell, A.B., Bucknell University.	Electrical Engineering

NOT CANDIDATES FOR A DEGREE.

Best, Lyman Austin, B.S.,	Entomology
Floy, Henry, A.B., Wesleyan University.	Electrical Engineering
Hyde, Lulu Eloise, B.S.,	Chemistry and Physiology
Kerr, Charles Volney, M.E., Stevens Institute.	Electrical Engineering
Wilson, Nathaniel Estes, B.S., Maine State College.	Chemistry
Zahm, Albert Francis, A.M., Notre Dame University.	Mechanical Engineering

UNDERGRADUATES.

SENIORS.

Abbott, Frank Addison,	<i>Abbott's Corners,</i>	Letters
Auerbach, Junius Theodore,	<i>Corsicana, Tex.,</i>	Letters
Barrett, Ella Teresa,	<i>Albion,</i>	Letters
Bartlett, Calvin William,	<i>Franklin,</i>	Philosophy
Battin, John Wilson,	<i>Albany,</i>	Philosophy
Bell, James Donald,	<i>Hillsdale,</i>	Letters
Benham, Adelaide Eunice,	<i>Cortland,</i>	Arts
Bentley, Louis Lees,	<i>New Brighton, Pa.,</i>	Mech. Eng.
Berry, Emma Louise,	<i>Owego,</i>	Arts
Blauvelt, George Alanson,	<i>Monsey,</i>	Letters
Bowen, Ernest Spencer,	<i>Auburn,</i>	Mechanical Eng.
Brooks, Frank Elbert,	<i>South New Berlin,</i>	Letters
Broughton, Henry Primm,	<i>Belleville, Ill.,</i>	Electrical Eng.
Brown, Frank Horton,	<i>White Plains,</i>	Architecture
Brown, Mabel Preston,	<i>Cortland,</i>	Arts
Brun, Clément Benjamin,	<i>Fontanès, France,</i>	Architecture
Caldwell, Francis Cary,	<i>Ithaca,</i>	Arts
Callan, Francis Hiram,	<i>Lockport,</i>	Philosophy
Carle, Roscoe Litchfield,	<i>Tiffin, Ohio,</i>	Letters
Chamberlain, Paul Mellen, B.S.,	<i>Three Oaks, Mich.,</i>	Mech. Eng.
Chamberlain, William Mathers,	<i>Sheffield, Ala.,</i>	Arts
Chapman, Newton David,	<i>Groton,</i>	Agriculture
Chillingworth, Charles Curtis,	<i>Liverpool,</i>	Letters
Clark, Tracy Earl,	<i>Pembroke,</i>	Science
Clisdell, Percy Alfred,	<i>Corning,</i>	Electrical Eng.
Cochrane, Hayward,	<i>Antrim, N. H.,</i>	Electrical Eng.
Conable, George Willard,	<i>Cortland,</i>	Architecture
Cook, Charles Chauveau,	<i>Washington, D. C.,</i>	Letters
Corbett, Lee Cleveland,	<i>Watkins,</i>	Agriculture
Cowles, Joseph Walker,	<i>Norfolk, Conn.,</i>	Electrical Eng.
Crossman, Fred Andrew,	<i>Providence, R. I.,</i>	Mechanical Eng.
Crouch, Nelson Seymour,	<i>Erie, Pa.,</i>	Civil Eng.
Dalton, William,	<i>Buffalo,</i>	Mechanical Eng.
Danforth, George Flavel,	<i>Jamestown,</i>	Philosophy
Datcher, Jane Eleanor,	<i>Washington, D. C.,</i>	Science
Day, Robert Jacob,	<i>Huntington, Ind.,</i>	Letters
Deane, John Pitt,	<i>Crown Point,</i>	Arts

Denney, James McCormick,	<i>Harrisburg, Pa.,</i>	Electrical Eng.
Deuchler, Charles Henry,	<i>Lyons,</i>	Arts
Dobbin, Clarence Ephraim,	<i>Fairport,</i>	Architecture
Dodd, Franklin Marcus Grant,	<i>Franklin, N. J.,</i>	Civil Eng.
Duckham, Albert Edward,	<i>Pittsburgh, Pa.,</i>	Civil Eng.
Eaton, Henry Morris,	<i>Titusville, Pa.,</i>	Philosophy
Ehle, Louis Carl,	<i>Fort Plain,</i>	Letters
Eidlitz, Ernest Frederick,	<i>New York City,</i>	Letters
Ellis, Edith Anna,	<i>Ithaca,</i>	Letters
Ely, Fred William,	<i>Buffalo,</i>	Arts
Emerson, Edwin,	<i>Munich, Germany,</i>	Arts
Eschweiler, Alexander Chadbourne,	<i>Milwaukee, Wis.,</i>	Architecture
Ewing, John Jackson,	<i>Huntington, Ind.,</i>	Mech. Eng.
Fallows, Edward Thomas,	<i>Malone,</i>	Architecture
Fisher, Elbert Curtiss,	<i>Scranton, Pa.,</i>	Mechanical Eng.
Fisher, Frederick George,	<i>Scranton, Pa.,</i>	Letters
Ford, John,	<i>Medina,</i>	Arts
Fortenbaugh, Samuel B,	<i>Halifax, Pa.,</i>	Electrical Eng.
*Foskett, Harry Silas,	<i>Medina, Ohio,</i>	Letters
Frost, Frank Leslie,	<i>Albany,</i>	Science
Galland, Justin Samuel,	<i>New York City,</i>	Letters
Gasche, Ferd Guy,	<i>Wooster, Ohio,</i>	Mechanical Eng.
Genung, Nelson Howard,	<i>Ithaca,</i>	Science
Gibb, Arthur Norman,	<i>Toronto, Canada,</i>	Architecture
Gifford, Robert Ladd,	<i>Chicago, Ill.,</i>	Civil Eng.
Gilbert, Emma Large,	<i>Holicong, Pa.,</i>	Arts
Gilchrist, Colin Bell,	<i>Evansville, Ind.,</i>	Philosophy
Goodwin, Frank Fairfield,	<i>Ithaca,</i>	Electrical Eng.
Gorman, James Maurice,	<i>Ithaca,</i>	Letters
Graves, William Hagerman,	<i>Milwaukee, Wis.,</i>	Letters
Gray, Henry Carpenter,	<i>Greenwich,</i>	Philosophy
Greenawalt, John Eckert,	<i>Silver Spring, Pa.,</i>	Electrical Eng.
Griffin, Edwin Milton,	<i>Buffalo,</i>	Arts
Hagerman, Percy,	<i>Colorado Springs, Col.,</i>	Philosophy
Hahn, Victor Ignatius,	<i>Pittsburgh, Pa.,</i>	Mechanical Eng.
HasBrouck, Howard,	<i>New Paltz,</i>	Letters
Healy, Louis Watres,	<i>Scranton, Pa.,</i>	Electrical Eng.
Heisler, Charles Louis,	<i>Wapakoneta, Ohio,</i>	Mech. Eng.
Herschel, Arthur Hobart,	<i>Montclair, N. J.,</i>	Electrical Eng.
Hicks, George Cleveland, Jr.,	<i>Brooklyn,</i>	Mechanical Eng.
Higgins, Wilson Freeman,	<i>Manchester, N. H.,</i>	Mech. Eng.
Hill, Ida May,	<i>Nashville, Tenn.,</i>	Science

Hitchcock, Embury Asbury,	<i>Warners,</i>	Mechanical Eng.
Hoyt, William Tecumseh Sherman,	<i>Osceola Mills, Pa.,</i>	Architecture
Hulbert, Edwin Henry,	<i>Troy,</i>	Architecture
Hulett, Gaylord DeForest,	<i>Sodus,</i>	Electrical Eng.
Hume, Frank Leigh,	<i>Hamilton, Ohio,</i>	Letters
Ibaraki, Muneyuki,	<i>Hiroshima, Japan,</i>	Letters
Irish, William Mitchell, Jr.,	<i>Olean,</i>	Chemistry
Jackson, William, B.S.,	<i>Bowling Green, Ky.,</i>	Civil Eng.
Johns, Charles Frank,	<i>Salamanca,</i>	Letters
Knapp, Edwin Curtis,	<i>Ithaca,</i>	Mechanical Eng.
Lamont, William Stanley,	<i>Richmondville,</i>	Letters
Landers, Herbert Henry,	<i>Green Island,</i>	Civil Eng.
Larned, Sherwood Johnston,	<i>Buffalo,</i>	Electrical Eng.
Levy, Max,	<i>Galveston, Texas,</i>	Electrical Eng.
Lochary, John Randolph,	<i>St. Clairsville, Ohio,</i>	Agriculture
Loomis, Julius Smith,	<i>Piqua, Ohio,</i>	Electrical Eng.
Lozier, Harry Abram, Jr.,	<i>Cleveland, Ohio,</i>	Arts
May, Edwin Augustus,	<i>Troy,</i>	Architecture
Menken, Solomon Stanwood,	<i>New York City,</i>	Letters
Miller, Charles J,	<i>Wright's Corners,</i>	Science
Miller, Charles Philip,	<i>Newark, N. J.,</i>	Mechanical Eng.
Miller, Henrietta Emma,	<i>Brownsville, Pa.,</i>	Arts
Monroe, William Stanton,	<i>Chicago, Ill.,</i>	Mechanical Eng.
Morgan, Anson Clarence,	<i>Highland Park, Ill.,</i>	Letters
Morrison, William Henry,	<i>Ithaca,</i>	Science
Mould, Stephen Hyatt,	<i>Newburgh,</i>	Letters
Mount, William Dye,	<i>Groton,</i>	Mechanical Eng.
Nathan, Henry Hendricks,	<i>New York City,</i>	Science
Palmer, Cyrus Story,	<i>Centreville,</i>	Letters
Palmié, Anna Helene,	<i>Brooklyn,</i>	Philosophy
Patterson, Frank Dean,	<i>Marshall, Mich.,</i>	Arts
Pearson, Agnes Lillie,	<i>Mt. Vernon,</i>	Science
Powell, William Henry,	<i>New Britain, Conn.,</i>	Elec. Eng.
Ramage, Joseph Cowan,	<i>Washington, D. C.,</i>	Elec. Eng.
Reid, Harold Newton,	<i>Brooklyn,</i>	Agriculture
Robinson, Floyd Lucien,	<i>West Burlington,</i>	Architecture
Root, Joseph Harrison,	<i>Port Byron,</i>	Science
Root, William Webster,	<i>Ithaca,</i>	Agriculture
Rubert, Kennedy Furlong,	<i>Owego,</i>	Arts
Rumsey, Eugene Aertsin,	<i>Salem, N. J.,</i>	Electrical Eng.
Russell, Frank Downing,	<i>Ilion,</i>	Arts
Sands, Charles Goodwin,	<i>Brooklyn,</i>	Architecture

Sewall, Frederick Farley,	<i>Milwaukee, Wis.,</i>	Architecture
Seymour, George Francis,	<i>Northville,</i>	Architecture
Shearn, Clarence John,	<i>Leeds, Mass.,</i>	Letters
Shick, Harry Trevenen,	<i>Reading, Pa.,</i>	Mechanical Eng.
Sickles, Eugene Charles,	<i>New Baltimore,</i>	Electrical Eng.
Skinner, John Franklin,	<i>Rochester,</i>	Civil Eng.
Smith, Louis Lincoln,	<i>Islip,</i>	Mechanical Eng.
Smith, William Nelson,	<i>Woodstock, Vt.,</i>	Electrical Eng.
Spear, Louis Hoyt,	<i>Warren, Ohio,</i>	Mechanical Eng.
Spence, Thomas Bray,	<i>Starkey,</i>	Arts
Spencer, Henry King,	<i>Milwaukee, Wis.,</i>	Mech. Eng.
Sternberg, Robert Eldredge,	<i>Seward,</i>	Letters
Stevens, William Adam,	<i>Huntington, Ind.,</i>	Architecture
Stewart, Clinton Brown,	<i>Anchor, Ill.,</i>	Civil Eng.
Stewart, Mary Donna,	<i>Anchor, Ill.,</i>	Letters
Stranahan, Olin Ames,	<i>Litchfield, Ohio,</i>	Electrical Eng.
Stuhr, Herman Frederick,	<i>Cleveland, Ohio,</i>	Architecture
Sugi, Bunzo,	<i>Tokio, Japan,</i>	Civil Eng.
Thatcher, Louis Grant,	<i>West Danby,</i>	Agriculture
Thayer, Guy Harold,	<i>Fredonia,</i>	Mechanical Eng.
Thomas, Mason Blanchard,	<i>New Woodstock,</i>	Science
Thompson, Milton Ellsworth,	<i>Lebanon, Ohio,</i>	Electrical Eng.
Thurber, Howard Ford,	<i>Brooklyn,</i>	Electrical Eng.
Tobey, William Boardman,	<i>Great Barrington, Mass.,</i>	E. Eng.
Upton, Daniel,	<i>Big Rapids, Mich.,</i>	Mech. Eng.
Vickers, Thomas McEldeny,	<i>Ithaca,</i>	Civil Eng.
Wadsworth, Joel Edward,	<i>West Winfield,</i>	Civil Eng.
Waldo, Edward Hardenbergh, A. B.,	<i>Amherst, Mass.,</i>	Electrical Eng.
Walker, Charles Henry,	<i>Lockport,</i>	Philosophy
Warner, Harriet Elizabeth,	<i>Medina, Ohio,</i>	Letters
Webster, William Reuben, Jr.,	<i>Brooklyn,</i>	Mechanical Eng.
West, John Ackroyd, Jr.,	<i>Peoria, Ill.,</i>	Electrical Eng.
White, Justin Du Pratt,	<i>Nyack,</i>	Letters
Wilkinson, Henry Wilhelm,	<i>Syracuse,</i>	Architecture
Wing, Frederick Kelly,	<i>Buffalo,</i>	Civil Eng.
Wing, Herbert Healy,	<i>Buffalo,</i>	Chemistry
Young, Stewart Woodford,	<i>Orient,</i>	Chemistry

OPTIONAL STUDENTS.

Barker, Herbert Luther,	<i>Staatsburgh</i>
Ellis, Joseph William,	<i>Havana</i>
Fish, Pierre Augustine,	<i>Chatham</i>

Galbreath, Louis Hutchinson,	<i>Ashmore, Ill.</i>
Martin, Jennie Tift,	<i>Buffalo</i>
Smith, Reuben Oliver,	<i>Avoca</i>
Tarbell, George Schuyler,	<i>Ithaca</i>
Ward, Willet Lyon,	<i>Wellsville</i>
Williams, John Augustus,	<i>Poughkeepsie</i>

JUNIORS.

Abrams, Alfred Willis,	<i>Seward,</i>	Philosophy
Adsitt, Carrie Ingersoll,	<i>Ithaca,</i>	Philosophy
Alexander, Frank James,	<i>Louisville,</i>	Civil Eng.
Almirall, Juan Antonio,	<i>Brooklyn,</i>	Mechanical Eng.
Almirall, Raymond Francis,	<i>Brooklyn,</i>	Architecture
Anderson, Gilbert Hart,	<i>Peekskill,</i>	Architecture
Anderson, Homer Allan,	<i>Peekskill,</i>	Letters
Atwood, Horace,	<i>East Genoa,</i>	Agriculture
Baker, William Pimm,	<i>Skaneateles,</i>	Letters
Ball, Winifred,	<i>Rochester,</i>	Arts
Barton, Frank Arthur,	<i>Washington, D.C.,</i>	Electrical Eng.
Bates, Frank Greene,	<i>Summit, R. I.,</i>	Letters
Beardsley, James Wallace,	<i>Ithaca,</i>	Civil Eng.
Becker, Charles Morris,	<i>Central City, Col.,</i>	Civil Eng.
Benedict, Herschel Albert,	<i>Billing,</i>	Electrical Eng.
Bentley, Elwyn Brockway,	<i>Springfield, Mo.,</i>	Arts
Bentley, Frank Crane,	<i>Springfield, Mo.,</i>	Arts
Bernheisel, Charles Hay,	<i>Harrisburg, Pa.,</i>	Architecture
Bierbaum, Christopher Henry,	<i>Ceres, Iowa,</i>	Mechanical Eng.
Bird, Albert Alexander,	<i>Ellicottville,</i>	Philosophy
Booraem, John Francis,	<i>Brooklyn,</i>	Electrical Eng.
Bowes, Thomas Francis,	<i>Bath,</i>	Civil Eng.
Brace, Charles Talcott,	<i>Ithaca,</i>	Science
Bridges, Thomas John,	<i>Fairport,</i>	Letters
Brill, George Mackensie,	<i>Poughquag,</i>	Electrical Eng.
Brown, Edmund Fowler,	<i>Marathon,</i>	Letters
Brown, Ernest H.,	<i>Belfast,</i>	Electrical Eng.
Brown, Lena Frances,	<i>New Berlin,</i>	Science
Brownell, James Parker,	<i>Carthage,</i>	Civil Eng.
Casey, James Irving,	<i>Mohawk,</i>	Arts
Cauffman, Maurice,	<i>Rochester,</i>	Chemistry
Chamberlain, George Ray,	<i>New York City,</i>	Electrical Eng.

Clarke, Herbert Burns,
 Clephane, Lewis Painter,
 Cosad, Matie Adeline,
 Cowan, Freeman Britton,
 Crane, Albert Sears,
 Cruikshank, John,
 Dalzell, Chester Goodale,
 Danforth, Richard Eugene,
 Davis, Burton William,
 Davis, Eunice Maria,
 Davis, Francis Daniel,
 Dickinson, Charles Courter,
 Dickinson, Joseph Haines,
 Dikeman, George Jason,
 Dingle, James Hervey, A. B.,
 Dollar, William McBroom,
 Dunlap, Milton Irwin,
 Easton, Irving Boyd,
 Emerick, Louis Warren,
 Esterly, William Lawrence,
 Field, Arthur Carpenter,
 Fisher, Edwin Eugene,
 Fitts, Edwin,
 Foote, Robert Budroe, Jr.,
 Fowler, Albert Perry,
 French, Charles Gillmore,
 Fuller, Thomas James Duncan,
 Garnsey, John Kneeland,
 Genung, Ina Eloeen,
 Gilliland, Alice Mabel,
 Golden, Harry Eysaman,
 Graves, Halsey Rogers,
 Greene, Carleton, A. B.,
 Griswold, Mary Ellen,
 Haggett, Earle Clifford,
 Hall, Joseph Linville,
 Hallock, Elijah Allen,
 Hatch, Metcalf Bradley, Jr.,
 Hatt, William Kendrick, A. B.,
 Hawley, Sarah Ellen,
 Hayes, Stanley Wolcott,
 Heath, Byron Henry,
 Heilman, Oren Gibson,

Peoria, Ill., Mechanical Eng.
Washington, D. C., Electrical Eng.
Waterloo, Letters
Gananoque, Canada, Mech. Eng.
Addison, Civil Eng.
Carthage, Letters
South Egremont, Mass., Mech. Eng.
Buffalo, Electrical Eng.
St. Johnsville, Philosophy
Binghamton, Science
Fort Jackson, Mechanical Eng.
Cobleskill, Letters
Mast, Pa., Civil Eng.
Spencer, Letters
Charleston, S. C., Civil Eng.
Heuvelton, Mechanical Eng.
Greenfield, Ohio, Philosophy
Albany, Letters
Fulton, Electrical Eng.
Columbiana, Ohio, Philosophy
Chicago, Ill., Mechanical Eng.
Brooklyn, Electrical Eng.
Dresserville, Electrical Eng.
Hamburgh, Letters
Syracuse, Arts
New Hartford, Agriculture
Washington, D. C., Architecture
Troy, Letters
Ithaca, Philosophy
Delmar, Philosophy
Little Falls, Civil Eng.
Au Sable Forks, Mechanical Eng.
New York City, Civil Eng.
Southport, Letters
Dunkirk, Mechanical Eng.
Springfield, Mass., Electrical Eng.
Moriches, Civil Eng.
Middletown, Ohio, Letters
Fredericton, Canada, Civil Eng.
Brandon, Vt., Arts
Hanover, Ohio, Mechanical Eng.
North Evans, Letters
Williamsport, Pa., Mech. Eng.

Hibbard, Herbert Wade, A.B.,	<i>Providence, R. I.,</i>	Mech. Eng.
Hilborn, Edwin,	<i>Ithaca,</i>	Civil Eng.
Holt, Byron Webber,	<i>Rutland, Ohio,</i>	Letters
Hoskins, Mary Isabel,	<i>Erie, Pa.,</i>	Philosophy
Howe, Susan Fowler,	<i>Genoa,</i>	Science
Hoy, David Fletcher,	<i>Bovina Centre,</i>	Science
Hulse, Howard Corwin,	<i>Ithaca,</i>	Civil Eng.
Hurd, Brad French,	<i>Branchport,</i>	Architecture
Hyde, Ida,	<i>Chicago, Ill.,</i>	Science
Jackson, Lucian Cornes,	<i>Springville,</i>	Mechanical Eng.
Jeffrey, Samuel,	<i>Pittsburgh, Pa.,</i>	Agriculture
Joy, John Marston,	<i>Amesbury, Mass.,</i>	Electrical Eng.
Kellogg, Robert James,	<i>Norwalk, Ohio,</i>	Arts
Kennedy, Dwight Bruce,	<i>Syracuse,</i>	Electrical Eng.
Kerr, Irvine Jay,	<i>Ithaca,</i>	Science
Kirkland, George Alfred,	<i>Dewittville,</i>	Philosophy
Kirley, William Winant,	<i>Utica,</i>	Mechanical Eng.
Knighton, John Albert,	<i>Bowmansville,</i>	Civil Eng.
Kortright, Frederic Lawrence,	<i>Middletown,</i>	Science
Kress, James Edward,	<i>Johnstown, Pa.,</i>	Mechanical Eng.
Kuehmsted, Albert Louis,	<i>Oshkosh, Wis.,</i>	Electrical Eng.
Land, Frank,	<i>Syracuse,</i>	Electrical Eng.
Levy, Lehman, B.S.,	<i>New York City,</i>	Electrical Eng.
Lewis, Clarence Charles,	<i>Cleveland, Ohio,</i>	Civil Eng.
Lewis, John Thomas,	<i>Lansingburgh,</i>	Architecture
Lomax, Clarence Stanley,	<i>Buffalo,</i>	Chemistry
Lovell, Earl Brink,	<i>Marathon,</i>	Civil Eng.
Lyon, Thomas Lyttleton,	<i>Pittsburgh,</i>	Agriculture
McConahey, William McConnell, A.B.,	<i>Washington, Pa.,</i>	Elec. Eng.
McConville, Cornelia Adeline,	<i>Brooklyn,</i>	Science
MacLaren, Malcolm Neill, Jr.,	<i>Milwaukee, Wis.,</i>	Mech. Eng.
McNeil, Wilbur James,	<i>Chelsea, Mass.,</i>	Agriculture
Mack, Horace, 2d,	<i>Ithaca,</i>	Letters
Manierre, John Thompson,	<i>Chicago, Ill.,</i>	Science
Mansfield, Elmer G,	<i>Akron, Ohio,</i>	Philosophy
Marble, Harry Mills,	<i>Washington, D. C.,</i>	Mech. Eng.
Meeker, Warren H,	<i>Binghamton,</i>	Electrical Eng.
Miller, Alfred John,	<i>Doylestown, Ohio,</i>	Letters
Moon, Annie Florence,	<i>Newport,</i>	Arts
Moreland, Sherman,	<i>Van Etenville,</i>	Science
Muñoz, José del Carmen,	<i>Rivas, Nicaragua,</i>	Civil Eng.
Niemeyer, Carl Hess,	<i>Williamsport, Pa.,</i>	Civil Eng.

Norton, Edith Marie,	<i>Jefferson, Ohio,</i>	Philosophy
Ogden, Phillip,	<i>Woodfords, Me.,</i>	Arts
Olmsted, Everett Ward,	<i>Galesburgh, Ill.,</i>	Philosophy
Paris, William Albert,	<i>Philadelphia, Pa.,</i>	Mech. Eng.
Parsons, Herbert,	<i>Marcellus,</i>	Civil Eng.
Perkins, Frank Clinton,	<i>Dunkirk,</i>	Electrical Eng.
Phillips, Ervin Louis,	<i>Franklinville,</i>	Arts
Phillips, Merton Ogden,	<i>Fremont, Ohio,</i>	Philosophy
Phillips, Rosina Olive,	<i>Naples,</i>	Science
Pollard, Seabury Gould,	<i>Seneca Falls,</i>	Mechanical Eng.
Raymond, Francis, 3d,	<i>Detroit, Mich.,</i>	Electrical Eng.
Reed, Bertha Prichard,	<i>Ithaca,</i>	Philosophy
Rice, James Edward,	<i>Fort Ann,</i>	Agriculture
Rixey, Samuel Francis, B.S.,	<i>Culpeper, Va.,</i>	Civil Eng.
Robbins, Mary Louise,	<i>Washington, D. C.,</i>	Philosophy
Rodriguez, Arturo,	<i>San Juan, Porto Rico,</i>	Civil Eng.
Roess, Gustav Frederic,	<i>Oil City, Pa.,</i>	Civil Eng.
Rogers, Frederick Newton,	<i>Central City, Col.,</i>	Mech. Eng.
Rogers, Jesse Alanson,	<i>Evans Mills,</i>	Civil Eng.
Rouillion, Louis,	<i>Boston, Mass.,</i>	Science
Rowe, Norman,	<i>Oswego,</i>	Electrical Eng.
Royce, Milton Tibbits,	<i>White Lake,</i>	Science
Ryan, Rose Josephine,	<i>Shelby,</i>	Letters
Sanger, Henry Hubbell,	<i>Detroit, Mich.,</i>	Letters
Schoonmaker, Frederic Palen,	<i>Limestone,</i>	Arts
Schutt, Peter Lamont,	<i>Slaterville,</i>	Letters
Shepard, Alvin Wayland,	<i>North Evans,</i>	Science
Sherman, Mason Hall,	<i>Webster's Station,</i>	Mech. Eng.
Slingerland, Mark Vernon,	<i>Otto,</i>	Agriculture
Smith, Frank Will,	<i>Hermitage,</i>	Letters
Smith, Fred Douglass,	<i>Bath,</i>	Chemistry
Smith, Harold Babbitt,	<i>Barre, Mass.,</i>	Electrical Eng.
Snider, Clarence A,	<i>Cleveland, Ohio,</i>	Civil Eng.
Stagg, Louis Rolfe,	<i>Detroit, Mich.,</i>	Architecture
Stidham, Harrison Lockwood,	<i>Washington, D. C.,</i>	Civil Eng.
Stiles, Charles Albert,	<i>Binghamton,</i>	Electrical Eng.
Stocker, John Henry,	<i>Angola,</i>	Science
Taintor, Grace Pierson,	<i>East Avon,</i>	Arts
Tanner, John Henry,	<i>Clarence, Mo.,</i>	Science
Taylor, Willard Underhill,	<i>Lyons,</i>	Philosophy
Thayer, Harry Stowe,	<i>Van Ettenville,</i>	Letters
Titus, Fred Allyn,	<i>Shortsville,</i>	Mechanical Eng.

Tone, Frank Jerome,	<i>Bergen,</i>	Civil Eng.
Tousey, Benjamin Copeland,	<i>New York City,</i>	Science
Tracy, Charles Sedgwick,	<i>Syracuse,</i>	Letters
Trevor, Joseph Ellis,	<i>Lockport,</i>	Chemistry
Trowbridge, Alexander Buel,	<i>Detroit, Mich.,</i>	Architecture
Twining, William,	<i>East Mauch Chunk, Pa.,</i>	Civil Eng.
Van Everen, Horace Greeley,	<i>Brooklyn,</i>	Electrical Eng.
Van Kirk, Edwin Stratton,	<i>Newfield,</i>	Agriculture
Van Vleet, Carrie Lena,	<i>Candor,</i>	Philosophy
Vedder, Wellington Romeyn,	<i>Leeds,</i>	Civil Eng.
Vogel, George John,	<i>Albany,</i>	Arts
Waful, Edward Everett,	<i>Le Raysville,</i>	Architecture
Wagner, Richard,	<i>New York City,</i>	Letters
Waterman, Jot Salisbury,	<i>Worcester,</i>	Letters
Weeks, Charles Melville,	<i>Brooklyn,</i>	Letters
White, Charles Miles,	<i>Buffalo,</i>	Electrical Eng.
Wilbur, Charles Phelps,	<i>Carthage,</i>	Civil Eng.
Williams, Edward Eugene,	<i>Rochester,</i>	Electrical Eng.
Willson, Herbert McAdam,	<i>Sharon, Pa.,</i>	Electrical Eng.
Wood, Augustus,	<i>Batavia,</i>	Mechanical Eng.
Wood, Edward Magill,	<i>Indianapolis, Ind.,</i>	Electrical Eng.
Wood, Harrison Haskell,	<i>Pittsburgh, Pa.,</i>	Electrical Eng.
Yawger, Edwin,	<i>Union Springs,</i>	Mechanical Eng.

OPTIONAL STUDENTS.

Anderson, LeRoy,	<i>Magee's Corners</i>
Austin, Willard Henry,	<i>Jackson, Mich.</i>
Capron, Ola Beth,	<i>Boonville</i>
Holmes, Manfred James,	<i>Ithaca</i>
Kerr, Clara Hannah,	<i>Collin</i>
Martin, Albert,	<i>Millersburgh, Ky.</i>
Moody, Robert Orton,	<i>New Haven, Conn.</i>
Priest, Alice Lucinda,	<i>Shenandoah, Iowa</i>
Robertson, George Clayton,	<i>Cherry Creek</i>
Sheldon, Edward Morgan,	<i>Martinsburgh</i>

SOPHOMORES.

Aldrich, Elliott Fournier,	<i>Aquebogue,</i>	Mechanical Eng.
Alexander, Henry David,	<i>Minneapolis, Minn.,</i>	Civil Eng.
Appleton, Edward Allen, A.B.,	<i>Springfield, Mass.,</i>	Mech. Eng.

Arnold, Charles Joseph,	<i>Albany,</i>	Mechanical Eng.
Atwood, William Greene,	<i>Fredonia,</i>	Civil Eng.
Auel, Carl Bennett,	<i>New York City,</i>	Electrical Eng.
Bacon, George Wood,	<i>Greenwich, N. J.,</i>	Electrical Eng.
Bailey, Edward Clifford,	<i>New York City,</i>	Letters
Baker, William Gregory,	<i>Clyde,</i>	Arts
Balcom, Lillian Lynn,	<i>Bath,</i>	Science
Baldwin, Arthur J,	<i>Ithaca,</i>	Arts
Baldwin, Ernest Howard,	<i>Springfield, Mo.,</i>	Civil Eng.
Baldwin, Leonard DeWitt,	<i>Ithaca,</i>	Arts
Barlow, Edwin Thayer,	<i>Rochester,</i>	Architecture
Barnes, Stuart Gray,	<i>Syracuse,</i>	Mechanical Eng.
Bates, Fred Oriando,	<i>Shelby Centre,</i>	Arts
Beardslee, John S T,	<i>Ithaca,</i>	Mechanical Eng.
Beardsley, Frank J,	<i>Owego,</i>	Arts
Beebe, Roscoe Conkling,	<i>Ludlowville,</i>	Civil Eng.
Bell, Frank Austin,	<i>Spencer,</i>	Arts
Biggin, Frederic Child,	<i>Baltimore, Md.,</i>	Architecture
Bissell, Fred Olds,	<i>Buffalo,</i>	Arts
Black, Frederic M,	<i>Newark, Ohio,</i>	Philosophy
Bohn, John Valentine,	<i>St. Louis, Mo.,</i>	Electrical Eng.
Boland, Francis Halsey,	<i>New York City,</i>	Electrical Eng.
Boright, William Parsons,	<i>Chatham,</i>	Civil Eng.
Bostwick, Charles Dibble,	<i>Ithaca,</i>	Arts
Brasser, Jacob,	<i>East Williamson,</i>	Letters
Breckinridge, Mary Grace,	<i>Binghamton,</i>	Philosophy
Brewer, Francis Ezra,	<i>Gilbertsville,</i>	Arts
Brooks, William Benthall, Jr.,	<i>Erie, Pa.,</i>	Electrical Eng.
Browd, Paul Konstance,	<i>Odessa, Russia,</i>	Mechanical Eng.
Brown, J Grove,	<i>Harford,</i>	Mechanical Eng.
Brown, William,	<i>Belfast,</i>	Civil Eng.
Brussel, Elbert,	<i>New York City,</i>	Electrical Eng.
Bump, Burton Nelson,	<i>Binghamton,</i>	Electrical Eng.
Bunting, Jessie Maria,	<i>Hamburgh,</i>	Arts
Burnett, Samuel Howard,	<i>Webster,</i>	Arts
Burns, Justin Jerome Ambrose,	<i>Watertown,</i>	Civil Eng.
Burrage, George Closson,	<i>Worcester, Mass.,</i>	Philosophy
Burrage, Herbert Farwell,	<i>Worcester, Mass.,</i>	Agriculture
Burwell, Robert Turnbull,	<i>Raleigh, N. C.,</i>	Mechanical Eng.
Cadmus, George Woodhead,	<i>Brooklyn,</i>	Civil Eng.
Caldwell, Grace Wilmarth,	<i>Ithaca,</i>	Arts
Cannon, Harrison Dickinson,	<i>Ithaca,</i>	Philosophy
Capwell, Allison Stone,	<i>Rockland, R. I.,</i>	Electrical Eng.

Carlton, Willard Gilbert,	<i>Warren, Ill.,</i>	Electrical Eng.
Carolan, Edgar Alfred,	<i>San Francisco, Cal.,</i>	Elec. Eng.
Carpenter, Henry Gay,	<i>Lebanon Springs,</i>	Civil Eng.
Chamot, Emile Monnin,	<i>Buffalo,</i>	Chemistry
Clark, Charles Henry,	<i>Canastota,</i>	Civil Eng.
Clark, Edward Everett,	<i>Elmira,</i>	Electrical Eng.
Clark, Henry, Jr.,	<i>Montgomery City, Mo.,</i>	Civil Eng.
Clark, Howard William,	<i>Irondequoit,</i>	Arts
Clemens, Abraham Bowman,	<i>Preston, Canada,</i>	Mechanical Eng.
Colton, Royal Fowler,	<i>Rockford, Ill.,</i>	Civil Eng.
Cook, John Ames,	<i>Chicago, Ill.,</i>	Mechanical Eng.
Corey, Fred Brainard,	<i>Homer,</i>	Electrical Eng.
Cornell, John Beeler, Jr.,	<i>Hamilton, Ohio,</i>	Electrical Eng.
Couch, Vinton Myron,	<i>Odessa,</i>	Civil Eng.
Crist, Arthur H,	<i>North Winfield,</i>	Letters
Crouch, Calvin Henry,	<i>Oswego,</i>	Mechanical Eng.
Cruikshank, Lyle,	<i>Carthage,</i>	Mechanical Eng.
Cruz, Henrique Barboza da,	<i>Rio de Janeiro, Brazil,</i>	M. Eng.
Curtis, Winthrop Lincoln,	<i>Horseheads,</i>	Civil Eng.
Darlington, Philip Jackson,	<i>Lincoln University, Pa.,</i>	M. Eng.
Davis, George Henry,	<i>North Hannibal,</i>	Electrical Eng.
Davis, Theron Dexter,	<i>Varysburgh,</i>	Arts
Davison, George Millard,	<i>Apalachin,</i>	Arts
Dickey, Laura Stanley,	<i>Newburgh,</i>	Science
Dill, William,	<i>Rushville, Ind.,</i>	Civil Eng.
Dinsmoor, Frank Murray,	<i>Keene, N. H.,</i>	Medical Prep.
Doolittle, Adelia Francis,	<i>Washington, D. C.,</i>	Arts
Duncan, Charles Henry,	<i>Cincinnati, Ohio,</i>	Mechanical Eng.
Duniway, Clyde Augustus,	<i>Houston, Idaho,</i>	Arts
Dunn, Frank Sientz,	<i>Utica, Pa.,</i>	Civil Eng.
Dyett, James Hatheway,	<i>Rome,</i>	Mechanical Eng.
Eakle, Arthur Starr,	<i>Washington, D. C.,</i>	Science
Earll, Lottie Irene,	<i>Syracuse,</i>	Arts
Erisman, Henry,	<i>Wilhelm,</i>	Civil Eng.
Etheridge, Charles Locke,	<i>Chicago, Ill.,</i>	Electrical Eng.
Farkell, George C,	<i>Canajoharie,</i>	Electrical Eng.
Farnham, Irving Tupper,	<i>Deposit,</i>	Civil Eng.
Ferris, Frank Henry,	<i>Spencer,</i>	Architecture
Fish, John Charles Lounsbury,	<i>Florence, Ohio,</i>	Civil Eng.
Flint, Frances Elizabeth Holeman,	<i>Rochester,</i>	Arts
Ford, James Story,	<i>West Albany,</i>	Electrical Eng.
Ford, Paul Cooley, Jr.,	<i>Ashtabula, Ohio,</i>	Mechanical Eng.

Fowler, Albert Merrill,	<i>Newburgh,</i>	Philosophy
Fullagar, Guy Kent,	<i>Dunkirk,</i>	Civil Eng.
Gail, Harry Stevens,	<i>Wales Centre,</i>	Letters
Garrett, Urias Evans,	<i>Iona, Pa.,</i>	Architecture
Geigel, Antonio Sabat,	<i>San Juan, Porto Rico,</i>	Civil Eng.
Gerecke, Amy,	<i>Newburgh,</i>	Science
Gibbon, Charles William,	<i>Charleston, S. C.,</i>	Mechanical Eng.
Gilbert, Frank Marble,	<i>Marcellus Falls,</i>	Mechanical Eng.
Goldsborough, Winder Elwell,	<i>Greensborough, Md.,</i>	Elec. Eng.
Grube, Warren Earl Marble,	<i>Rochester,</i>	Architecture
Gunderson, Carl,	<i>Vermillion, S. D.,</i>	Civil Eng.
Hamann, Henry George,	<i>Davenport, Iowa,</i>	Electrical Eng.
Hamilton, John Alan,	<i>East Saginaw, Mich.,</i>	Philosophy
Hand, William Benjamin,	<i>Nyack,</i>	Architecture
Haring, Fred Benson,	<i>Ludlowville,</i>	Letters
Harris, Benjamin Marvin,	<i>Kendall,</i>	Mechanical Eng.
Harshman, Walter Scott,	<i>Milton, Ohio,</i>	Science
Haynes, George White,	<i>Fremont, Ohio,</i>	Philosophy
Hedden, Elmond Jansen,	<i>Charlton,</i>	Civil Eng.
Heppert, Albert George,	<i>Johnson's Corners, Ohio,</i>	Letters
Hicks, Henry,	<i>Westbury Station,</i>	Agriculture
Hiscock, Fidelio King,	<i>Syracuse,</i>	Letters
Hitt, Samuel Edward,	<i>Chicago, Ill.,</i>	Electrical Eng.
Hogg, George Thomas,	<i>Franklinville,</i>	Arts
Holbrook, Dio Lewis,	<i>New York City,</i>	Mechanical Eng.
Hoopes, Maurice,	<i>Westchester, Pa.,</i>	Electrical Eng.
Horton, Elmer Grant,	<i>Arcade,</i>	Science
Howe, Harry Dresser,	<i>Hampton, Va.,</i>	Agriculture
Hoxie, George L,	<i>Anamosa, Iowa,</i>	Mechanical Eng.
Hoxie, Robert Franklin,	<i>Whitesboro,</i>	Letters
Hoyt, Carroll Livingston,	<i>Wellsville,</i>	Mechanical Eng.
Huestis, Charles Calvin,	<i>Crown Point,</i>	Civil Eng.
Hyde, Frank Shaw,	<i>Montague, Mass.,</i>	Chemistry
Ide, Frank Pierce,	<i>Springfield, Ill.,</i>	Mechanical Eng.
Jackson, Frank Darwin,	<i>Bradford, Pa.,</i>	Electrical Eng.
Jackson, Willard Cartwright,	<i>Wilmington, Del.,</i>	Letters
Jenkins, David John,	<i>Milton, Pa.,</i>	Mechanical Eng.
Kaiser, Arthur William Herman,	<i>Buffalo,</i>	Philosophy
Keiffer, Lenard Brown,	<i>New Orleans, La.,</i>	Chemistry
Keller, Frank Perry,	<i>Monongahela City, Pa.,</i>	Arch.
Kelsey, Arthur Townsend,	<i>Mecklenburgh,</i>	Mechanical Eng.
King, Walter Grant,	<i>New York City,</i>	Science
Knapp, Alexander Payson,	<i>New York City,</i>	Electrical Eng.

Knight, Percy Henry,	<i>Fredonia,</i>	Electrical Eng.
Knoch, Julius James, B.S.,	<i>Saxonburgh, Pa.,</i>	Civil Eng.
Kreidler, Charles Ray,	<i>South Dansville,</i>	Science
Kreidler, Deo Clair,	<i>South Dansville,</i>	Letters
Kuhn, Joseph,	<i>Lima, Ohio,</i>	Mechanical Eng.
Landers, Leland Leroy,	<i>Afton,</i>	Arts
Langdon, William Chauncy, Jr.,	<i>Bedford, Pa.,</i>	Arts
Lathrop, John Pelatiah Perit,	<i>LeRoy,</i>	Civil Eng.
Lathrop, Mary Alinda,	<i>Attleborough, Mass.,</i>	Philosophy
Law, Cecilia Agnes,	<i>Ithaca,</i>	Letters
Law, Grace Mary,	<i>Ithaca,</i>	Letters
Levy, Charles Joseph,	<i>New York City,</i>	Letters
Lewis, Liston Leone,	<i>Canton, Pa.,</i>	Philosophy
Lindsay, William Edward,	<i>Baltimore, Md.,</i>	Electrical Eng.
Ling, Charles Joseph,	<i>Auburn,</i>	Science
Lombard, Edward Craffs,	<i>Jackson, Mich.,</i>	Electrical Eng.
Ludlam, Harry Weeks,	<i>Oyster Bay,</i>	Electrical Eng.
McAllister, Peter Francis,	<i>Ithaca,</i>	Letters
McCall, Frank Hamilton,	<i>Binghamton,</i>	Mechanical Eng.
McComb, William Nelson,	<i>Ithaca,</i>	Mechanical Eng.
McGraw, James Rea,	<i>Claysburgh, Pa.,</i>	Civil Eng.
MacGregor, James Ferguson,	<i>Galt, Canada,</i>	Mechanical Eng.
McIntire, Mary Amelia Josephine,	<i>East Cambridge, Mass.,</i>	Philosophy
McKinley, Eugene Fritz,	<i>Brewerton,</i>	Arts
McKnight, George Harley,	<i>Sterling Valley,</i>	Arts
McNulty, Sarah Adeline,	<i>Washington, D. C.,</i>	Arts
Mack, William Gordon,	<i>Norwalk, Ohio,</i>	Mechanical Eng.
Marble, Louis Mills,	<i>Washington, D. C.,</i>	Science
Marston, Amos Wilbur,	<i>Winnebago, Ill.,</i>	Science
Massey, John Rice,	<i>Chicago, Ill.,</i>	Electrical Eng.
Mathewson, George Riley,	<i>Sinclairville,</i>	Civil Eng.
Matthews, Charles Philo,	<i>Fort Covington,</i>	Electrical Eng.
Mayers, Wilbur Shirley,	<i>Fairmount, W. Va.,</i>	Mech. Arts
Maynard, Sherman Darwin,	<i>Lew Beach,</i>	Agriculture
Meech, Robert Owen,	<i>Buffalo,</i>	Arts
Melotte, Julia Lorraine,	<i>Ithaca,</i>	Philosophy
Merritt, Ernest Gordon,	<i>Savannah,</i>	Letters
Meyer, Conrad,	<i>Zürich, Switzerland,</i>	Agriculture
Michaelson, Joseph McConnechy,	<i>Geneva,</i>	Civil Eng.
Mickle, Robert Thomas,	<i>Millville, N. J.,</i>	Mechanical Eng.
Mitchell, Clara Audita,	<i>Wellsborough, Pa.,</i>	Letters
Moore, Frank Cook,	<i>Aquebogue,</i>	Civil Eng.

Morehouse, Alanson David,	<i>Brooklyn,</i>	Electrical Eng.
Morley, Edgar Lewis,	<i>Baldwinsville,</i>	Mechanical Eng.
Mosher, Ward,	<i>Cold Spring,</i>	Letters
Muñoz, Salvador,	<i>Rivas, Nicaragua,</i>	Mech. Eng.
Murray, Lucy,	<i>San Francisco, Cal.,</i>	Arts
Newman, Jacob Kiefer,	<i>New Orleans, La.,</i>	Electrical Eng.
Norton, Francis Leonard,	<i>Springfield, Mass.,</i>	Arts
Noyes, George Wallingford,	<i>Kenwood,</i>	Arts
Oliver, Cyrus Golie,	<i>Onawa, Iowa,</i>	Electrical Eng.
Osgood, Winchester Dana,	<i>Fortress Monroe, Va.,</i>	Civil Eng.
Palmer, Harry Mitchell,	<i>Pittsburgh, Pa.,</i>	Electrical Eng.
Park, Arthur Bushnell,	<i>Winfield,</i>	Mechanical Eng.
Parke, Frederic Huntington,	<i>Unadilla,</i>	Mechanical Eng.
Parsons, James Gilliard,	<i>Harrisburg, Pa.,</i>	Philosophy
Pearson, Anne R,	<i>Ithaca,</i>	Letters
Peck, John Sedgwick,	<i>Staunton, Va.,</i>	Electrical Eng.
Phillips, Fred Clinton,	<i>Little Falls,</i>	Civil Eng.
Piffard, Henry Haight,	<i>New York City,</i>	Electrical Eng.
Pillmore, Fred,	<i>Westernville,</i>	Mechanical Eng.
Platt, Frederick Joseph,	<i>Waterford,</i>	Mechanical Eng.
Pope, Charles Edward,	<i>Cleveland, Ohio,</i>	Mechanical Eng.
Potter, Mary Alice,	<i>North Easton,</i>	Science
Purdy, George Carr,	<i>Middletown,</i>	Arts
Register, Harry Vollmer,	<i>Philadelphia, Pa.,</i>	Arts
Richardson, Albert Goldwin George,	<i>Ithaca,</i>	Architecture
Roess, Louis Jacob,	<i>South Oil City, Pa.,</i>	Arts
Root, Louis Carroll,	<i>Port Byron,</i>	Arts
Rowe, Bertrand Perry,	<i>Ithaca,</i>	Electrical Eng.
Rumsey, Willie Earl,	<i>Van Ettenville,</i>	Agriculture
Russell, Charles,	<i>Albany,</i>	Science
Russell, Frederick Fuller,	<i>Brooklyn,</i>	Science
Sawyer, Burton Mansfield,	<i>Ithaca,</i>	Electrical Eng.
Sawyer, Harland Aaron,	<i>Amesbury, Mass.,</i>	Electrical Eng.
Schneck, George William,	<i>Waterloo,</i>	Arts
Schreuder, Otto Peter,	<i>Syracuse,</i>	Architecture
Scidmore, Frank Lincoln,	<i>East Watertown,</i>	Electrical Eng.
Shaw, Harry Wesley,	<i>South Orange, N. J.,</i>	Civil Eng.
Sheldon, Franklin Lacy,	<i>Auburn,</i>	Mechanical Eng.
Shillinger, John George,	<i>West Lebanon,</i>	Civil Eng.
Shurter, Edwin DuBois,	<i>Brookton,</i>	Philosophy
Smith, Charles Marvin,	<i>Lancaster,</i>	Letters
Smith, Irving Bell,	<i>Poughkeepsic,</i>	Electrical Eng.

Smith, Jesse Woodhull,	<i>Newburgh,</i>	Electrical Eng.
Smith, Laura Bertha,	<i>Ithaca,</i>	Science
Smith, Leonard J,	<i>Cortland,</i>	Civil Eng.
Smith, Murray Hilton,	<i>New York City,</i>	Electrical Eng.
Smith, William Sumner,	<i>Hampden, Mass.,</i>	Mech. Eng.
Snyder, George B McClellan,	<i>Nina,</i>	Science
Soulé, Frank,	<i>New Orleans, La.,</i>	Letters
Souza, Epaminondas Alves de,	<i>Juiz de Fôra, Brazil,</i>	Agriculture
Sparrell, John Kirkwood,	<i>Oriskany,</i>	Arts
Spencer, Josephine,	<i>Waverly,</i>	Letters
Starkweather, William Gustavus,	<i>Milwaukee, Wis.,</i>	Mechanical Eng.
Steinacher, Gustavo José,	<i>Ponce, Porto Rico,</i>	Civil Eng.
Stewart, Arthur Daniel,	<i>Anchor, Ill.,</i>	Mechanical Eng.
Studley, Elmer Ebenezer,	<i>East Ashford,</i>	Arts
Sturdevant, Charles Ralph,	<i>Youngsville, Pa.,</i>	Electrical Eng.
Swartout, Carolinne Harder,	<i>Owego,</i>	Philosophy
Tappan, Frances,	<i>Baldwinsville,</i>	Letters
Tassin, Wirt de Vivier,	<i>Fort Sully, S. D.,</i>	Chemistry
Taylor, Beulah Wilson,	<i>Schuyler's Lake,</i>	Science
Throop, Francis Wayland,	<i>Port Gibson,</i>	Electrical Eng.
Tompkins, Walter Hall,	<i>Batavia,</i>	Electrical Eng.
Tourtellot, Jerry Williams,	<i>Ithaca,</i>	Electrical Eng.
Townsend, George Rappleye,	<i>Ithaca,</i>	Mechanical Eng.
Tracy, James Frank,	<i>Toledo, Ohio,</i>	Electrical Eng.
Turner, Horace Greeley,	<i>Pope's Mills,</i>	Civil Eng.
Tuttle, George Mott,	<i>Le Roy,</i>	Science
Van Dorn, Thomas Burten,	<i>Cleveland, Ohio,</i>	Mechanical Eng.
Van Wagenen, Jared, Jr.,	<i>Lawyersville,</i>	Agriculture
Voetter, Thomas Wilson,	<i>Pittsburgh, Pa.,</i>	Electrical Eng.
Vose, Walter Irving,	<i>Manville, R. I.,</i>	Civil Eng.
Walbridge, George Hicks,	<i>North Bennington, Vt.,</i>	Elec. Eng.
Walker, John Charles,	<i>Akron,</i>	Science
Walter, Harry Joseph,	<i>Whitney's Point,</i>	Philosophy
Wardlaw, George Augustus,	<i>New York City,</i>	Electrical Eng.
Ware, Louie Erville,	<i>Worcester, Mass.,</i>	Letters
Warner, Robert Lyon,	<i>Portland, Oreg.,</i>	Electrical Eng.
Werner, Charles Hain,	<i>Reading, Pa.,</i>	Mechanical Eng.
Wharton, Hugh Morrison,	<i>Philadelphia, Pa.,</i>	Electrical Eng.
White, Louis Eugene,	<i>Detroit, Mich.,</i>	Mechanical Eng.
Wicker, George Ray,	<i>Leicester,</i>	Arts
Widger, Clark William,	<i>Norwich,</i>	Civil Eng.
Wilcox, Robert Bruce,	<i>Chicago, Ill.,</i>	Civil Eng.

Wilhelm, Ed Adam,	<i>Toledo, Ohio,</i>	Electrical Eng.
Wille, Harry Valentine,	<i>Philadelphia, Pa.,</i>	Electrical Eng.
Williams, Roswell Carter, Jr.,	<i>Brooklyn,</i>	Electrical Eng.
Williams, William W,	<i>Groton,</i>	Civil Eng.
Wilson, Chester Paulton,	<i>Indianapolis, Ind.,</i>	Electrical Eng.
Wilson, Fred Lewis,	<i>Buffalo,</i>	Electrical Eng.
Wolf, Rennold,	<i>Ithaca,</i>	Philosophy
Wolfe, Joseph Meixell, A. B.,	<i>Lewisburgh, Pa.,</i>	Electrical Eng.
Wood, Edgar Harper,	<i>Ithaca,</i>	Mechanical Eng.
Wood, Horatio Nelson,	<i>Westbury,</i>	Mechanical Eng.
Woodward, Arthur Herbert,	<i>Chicago, Ill.,</i>	Mechanical Eng.
Yerzley, William Alfred,	<i>Forrest City, Ark.,</i>	Mech. Eng.

OPTIONAL STUDENTS.

Bates, Sherman William,	<i>Akron</i>
Bloss, Joseph Mackie,	<i>Titusville, Pa.</i>
Booth, Henry Anson,	<i>Candor</i>
Bowman, Frank,	<i>Barnes' Corners</i>
Breckenridge, Roeliff Morton,	<i>Hamilton, Canada</i>
Brewster, Anna Roosa,	<i>South Plainfield</i>
Burrows, Bion Luceine,	<i>Ithaca</i>
Cameron, Annie Richardson,	<i>Wellsborough, Pa.</i>
Collins, Florence Belle,	<i>Syracuse</i>
Cushman, Blin Sill,	<i>New Berlin</i>
Elliott, John Lovejoy,	<i>Princeton, Ill.</i>
Elliott, Russell,	<i>Springville</i>
Ellis, Willis Charles,	<i>Pike</i>
Herrick, John James,	<i>Staatsburgh</i>
Howell, William Gyllich,	<i>Washington, D. C.</i>
Knox, George Platt,	<i>Ballston</i>
Kolb, Theodore Baldwin,	<i>Elmira</i>
Laidlaw, Gilbert William,	<i>Ellicottville</i>
Newbrook, William George,	<i>Buffalo</i>
Nichols, Leon Nelson,	<i>West Winfield</i>
Nourse, Jennie Louise,	<i>Ithaca</i>
Putnam, Robert Myers Shoemaker,	<i>Saratoga Springs</i>
Raynor, Addison,	<i>Westhampton</i>
Relihan, Mary,	<i>Painted Post</i>
Seymour, Arthur Trumbull,	<i>Turin</i>
Stroud, Bert Brenette,	<i>Ithaca</i>
Sutliff, Edward Milton,	<i>Warren, Ohio</i>
Tuthill, Grace Blanch,	<i>Waverly</i>

Whicher, Charles Maples, *Mayville*
 Wilcox, George Burton, *Wellsville*
 Wright, John Newton, *Washington, D. C.*

FRESHMEN.

Adams, Percy Crowley,	<i>Randolph,</i>	Architecture
Adams, Spencer Lionel,	<i>Skaneateles,</i>	Arts
Ahern, John Louie,	<i>Whitney's Point,</i>	Civil Eng.
Alberger, Alvan Hyde,	<i>Buffalo,</i>	Mechanical Eng.
Albree, Frederick William,	<i>Allegheny, Pa.,</i>	Mechanical Eng.
Allen, Edwin Pitcher,	<i>Clarence,</i>	Letters
Allen, Harry Carleton,	<i>Cleveland, Ohio,</i>	Civil Eng.
Ames, Frank Ludington,	<i>Syracuse,</i>	Letters
Ames, Thomas Palmer,	<i>Ogdensburgh,</i>	Science
Anthony, James Stowell,	<i>New York City,</i>	Electrical Eng.
Armstrong, Harley J,	<i>Decatur, Ill.,</i>	Electrical Eng.
Ashby, Charles Wesley,	<i>Troy,</i>	Civil Eng.
Ashley, Edward Gordon,	<i>Batavia,</i>	Electrical Eng.
Austin, Sedgwick Elisha,	<i>Throopsville,</i>	Medical Prep.
Austin, William Eugene,	<i>Brookfield,</i>	Architecture
Ayres, Clarence Morton,	<i>St. Joseph, Mo.,</i>	Civil Eng.
Bacon, George Morgan,	<i>West Medford, Mass.,</i>	Civil Eng.
Baier, Julius William,	<i>Jersey City, N. J.,</i>	Medical Prep.
Baird, Frank Jewell,	<i>Pulaski,</i>	Science
Baker, Rollin Thaddeus,	<i>Suffern,</i>	Agriculture
Baldwin, Abram Turnure,	<i>New York City,</i>	Mechanical Eng.
Baldwin, George Lyon,	<i>Towanda, Pa.,</i>	Letters
Baldwin, Seward,	<i>Waverly,</i>	Mechanical Eng.
Ball, Charles Hubbard,	<i>Le Roy,</i>	Letters
Ballantyne, Norman Frank,	<i>Ottawa, Canada,</i>	Electrical Eng.
Ballard, Walter Angus,	<i>Richburgh,</i>	Mechanical Eng.
Barker, James Francis,	<i>Chicago, Ill.,</i>	Mechanical Eng.
Barnes, Jay Preston,	<i>Housatonic, Mass.,</i>	Civil Eng.
Barnum, Ward,	<i>Centreville,</i>	Electrical Eng.
Barr, Charles James,	<i>Lindsay, Canada,</i>	Mechanic Arts
Barton, Rosetta Mayard,	<i>Oneonta,</i>	Arts
Beach, Harry Merrick,	<i>Cortland,</i>	Mechanical Eng.
Beals, Albert Ebenezer,	<i>Norwich,</i>	Mechanical Eng.
Becker, Theodore,	<i>Central City, Col.,</i>	Electrical Eng.
Beckett, Samuel Gustavus,	<i>Toronto, Canada,</i>	Architecture
Beckman, Horatio Blake, Jr.,	<i>Newburgh,</i>	Mechanic Arts
Berger, Calvin M,	<i>Canton, Ohio,</i>	Electrical Eng.

Berst, Jessie May,	<i>Erie, Pa.,</i>	Arts
Bertholf, Charles Howard,	<i>Marlborough, N. J.,</i>	Elec. Eng.
Billings, Harry Daniel,	<i>Tunkhannock, Pa.,</i>	Arts
Bishop, Hubert Keeney,	<i>Warsaw,</i>	Civil Eng.
Bissell, Frank Brigham,	<i>Buffalo,</i>	Mechanical Eng.
Blood, Charles W H,	<i>New York City,</i>	Mechanical Eng.
Blyth, Henry Adams,	<i>Ashtabula, Ohio,</i>	Electrical Eng.
Bolles, George Albert,	<i>Naples,</i>	Arts
Booth, Arthur Woodward,	<i>Elmira,</i>	Medical Prep.
Bowen, Corydon Hart,	<i>Le Roy,</i>	Civil Eng.
Boynton, Stuart Dunlevy,	<i>Chicago, Ill.,</i>	Mechanical Eng.
Bradley, Lyman Richard,	<i>Spencer,</i>	Civil Eng.
Braine, Elizabeth Musgrove,	<i>Brooklyn,</i>	Letters
Brayton, William Stanton,	<i>Providence, R. I.,</i>	Electrical Eng.
Brazier, Harry Bartol,	<i>Philadelphia, Pa.,</i>	Mechanic Arts
Bristol, Alice Josephine,	<i>Canton, Pa.,</i>	Letters
Brobeck, Joseph George,	<i>Sag Harbor,</i>	Science
Brooks, Alfred Charles,	<i>Ithaca,</i>	Architecture
Brown, Ethelbert Washington,	<i>Ithaca,</i>	Architecture
Brown, Martha Avery,	<i>Le Roy,</i>	Science
Brown, Walter Frazer,	<i>Chicago, Ill.,</i>	Mechanical Eng.
Browne, La Monte Gray,	<i>Utica,</i>	Medical Prep.
Bugbee, Alice Elmina,	<i>Canton,</i>	Arts
Bunting, Douglas,	<i>East Mauch Chunk, Pa.,</i>	M. Eng.
Burns, Clinton Sumner,	<i>Almena, Kan.,</i>	Civil Eng.
Burns, Edward Michael,	<i>Bull's Head,</i>	Science
Burr, Jessie Alice,	<i>Boonville,</i>	Architecture
Burr, Jonathan Sturges,	<i>Brooklyn,</i>	Mechanical Eng.
Burr, Nellie Ann,	<i>Boonville,</i>	Science
Burton, Paul Gibson,	<i>Albany,</i>	Electrical Eng.
Bush, Harold Montfort,	<i>Ithaca,</i>	Mechanical Eng.
Cady, Charles J,	<i>Rice's,</i>	Civil Eng.
Camp, Charles Forster,	<i>Brooklyn,</i>	Mechanical Eng.
Campbell, John Palmer,	<i>New York Mills,</i>	Mechanical Eng.
Canal, Carlos Julio,	<i>Cucuta, U. S. of Col.,</i>	Mech. Eng.
Candee, Bertram Colman,	<i>Dunkirk,</i>	Architecture
Carpenter, Mark Ball,	<i>Holyoke, Mass.,</i>	Civil Eng.
Cavanaugh, George Walter,	<i>Watertown,</i>	Chemistry
Center, Henry Price,	<i>Ottawa, Ill.,</i>	Mechanical Eng.
Cessna, Julia,	<i>Ithaca,</i>	Architecture
Cessna, John Randolph,	<i>Ithaca,</i>	Mechanical Eng.
Chapin, Ernest Pitney,	<i>Antrim, N. H.,</i>	Electrical Eng.

Chollar, Harvey W,	<i>Homer,</i>	Arts
Christiance, Minnie May,	<i>Ithaca,</i>	Letters
Church, Frank Leonard,	<i>Troy,</i>	Mechanic Arts
Clark, Dan Baker,	<i>Olean,</i>	Civil Eng.
Clark, Edwin Carleton,	<i>Lancaster,</i>	Electrical Eng.
Clark, Wellyn Brayton,	<i>Castorland,</i>	Architecture
Clarke, William Addison,	<i>Toledo, Ohio,</i>	Mechanical Eng.
Clephane, Malcolm Wolcott,	<i>Philadelphia, Pa.,</i>	Electrical Eng.
Coe, Ira Judson,	<i>Dover, N. J.,</i>	Civil Eng.
Cohen, Alan M,	<i>Baltimore, Md.,</i>	Mechanical Eng.
Collins, Roderick Greene, Jr.,	<i>Milwaukee, Wis.,</i>	Electrical Eng.
Colwell, John Alexander, Jr.,	<i>Kittaning, Pa.,</i>	Mechanical Eng.
Comesky, John,	<i>Norwalk, Ohio,</i>	Mechanical Eng.
Connard, Frank Leavenworth,	<i>Reading, Pa.,</i>	Mechanical Eng.
Cook, Junius Ford,	<i>Whitney's Point,</i>	Mechanical Eng.
Corcoran, John Bernard,	<i>Colton,</i>	Letters
Cornish, George Alonzo,	<i>Gillette, N. J.,</i>	Mechanical Eng.
Cosby, Frank Clark,	<i>Washington, D. C.,</i>	Elec. Eng.
Cowperthwait, Allan,	<i>New York City,</i>	Mechanic Arts
Cross, Frank Leonard,	<i>Niagara Falls,</i>	Electrical Eng.
Cruickshanks, John DeWitt,	<i>Ovid,</i>	Electrical Eng.
Dagwell, George Albert, Jr.,	<i>Lansingburgh,</i>	Civil Eng.
Darling, Frederick Edgar Bradford,	<i>Troy,</i>	Letters
Dauchy, Otis Burr,	<i>Chicago, Ill.,</i>	Mechanical Eng.
Davenport, Ward Palmer,	<i>Plymouth, Pa.,</i>	Civil Eng.
Davis, Carl Everett,	<i>Council Bluffs, Iowa,</i>	Civil Eng.
Davison, Hope,	<i>New York City,</i>	Arts
Dewsnap, Samuel Brown,	<i>New York City,</i>	Electrical Eng.
Dole, Walter Sanford,	<i>Kapaa Kanai, Hawaiian Is.,</i>	C. Eng.
Donn, John Mahon,	<i>Baltimore, Md.,</i>	Architecture
Doolittle, Lewis Joseph,	<i>Plantsville, Conn.,</i>	Electrical Eng.
Doores, William Richard,	<i>Washington, D. C.,</i>	Civil Eng.
Downes, Charles Sawyer,	<i>Franeestown, N. H.,</i>	Mech. Eng.
Draper, Frederick Clinton,	<i>Fulton,</i>	Architecture
Durand, Elias Judah,	<i>Canandaigua,</i>	Arts
Earle, Henry Curtis,	<i>Providence, R. I.,</i>	Electrical Eng.
Eastman, Walter Lane,	<i>Ithaca,</i>	Electrical Eng.
Edwards, Walter Wallace,	<i>Forest Home,</i>	Electrical Eng.
Eickemeyer, Carl,	<i>Yonkers,</i>	Mechanical Eng.
Ellsworth, Sanford Jay,	<i>Cortland,</i>	Architecture
Elmer, Lewis Stewart,	<i>Baltimore, Md.,</i>	Electrical Eng.
Emery, Arthur Lowell,	<i>Westborough, Mass.,</i>	Chemistry

Everett, Edward,	<i>Williamsport, Pa.,</i>	Civil Eng.
Filkins, Claude William Leroy,	<i>Olean,</i>	Civil Eng.
Fisher, William George,	<i>Utica,</i>	Mechanical Eng.
Fitzpatrick, May Ransom,	<i>Brooklyn,</i>	Arts
Fleming, James Edward,	<i>Spencer,</i>	Philosophy
Fleming, Judson Everett,	<i>Groton, Mass.,</i>	Agriculture
Fletcher, Robert Charles,	<i>Albany,</i>	Science
Fowler, George Vermilyea,	<i>Yonkers,</i>	Arts
Freshman, Charles Homer,	<i>New York City,</i>	Letters
Frost, Frank Raymond,	<i>Ithaca,</i>	Electrical Eng.
Fulton, Thomas Cooper,	<i>Pittsburgh, Pa.,</i>	Science
Gaus, Edward Leo,	<i>Albany,</i>	Chemistry
Gilbert, Wells Smith,	<i>Duluth, Minn.,</i>	Arts
Gleason, James Emmett,	<i>Rochester,</i>	Mechanical Eng.
Goda, Kanemaro,	<i>Tokio, Japan,</i>	Architecture
Goldard, Mary,	<i>Worcester, Mass.,</i>	Philosophy
Gordon, Fred Force,	<i>Rochester,</i>	Civil Eng.
Gorton, Elmer Eldridge,	<i>Tonawanda,</i>	Architecture
Grafft, Jennie Bonnell,	<i>Waverly,</i>	Philosophy
Greene, George de Boketon,	<i>New York City,</i>	Mechanic Arts
Hall, Charles Frederick,	<i>Elmira,</i>	Mechanic Arts
Halsey, Abram Augustus,	<i>Water Mill,</i>	Arts
Hammond, Wilber Fiske, Jr.,	<i>Greenport,</i>	Civil Eng.
Harman, John Nepomucene,	<i>Watertown,</i>	Letters
Harmon, Mary Patterson,	<i>Corry, Pa.,</i>	Philosophy
Harris, Paul Cherington,	<i>Galena, Ill.,</i>	Mechanical Eng.
Harris, William Allison,	<i>Niles, Ohio,</i>	Mechanic Arts
Hartley, Carney,	<i>Fairmount, W. Va.,</i>	Mech. Eng.
Harvey, George Roy,	<i>Hamilton, Canada,</i>	Mechanic Arts
Hasbrouck, Maude Estelle,	<i>Ithaca,</i>	Letters
Haywood, Charles Westly,	<i>Gouverneur,</i>	Civil Eng.
Heath, Homer Jay,	<i>Rodman,</i>	Civil Eng.
Hebard, Caroline Louise,	<i>Homer,</i>	Letters
Hegewald, Edwin Christian,	<i>New Albany, Ind.,</i>	Mech. Eng.
Heinrich, Christoph,	<i>Milwaukee, Wis.,</i>	Mech. Eng.
Henderson, Thaddeus Clarence,	<i>Havana,</i>	Arts
Henry, Arthur Robert,	<i>Quebec, Canada,</i>	Mechanical Eng.
Hernandez, Rafael,	<i>Mayaguez, Porto Rico,</i>	Mech. Eng.
Higley, Seth Duane,	<i>Windsor, Ohio,</i>	Electrical Eng.
Hildebrand, Charles Edwin,	<i>Indianapolis, Ind.,</i>	Electrical Eng.
Hill, Ernest Rowland,	<i>Riverdale, N. J.,</i>	Mechanic Arts
Hill, Lizzie,	<i>Danvers, Mass.,</i>	Philosophy

Hill, Theodore William,	Lyons,	Civ. Eng.
Hinman, Edgar Ienderson,	Afton,	Arts
Hisey, William Newell,	Los Angeles, Cal.,	Civil Eng.
Hitchcock, Edward Northrup,	Hilo, Hawaiian Is.,	Mechanic Arts
Hopkins, Walter David,	Ithaca,	Arts
Houghton, Bert,	Pittsfield, Vt.,	Mechanical Eng.
Howard, George Edwin,	Butler, Pa.,	Mechanic Arts
Howe, Charles Burton,	Clarence,	Electrical Eng.
Howe, Herbert Crombie,	Cortland,	Letters
Howland, Arthur Charles,	South Danby,	Arts
Hoxie, Kinney,	Leonardsville,	Mechanic Arts
Hubbell, Benjamin S,	Detroit, Mich.,	Architecture
Hubby, Rollin Germain,	Cleveland, Ohio,	Electrical Eng.
Hull, Howard Windsor,	Scranton, Pa.,	Mechanical Eng.
Hunnting, Henry Roderic,	Gardner, Mass.,	Philosophy
Hurd, William Disbrow,	Watkins,	Letters
Hutchinson, Frederick Lane,	Elizabeth, N. J.,	Electrical Eng.
Hyde, Walter Woodburn,	Ithaca,	Arts
Insull, Martin John,	London, England,	Electrical Eng.
Jacobs, Robert Hyde,	Delhi,	Civil Eng.
Jameson, Joseph Moore,	Montrose, Pa.,	Science
Jaquish, Ben Murray,	Luzerne, Pa.,	Science
Jeffrey, Charles Louis,	New Berlin,	Electrical Eng.
Jewett, Frank N,	Elmira,	Science
Joerissen, Fred, Jr.,	Ilion,	Civil Eng.
Johnson, Willis Grant,	New Albany, Ohio,	Science
Jost, Frederic William,	Jersey City, N. J.,	Mech. Eng.
Kassler, Charles Moffat,	Denver, Col.,	Electrical Eng.
Katte, Edwin Britton,	New York City,	Mechanical Eng.
Kelley, Frederick Williams,	Albany,	Mechanical Eng.
Kellogg, Waldo Stewart,	Atchison, Kan.,	Architecture
Klinck, John Henry,	Charleston, S. C.,	Electrical Eng.
Knowles, Charles P,	Albany,	Medical Prep.
Kraus, George Augustus,	Clarence,	Electrical Eng.
Kress, Carl Fred,	Johnstown, Pa.,	Mechanical Eng.
Lacy, John Fletcher,	Lincoln, Del.,	Civil Eng.
Landis, John Christopher, Jr.,	St. Joseph, Mo.,	Philosophy
Lange, John,	Poughkeepsie,	Civil Eng.
Law, John Edwin,	Forest Home,	Medical Prep.
Lawrence, Clara Louise,	Waterville,	Science
Legg, William Fairfax,	Ithaca,	Mechanic Arts
Lillie, Charles Maples,	Gilbertsville,	Arts
Locke, Sylvanus Dire, Jr.,	Hoosick Falls,	Mechanical Eng.

Loomis, Willis Henry,	<i>Ilion,</i>	Civil Eng.
Lordly, Henry Robertson,	<i>St. John, Canada,</i>	Civil Eng.
Loveland, Floyd Neilson,	<i>Richmondville,</i>	Science
Lovell, Ross Meacham,	<i>Marathon,</i>	Arts
Lovell, William Wayne,	<i>Attica,</i>	Electrical Eng.
Lytle, George Andrew,	<i>Decatur, Ill.,</i>	Electrical Eng.
McConvill, William Thomas,	<i>Jersey City, N. J.,</i>	Medical Prep.
MacGillivray, Alexander Dyer,	<i>Salineville, Ohio,</i>	Science
McGonigal, Ethel Marion,	<i>Lyons,</i>	Arts
McGuire, John James,	<i>Cicero,</i>	Arts
MacHarg, John Brainerd, Jr.,	<i>Rome,</i>	Civil Eng.
McMaster, Frank,	<i>Toronto, Canada,</i>	Electrical Eng.
McNeal, Alfred Francis,	<i>Marion, Ohio,</i>	Arts
McNeal, Louis Bertel,	<i>Marion, Ohio,</i>	Letters
MacNider, Stanley Corwine,	<i>Hamilton, Canada,</i>	Mechanic Arts
Maccafferty, Woodruff Marbury,	<i>Tompkinsville,</i>	Architecture
Malvern, Lewis Keith,	<i>Providence, R. I.,</i>	Arts
Markham, Mary Catharine,	<i>Horseheads,</i>	Letters
Marx, Guido Hugo,	<i>Rochester,</i>	Mechanical Eng.
Masten, Herbert Boyd,	<i>Chester,</i>	Medical Prep.
Matthiessen, Frederick William, Jr.,	<i>La Salle, Ill.,</i>	Civil Eng.
Meeker, Gardner,	<i>Newark, N. J.,</i>	Mechanical Eng.
Melrose, Clifton John,	<i>Franklinville,</i>	Arts
Merchant, Bert Harmon,	<i>Denver, Col.,</i>	Architecture
Merrill, Edward White, Jr.,	<i>Brooklyn,</i>	Mechanic Arts
Meyers, Alfred Hildebrand,	<i>Columbia, Pa.,</i>	Electrical Eng.
Mickle, John Daniel,	<i>Chatham,</i>	Electrical Eng.
Miles, William David,	<i>New Britain, Conn.,</i>	Elec. Eng.
Miller, Kempster Blanchard,	<i>Washington, D. C.,</i>	Elec. Eng.
Moore, Harlan,	<i>Harrodsburgh, Ky.,</i>	Arts
Moore, Harlan Flavius,	<i>Holyoke, Mass.,</i>	Mech. Eng.
Morris, Freeman L,	<i>Fredonia,</i>	Arts
Morris, Mary Augusta,	<i>Brooklyn,</i>	Letters
Morris, Windsor,	<i>Baldwinsville,</i>	Mechanic Arts
Moses, Julian A,	<i>New York City,</i>	Electrical Eng.
Mossdrop, Thomas Arrowsmith,	<i>Brooklyn,</i>	Mechanic Arts
Moyer, Clarence Lewis,	<i>Rome,</i>	Civil Eng.
Mulford, Furman Lloyd,	<i>Millville, N. J.,</i>	Agriculture
Murphy, Charles Eugene,	<i>Pike,</i>	Letters
Murphy, James Louis,	<i>Ithaca,</i>	Mechanical Eng.
Mylod, Thomas Francis,	<i>Toughkeepsie,</i>	Medical Prep.
Nathan, Benjamin,	<i>New York City,</i>	Letters

Newell, Benjamin Haff,	<i>Brooklyn,</i>	Arts
Newton, Edward Taft,	<i>Holyoke, Mass.,</i>	Civil Eng.
Newton, Frederick Edwin,	<i>Nepaug, Conn.,</i>	Civil Eng.
Newton, Jacob Charles,	<i>Hamburgh,</i>	Letters
Nichols, Charles Henry,	<i>Syracuse,</i>	Mechanic Arts
Northrop, George Henry,	<i>Cherry Creek,</i>	Arts
Northup, Clark Sutherland,	<i>Edmeston,</i>	Arts
Osborne, Loyall Allen,	<i>Newark, N. J.,</i>	Electrical Eng.
O'Shea, Margaret,	<i>Rochester,</i>	Arts
O'Shea, Michael Vincent,	<i>LeRoy,</i>	Letters
Otis, Margaret,	<i>Rochester,</i>	Arts
Palmer, Harry Crowell,	<i>East Orange, N. J.,</i>	Civil Eng.
Palmer, Henry Hiram,	<i>Ogdensburgh,</i>	Letters
Paret, John, Jr.,	<i>Bergen Point, N. J.,</i>	Mech. Arts
Park, William Osborne,	<i>Atchison, Kan.,</i>	Electrical Eng.
Paz, Louis,	<i>Santa Barbara, Honduras,</i>	Civ. Eng.
Pearson, Satie,	<i>Waterloo,</i>	Arts
Pease, Charles,	<i>Windsor Locks, Conn.,</i>	Architecture
Peck, Harry Gold,	<i>Waterville,</i>	Mechanical Eng.
Perkins, Albert Henry,	<i>Granby Center,</i>	Civil Eng.
Perkins, George Clarence,	<i>Newark,</i>	Mechanical Eng.
Perrine, Charles,	<i>Wallkill,</i>	Arts
Peters, Heber Cushing,	<i>Boston, Mass.,</i>	Mechanical Eng.
Peticolas, Sherman Goodwin,	<i>Victoria, Tex.,</i>	Electrical Eng.
Pettebone, Jacob Sharps, Jr.,	<i>Kingston, Pa.,</i>	Architecture
Potter, Fred Hogeboom, Jr.,	<i>Saginaw, Mich.,</i>	Civil Eng.
Priest, Asa Beaumont,	<i>Canandaigua,</i>	Arts
Quencer, Albert Benore,	<i>Watertown,</i>	Arts
Ramsey, Harry Nathan,	<i>Olean,</i>	Electrical Eng.
Reed, Joseph Carl,	<i>Toronto, Canada,</i>	Mechanical Eng.
Rice, Edward Carr,	<i>Fairfield,</i>	Arts
Rich, Charles Abiel,	<i>Gardner, Mass.,</i>	Mechanical Eng.
Rider, Frederick Jackson,	<i>Portsmouth, N. H.,</i>	Civil Eng.
Ringwood, Thomas Duncan,	<i>Ilion,</i>	Civil Eng.
Ripley, John Wesley,	<i>Sag Harbor,</i>	Civil Eng.
Robbins, Charles Cook,	<i>Buffalo,</i>	Electrical Eng.
Root, Francis Stanton,	<i>Port Byron,</i>	Civil Eng.
Rossmann, Clark Green,	<i>Ancram,</i>	Civil Eng.
Rowland, John Thomas, Jr.,	<i>Jersey City, N. J.,</i>	Architecture
Royce, Charles Howard,	<i>Mongaup Valley,</i>	Agriculture
Rumsey, George Augustus, Jr.,	<i>Salem, N. J.,</i>	Electrical Eng.
Russell, Howard,	<i>Albany,</i>	Science

Sawyer, Emma Louise,	<i>Ithaca,</i>	Letters
Schierer, Charles Robert,	<i>Albany,</i>	Letters
Schmidt, William Henry,	<i>New York City,</i>	Civil Eng.
Schrenk, Hermann,	<i>New York City,</i>	Agriculture
Sechrist, Cora Stalling,	<i>Canton, Ohio,</i>	Medical Prep.
Serva, Adam Amos,	<i>North Industry, Ohio,</i>	Elec. Eng.
Shaffer, Von Collins,	<i>Huntington, Ind.,</i>	Letters
Shantz, Oliver,	<i>Breslau, Canada,</i>	Architecture
Shartle, Robert Alexander,	<i>Middletown, Ohio,</i>	Mech. Arts
Shaw, Charles Gray,	<i>South Orange, N. J.,</i>	Letters
Shearer, John Sandford,	<i>Homer,</i>	Civil Eng.
Sheldon, Jeanette May,	<i>Watertown,</i>	Science
Shepard, Dwight Collins,	<i>Medina, Ohio,</i>	Electrical Eng.
Shepard, Louis Alfred,	<i>Spencer,</i>	Arts
Shields, Samuel Shedd,	<i>Girard, Ohio,</i>	Mechanical Eng.
Shriver, Joseph Alexis,	<i>Baltimore, Md.,</i>	Agriculture
Simpson, William Robert,	<i>Greenburgh,</i>	Mechanical Eng.
Smith, Clarence Grant Tangier,	<i>Brook Haven,</i>	Civil Eng.
Smith, William Allen,	<i>Nantucket, Mass.,</i>	Civil Eng.
Smith, William Griswold,	<i>Toledo, Ohio,</i>	Mechanical Eng.
Snyder, Frank Gerome,	<i>Nina,</i>	Mechanical Eng.
Soule, Grace,	<i>Savannah,</i>	Arts
Southworth, William Walter,	<i>Holley,</i>	Arts
Spalding, Mary Don,	<i>Brooklyn,</i>	Letters
Sperry, Beardsley Northrop,	<i>Syracuse,</i>	Electrical Eng.
Springer, Anton, Jr.,	<i>Rome,</i>	Electrical Eng.
Stacey, Harley James,	<i>Rural Hill,</i>	Arts
Stoddard, Charles Herbert,	<i>Glens Falls,</i>	Letters
Strong, Charles Henery, Jr.,	<i>Cleveland, Ohio,</i>	Mechanical Eng.
Strong, Frederick Finch,	<i>Ithaca,</i>	Chemistry
Sweet, Horace Brimmer,	<i>Utica,</i>	Electrical Eng.
Symonds, George Parker,	<i>Ogdensburgh,</i>	Mechanical Eng.
Taylor, Frank Sylvester,	<i>Chicopee Falls, Mass.,</i>	Letters
Taylor, William Arthur,	<i>Freeport, Ill.,</i>	Mechanic Arts
Temple, Eunice Louise,	<i>South Granville,</i>	Science
Tennant, Fred Adams,	<i>Ripley,</i>	Electrical Eng.
Townsend, Edward Candee,	<i>Ridge Road,</i>	Arts
Trax, Judson D,	<i>Oil City, Pa.,</i>	Philosophy
Truman, Frank Stedman,	<i>Owego,</i>	Arts
Tsuji, Ottokichi,	<i>Tokio, Japan,</i>	Architecture
Turnbull, Wallace Rupert,	<i>St. John, Canada,</i>	Electrical Eng.
Upp, Edwin Lee,	<i>Kelley Island, Ohio,</i>	Mech. Eng.

Van Buren, James Henry,	<i>Dunkirk,</i>	Mechanical Eng.
Van Buskirk, John Hamlin,	<i>Peoria, Ill.,</i>	Mechanical Eng.
Van Buskirk, William Tobey,	<i>Peoria, Ill.,</i>	Chemistry
Van Cleef, Henry Howell,	<i>Poughkeepsie,</i>	Mechanical Eng.
Van Horne, William Culbertson,	<i>Zanesville, Ohio,</i>	Architecture
Vedder, Catherine Dorothy,	<i>St. Johnsville,</i>	Science
Walker, George Washington,	<i>Binghamton,</i>	Science
Ward, Frederick Kendal,	<i>LeRoy,</i>	Architecture
Waring, J Hallock,	<i>Brooklyn,</i>	Medical Prep.
Warner, Charles Emory,	<i>Portland, Oreg.,</i>	Electrical Eng.
Warner, George Bradner,	<i>Wellington, Ohio,</i>	Letters
Waters, William, Jr.,	<i>Oshkosh, Wis.,</i>	Architecture
Watson, William,	<i>Cleveland, Ohio,</i>	Electrical Eng.
Weed, Robert Murray,	<i>Leavenworth, Kan.,</i>	Letters
Wessling, Albert Gustave,	<i>Cincinnati, Ohio,</i>	Mechanical Eng.
Whetstone, Walter,	<i>Eau Claire, Wis.,</i>	Mech. Eng.
White, Ernest Ingersoll,	<i>Syracuse,</i>	Letters
White, Harry George,	<i>Buffalo,</i>	Mechanical Eng.
White, Rollin Henry,	<i>Cleveland, Ohio,</i>	Mechanical Eng.
White, William Curtis,	<i>Elmira,</i>	Arts
Wigglesworth, Albert Wesley,	<i>Palmyra,</i>	Electrical Eng.
Wilcox, Arabella Elizabeth,	<i>Middletown,</i>	Philosophy
Wilcox, Glenn Avery,	<i>North Litchfield,</i>	Science
Wilder, Edward Twichell,	<i>Topeka, Kan.,</i>	Architecture
Wilkins, Isaac Chester Griswold,	<i>Whitehall,</i>	Mechanical Eng.
Williamson, Robert Baird,	<i>Port Hope, Canada,</i>	Elec. Eng.
Wilson, Emory Meyers,	<i>Washington, D. C.,</i>	Philosophy
Wing, Louis Fennimore,	<i>Buffalo,</i>	Philosophy
Witherbee, George Pease,	<i>Port Henry,</i>	Mechanical Eng.
Wolcott, Henry George,	<i>Pike,</i>	Letters
Wood, Mabel Eliza,	<i>Hamburgh,</i>	Letters
Woodbridge, Thomas Witherbee,	<i>Port Henry,</i>	Chemistry
Yates, Harry Deshields,	<i>Warrenton, Va.,</i>	Mechanical Eng.
Young, Walter Douglas,	<i>Auburn,</i>	Mechanical Eng.
Young, William,	<i>Williamsport, Pa.,</i>	Civil Eng.

OPTIONAL STUDENTS.

Andrews, Arthur Lynn,	<i>Ithaca</i>
Ault, George Washington,	<i>Havana</i>
Baker, Georgia Cary,	<i>Forestport</i>
Bisbee, Harriet Hinman,	<i>Chicago, Ill.</i>
Blackmer, Samuel Huliug,	<i>Bennington, Vt.</i>

Bray, William L,	<i>Burnside, Ill.</i>
Brown, Minor Harlan,	<i>Ithaca</i>
Clauss, George Henry, Jr.,	<i>Lyons</i>
Colnon, Aaron Joseph,	<i>Ogdensburgh</i>
Cook, DeWitt Clinton,	<i>Vienna</i>
Crum, Fred Stephen,	<i>West Candor</i>
Danser, Jason Seymour,	<i>East Clarence</i>
DeWitt, John Hull,	<i>Port Jervis</i>
DeWolfe, Anne,	<i>Vincennes, Ind.</i>
Dinmick, Fenton Holt,	<i>Savona</i>
Earll, Carrie May,	<i>Syracuse</i>
Federspiel, Mortimer Alexander,	<i>Lockport</i>
Frost, Frank Lincoln,	<i>Tiffin, Ohio</i>
Gardinier, William John,	<i>Little Falls</i>
Goodbody, Louise Anne,	<i>Gainesville</i>
Grieve, William Wilson,	<i>Perry</i>
Griffith, Ellis Albert,	<i>Pike</i>
Griswold, Morgan Billings,	<i>Whitehall</i>
Hadden, Clarence Bernard,	<i>Catawba Islands, Ohio</i>
Hall, Frederic Willis,	<i>Lockport</i>
Hatcher, Morris Chandler,	<i>Chicago, Ill.</i>
Hills, Elijah Clarence,	<i>Tampa, Fla.</i>
Jackson, Edward, Jr.,	<i>Ithaca</i>
Jones, J Kirby,	<i>East Chatham</i>
Kellogg, William Greenwood,	<i>Greenwood</i>
Ladd, Carlton Eastman,	<i>Buffalo</i>
Ladd, Elwin Albert,	<i>Central Square</i>
Lautz, Otto John,	<i>Buffalo</i>
LeBoeuf, Randall James,	<i>Albany</i>
Lewman, John,	<i>Danville, Ill.</i>
McClaghry, Mary,	<i>Ithaca</i>
McFarland, Alan Ramsay,	<i>New Haven, Conn.</i>
Macomber, Mark Allen,	<i>Perry</i>
Marsh, Alice Brundage,	<i>Ithaca</i>
Merriam, Henry Estes,	<i>Waverly</i>
Morris, Julia Louise,	<i>Brooklyn</i>
Percy, Alice,	<i>Chatham</i>
Pettit, Rufus Hiram,	<i>Baldwinsville</i>
Pond, Freeman Clarke,	<i>Crown Point</i>
Reid, Rollin Hugh,	<i>Ithaca</i>
Richardson, Frances Amelia,	<i>Hornellsville</i>
Rose, Walter David,	<i>Hornellsville</i>
Scaife, William B,	<i>Pittsburgh, Pa.</i>

Southworth, John Howard,	<i>Ithaca</i>
Spurr, Maud,	<i>South Edmeston</i>
Swearingen, Grace Fleming,	<i>Council Bluffs, Iowa</i>
Taylor, Mary Gilley,	<i>Ithaca</i>
Todd, Jessie Mae,	<i>Albion</i>
Truman, Minnie Bache,	<i>Wellsborough, Pa.</i>
Tuck, John Bennett,	<i>Flackville</i>
Tuttle, Daniel Sanford,	<i>Watkins</i>
Watson, Henry Dewitt,	<i>Cincinnati</i>
Webster, Charles Able,	<i>Warsaw</i>
Wilder, Gertrude,	<i>Flint, Mich.</i>
Yarrington, Adrian Monroe,	<i>Sayville</i>

SPECIAL STUDENTS.

Austin, Lucy Fowler,	<i>East Troy, Wis.,</i>	English
Averill, Sarah Maria,	<i>Plainfield, Conn.,</i>	Latin and French
Barnes, Jessie Kate,	<i>Syracuse,</i>	German
Bassett, Hadden Ten Eyck,	<i>New York City,</i>	Agriculture
Beadel, Edward William,	<i>Syracuse,</i>	Mechanic Arts
Blakesley, Oscar James,	<i>Hammondsport,</i>	American History
Brouson, Anna Conant,	<i>Ithaca,</i>	Modern Languages
Burnette, Frank Hiram,	<i>Phelps,</i>	Agriculture
Card, Fred Wallace,	<i>Sylvania, Pa.,</i>	Agriculture
Colby, Willis Huston,	<i>Bangor, Me.,</i>	English
Colt, Frances Helen,	<i>Baltimore, Md.,</i>	Industrial Arts
Cooke, Elizabeth,	<i>Cedar Rapids, Iowa,</i>	Nat. History
Cookingham, Miles Harris,	<i>Poughkeepsie,</i>	Agriculture
Cushing, Harry Cooke, Jr.,	<i>Newport, R. I.,</i>	Electrical Eng.
Deens, Anna Matilda,	<i>Bellowsville, Pa.,</i>	Entomology
Dickinson, David Knox,	<i>Honey Brook, Pa.,</i>	Agriculture
Earll, Effie Brown,	<i>Mottville,</i>	Agriculture
Flint, Harry Allen,	<i>Syracuse,</i>	Chemistry
Funk, Isaac George,	<i>Bloomington, Ill ,</i>	Agriculture
Gray, Marion,	<i>Greigsville,</i>	History and Political Science, and English
Green, Andrew Heatley, Jr.,	<i>Syracuse,</i>	Mechanic Arts
Hardin, Frances,	<i>Springfield, Mo.,</i>	Physics and Chemistry
Hazard, Ernest Newbold,	<i>Peace Dale, R. I.,</i>	Mechanic Arts
Huff, Slaughter William,	<i>Petersburgh, Va.,</i>	Mechanic Arts
Hunt, Arthur Lincoln,	<i>Utica,</i>	Electrical Eng.
Johnson, Harriet Park,	<i>Sing Sing,</i>	Science

Katsumata, Tosaku,	<i>Aichi, Japan,</i>	Chemistry
Livingston, Mary Buchanan,	<i>Chicago, Ill.,</i>	Natural History, Chemistry and Philosophy
Lushington, Augustus Nathaniel Hubert,	<i>Trinidad, West Indies,</i>	Med. Prep.
Marsh, Clinton Stoner,	<i>Ithaca,</i>	Greek
Marsh, Florence Lillian,	<i>Groton,</i>	German
Martin, Harry Delos,	<i>Ithaca,</i>	Agriculture
Mathews, Clarence Wentworth,	<i>Andover, Mass.,</i>	Agriculture
Matthews, Holley Porter,	<i>Millville,</i>	Agriculture
Morrissey, Katharine Virginia,	<i>State Centre, Iowa,</i>	History
Moses, Louis Lawrence,	<i>Syracuse,</i>	Mechanic Arts
Mutschlechner, Berta Josephine,	<i>Bloom, Ill.,</i>	English
Nakayama, Kinzaburo,	<i>Nagasaki, Japan,</i>	Agriculture
Newberry, John Stoughton,	<i>Detroit, Mich.,</i>	Mechanic Arts
Norton, S Claire,	<i>Cortland,</i>	French
Parkhurst, Frederick Alexander,	<i>Albany,</i>	Industrial Arts
Peirson, Albert Henry,	<i>Waterloo,</i>	Agriculture
Porter, Edna,	<i>Buffalo,</i>	Botany
Powell, Edwin C,	<i>Ghent,</i>	Agriculture
Sands, Harry Senseney,	<i>Fairmount, W. Va.,</i>	Mechanic Arts
Semple, Charles B,	<i>Louisville, Ky.,</i>	Agriculture
Shottenkirk, Elizabeth Hedden,	<i>Johnstown,</i>	English
Smith, Anna Philena,	<i>Central Village, Conn.,</i>	History
Stedman, Louis Agassiz,	<i>Rochester,</i>	Agriculture
Strong, Howard Phelps,	<i>Ithaca,</i>	Agriculture
Swett, Herbert,	<i>Chicago, Ill.,</i>	Civil Eng.
Takahashi, Otoji,	<i>Tokio, Japan,</i>	Agriculture
Thompson, Samuel Billing,	<i>Montgomery, Ala.,</i>	Mechanic Arts
Van Brocklen, Clara Louise,	<i>Amsterdam,</i>	English
Van Hoesen, Martha Elizabeth,	<i>Truxton,</i>	English
Webster, Guy,	<i>Sparrows Point, Md.,</i>	Mechanic Arts
Wells, Myrtle,	<i>Oswayo, Pa.,</i>	Latin
Wiener, Mortimer Ralph,	<i>Buffalo,</i>	Agriculture
Williams, Edward Theodore,	<i>Somerset,</i>	English
Willis, Joseph Addison,	<i>Foxling Creek, Md.,</i>	Agriculture
Wilson, Paul Carlton,	<i>Menomonie, Wis.,</i>	Agriculture
Woodward, Olivia Langdon,	<i>Buffalo,</i>	Agriculture

STUDENTS IN THE SCHOOL OF LAW.

GRADUATES.

Bailey, Stephen Dana, LL.B.,	<i>Ithaca</i>
Cornell, Edward, LL.B.,	<i>Central Valley</i>
Crandall, Myron McKee, LL.B.,	<i>Winfield</i>
Cumming, Robert Cushing, LL.B.,	<i>Fredonia</i>
Narusé, Masayasu, LL.B.,	<i>Sanuki, Japan</i>
Noble, Ossian Gregory, LL.B.,	<i>Ithaca</i>
Potter, Owen Lincoln, LL.B.,	<i>Ithaca</i>
Sweetland, Monroe Marsh, A.B., LL.B. (Union Univ.), . . .	<i>Dryden</i>
Thomas, Frank Edward, LL.B.,	<i>Utica</i>

SENIORS.

Beloate, William Edmund,	<i>Corning, Ark.</i>
Benton, Frank Ransom,	<i>Ithaca</i>
Birmingham, John,	<i>Elmira</i>
Blood, Charles Hazen, Ph.B.,	<i>Ithaca</i>
Burnett, Archie Collamer,	<i>Waterloo</i>
Campbell, Lewis Daniel,	<i>Jackson, Mich.</i>
Chapman, George David,	<i>Syracuse</i>
Coville, Charles Ralph,	<i>Central Square</i>
Davis, Harry Clayton,	<i>Medina</i>
Delauey, William Joseph,	<i>Saratoga Springs</i>
Dickens, Charles Wellington,	<i>Montreal, Canada</i>
Emory, George Meade,	<i>Syracuse</i>
Fields, G Washington,	<i>Hampton, Va.</i>
Folts, Harry Gardner,	<i>Frankfort</i>
Hamilton, Walter Jones, Ph.B. (Univ. of Michigan), . . .	<i>Cleveland, Ohio</i>
Hammond, Charles Frank,	<i>Seneca Falls</i>
Lee, Ervin Delosse,	<i>Rome</i>
McDowell, John Guy,	<i>Elmira</i>
McKnight, Charles Hamilton,	<i>Elmira</i>
Morrison, John Tracy, A.B. (Univ. of Wooster),	<i>Ithaca</i>
Murphy, Daniel Vincent,	<i>Mt. Morris</i>
Narukawa, Gitaro,	<i>Tokio, Japan</i>
O'Brien, George Washington,	<i>Baldwinsville</i>
Parsons, James A,	<i>Hornellsville</i>
Pratt, Henry Valentine,	<i>Prattsburgh</i>
Rice, John Campbell, A.B. (Illinois College),	<i>Jacksonville, Ill.</i>
Ryan, Charles Patrick,	<i>Whitehall</i>
Seager, John Lockwood,	<i>Baldwinsville</i>

Smith, Burt Alonzo,	<i>Gasport</i>
Stanton, George Dallas, Jr.,	<i>Stonington, Conn.</i>
Strong, Robert Gray,	<i>Seneca Falls</i>
Takemura, Matsugu,	<i>Tokio, Japan</i>
Thomas, Ira,	<i>Tekamah, Neb.</i>
Tuthill, Theodore R.,	<i>Moravia</i>
Wells, Charles Henry,	<i>Livingston, Wis.</i>
Wells, John Walter,	<i>Oswayo, Pa.</i>
White, Eugene McLachlan,	<i>Cortland</i>

JUNIORS.

Bagley, Frederick Goodrich,	<i>Freehold</i>
Barnes, Albert Sullard,	<i>Franklin</i>
Berry, Watson Banks,	<i>North Lawrence</i>
Chappell, John Matthew,	<i>Lockport</i>
Chinn, John Morgan,	<i>Harrodsburgh, Ky.</i>
Cole, Alvarado Brown,	<i>Denver, Col.</i>
Cooke, Walter Platt,	<i>Buffalo</i>
Corwin, Stacy Monroe,	<i>Greenport</i>
Coughlin, Daniel James,	<i>North Brookfield, Mass.</i>
Davies, Llewellyn,	<i>Neath, Pa.</i>
Doolittle, William Gregg,	<i>Washington, D. C.</i>
Dowling, Edward Charles,	<i>Brooklyn</i>
Dunn, Thomas Chace,	<i>Providence, R. I.</i>
Durland, Frederick Lovejoy, B.L.,	<i>Elmira</i>
Emerson, George Hale,	<i>Munich, Germany</i>
Fancher, Leon Livermore,	<i>Nashville</i>
Flannery, Martin Joseph,	<i>Towanda, Pa.</i>
French, Mortimer Hopkins,	<i>Troy</i>
Frenkel, Charles, B.L. (Univ. of Texas),	<i>Galveston, Tex.</i>
Galvin, Thomas Francis,	<i>Troy</i>
Gardner, Frank Gleason,	<i>Penn Yan</i>
Gibbs, Merton Stanley,	<i>Pike</i>
Gorham, John Milton,	<i>Canajoharie</i>
Gould, Ernest Grove,	<i>Seneca Falls</i>
Gridley, Willis Timothy,	<i>Mycenac</i>
Hardie, William Henry,	<i>Pulaski</i>
Hargreaves, Fred Wells, B.L.,	<i>Wappinger's Falls</i>
Hubbs, Irving G,	<i>Pulaski</i>
Johnson, Frank,	<i>Havana</i>
Johnson, Peter Schermerhorn,	<i>Bolivar</i>
Lattin, Charles Sumner,	<i>Millport</i>

Lee, Charles Kleber,	<i>Galveston, Tex.</i>
Lincoln, Spencer Francis,	<i>Naples</i>
Lewenthal, Julius William,	<i>Chicago, Ill.</i>
Mason, Dean Birchard,	<i>Frankfort-on-the-Main, Germany</i>
Munson, Harlan Lawrence,	<i>Westfield</i>
O'Malley, Edward Richard,	<i>Barker's</i>
Parker, Clarence Gray,	<i>Moravia</i>
Parshall, Charles Henry, A.B.,	<i>Cooperstown</i>
Pool, James Henry,	<i>De Ruyter</i>
Potter, Henry John,	<i>Detroit, Mich.</i>
Record, Byron Frank,	<i>Smith's Mills</i>
Rogers, William Burch,	<i>Elmira</i>
Ross, J Dolph,	<i>Ludlowville</i>
Saunders, Henry Burr,	<i>Hamburgh</i>
Scovell, Josiah Boardman,	<i>Lewiston</i>
Seymour, Carl Jay,	<i>Westfield</i>
Stephens, Fred Kingsbury,	<i>Sheshequin, Pa.</i>
Stillman, Alphonso Derwin,	<i>Pendleton, Oreg.</i>
Struble, Clinton Backus,	<i>Penn Yan</i>
Sullivan, John Francis,	<i>Hoboken, N. J.</i>
Sullivan, Thomas Allen Joseph,	<i>Fisher's</i>
Thistlethwaite, Joe Layet,	<i>Macedon</i>
White, Hubert Lawrence,	<i>Utica</i>
Whitney, Fred Moore,	<i>Le Roy</i>
Wilkinson, Albert Thomas,	<i>Lee Centre</i>
Williams, Howell Charles,	<i>Palmyra</i>
Wittenberg, Albert Mack,	<i>Elmira</i>
Wormelle, Ralph,	<i>Le Droit Park, D. C.</i>

STUDENTS IN THE SCHOOL OF PHARMACY.

SENIOR.

Wilson, Roscoe Conkling,	<i>Ithaca</i>
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JUNIORS.

Bement, Fred Claud,	<i>Ithaca</i>
Greaves, Edith Emma,	<i>Watertown</i>
King, Joseph Catlin,	<i>Ithaca</i>
Whitney, James Wheeler,	<i>Bethel, Conn.</i>

SPECIAL STUDENT.

Horton, Seymour,	<i>Ovid</i>
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SUMMARIES.

SUMMARY BY RESIDENCES.

New York,	792	West Virginia,	3
Pennsylvania,	91	Alabama,	2
Ohio,	74	Arkansas,	2
Illinois,	50	Delaware,	2
Massachusetts,	39	Minnesota,	2
New Jersey,	27	North Carolina,	2
District of Columbia,	21	South Dakota,	2
Michigan,	17	Tennessee,	2
Indiana,	15	Florida,	1
Wisconsin,	15	Idaho,	1
Connecticut,	13	Nebraska,	1
Iowa,	11	Canada,	24
Rhode Island,	11	Japan,	11
Maryland,	10	Porto Rico,	4
Missouri,	9	Germany,	3
Colorado,	7	Brazil,	2
Kansas,	7	Hawaiian Islands,	2
Virginia,	7	Nicaragua,	2
New Hampshire,	6	England,	1
Kentucky,	5	France,	1
Texas,	5	Ireland,	1
Vermont,	5	Honduras,	1
Louisiana,	4	Russia,	1
California,	3	Switzerland,	1
Maine,	3	Trinidad,	1
Oregon,	3	U. S. of Columbia,	1
South Carolina,	3		
Total,			1329

SUMMARY BY COURSES. [UNDERGRADUATES.]

	Seniors.	Juniors.	Sopho- mores.	Fresh- men.	Total.
Arts,	18	13	36	44	111
Philosophy,	10	18	18	11	57
Letters,	32	27	23	35	117
Science,	11	18	19	21	69
Agriculture,	6	8	8	6	28
Architecture,	17	9	9	27	62
Chemistry,	3	4	4	6	17
Civil Engineering,	12	30	40	52	134
Electrical Engineering,	25	30	57	60	172
Mechanical Engineering,	24	25	53	72	174
Mechanic Arts,	—	—	1	22	23
Medical Preparatory,	—	—	1	11	12
Optional,	9	10	31	60	110

SUMMARY BY CLASSES.

Graduates,	84
Seniors,	167
Juniors,	192
Sophomores,	300
Freshmen,	427
Special Students,	62
Students in the School of Law :	
Graduates,	9
Seniors,	37
Juniors,	59
Students in the School of Pharmacy,	6
	<hr/>
	1343
Names repeated,	14
	<hr/>
Total in the University,	1329

THE TWENTY-FIRST ANNUAL COMMENCEMENT.

JUNE 20, 1889.

DEGREES CONFERRED.

FIRST DEGREES.

BACHELORS OF ARTS.

Alice Minerva Atkinson, A.B.,	Vojta Frank Mashek,
John Carleton Bliss,	Anne Elizabeth Morse,
Joyeuse Lennig Fullerton, A.B.,	Charles Henry Parshall,
Earl John Kelsey,	Clifton Price,
Joseph Alexander Lindquist,	Jessie Pyle, A.B.,
Susan Caroline Strong.	

BACHELORS OF PHILOSOPHY.

Katherine Bates,	Gertrude Woodard Langley,
Howard Burhanse Besemer,	Antoinette Lawrence,
Leonard Callender Crouch,	Minerva Woodruff McChain,
John Hurd Drown,	Herbert Eugene Millholen,
Robert Ernest Esterly,	Howard Ames Oppenheim,
Frank Sidney Fielder,	Henry Clay Stanclift,
Ida Belle Hadley,	Albert Henry Washburn,
Halliette Deraxa Ellis Hall,	Mary Elousia Wright.

(IN HISTORY AND POLITICAL SCIENCE.)

Perry Post Taylor,	Frank Edward Wade.
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BACHELORS OF SCIENCE.

John Herbert Ballantine, Jr.,	Grant Sherman Hopkins,
Nathan Banks,	Lulu Eloise Hyde,
Herbert Edwin Baright,	Clarence Herbert Lee,
Charles Smith Bensley,	John Fletcher Llewellyn Morris,
Helene Boileau,	James Verner Scaife,
Ervin Sidney Ferry,	Charles Mortimer Smith,
Harry Snyder.	

(IN AGRICULTURE.)

George Howard Davison, Ph.B.,	Hoxie Wilber Smith,
Arthur Lockwood Downs,	Ed Tarbell,
Yoshiji Okami,	Bertis Rupert Wakeman.

(IN CHEMISTRY.)

Henry Jessel.

(IN ARCHITECTURE.)

Lizzie Harwood Boynton,	Albert Haywood,
Arthur Mills Curtis,	William Rae,
William Eckert Greenawalt, C.E.,	Leon Stern,

BACHELORS OF LETTERS.

Simon Louis Adler,	Claude Jones,
Ida Virginia Brett,	Frank McFarland,
Hiram Sherman Bronson,	Charles Robert Murphy,
William Franklin Clark,	John Taylor Nichols,
Fandira Crocker,	DeElton Van Camp Seeber,
Frederick Lovejoy Durland,	Charles Edward Shinaman,
William Grant Goodwin,	Adeltus Ervin Smith,
Fred Wells Hargreaves,	George Anthony Smith,
Jennie Hollister,	Charles Edward Treman,
Mila Frances Tupper.	

CIVIL ENGINEERS.

Frank Valentine Erhart Bardol,	John Fillmore Hayford,
Isaac Curtis Brewer, Jr.,	Ernest Martin Holbrook,
Charles Wakeley Collins,	Clarence Stanley Mallery,
Elmore David Cummings,	Anson Marston,
Charles Stratton Davis,	Henry Neely Ogden,
Frank Lemont Dodgson,	James Stoddard Stone,
Joseph Lynam Dowling,	Frederick Eugene Turneure.

MECHANICAL ENGINEERS.

Walter Hull Baldwin,	Philip Schuyler Lyon,
Hugh Tinnen Burt,	Thomas William Milnor,
William Wilberforce Churchill,	Oliver Mowat Mowat,
Charles Sutherland Hamner,	William Ebenezer Reed,
John Lawyer Kerr,	Albert Scheible, B.M.E.,
Albert Kingsbury,	Fred Methvin Whyte,
John Wilkinson.	

(IN ELECTRICAL ENGINEERING.)

William Kibbee Archbold,
Allen Christopher Balch,
Henry Eugene Baskervill,
Bryant Harmon Blood,
Charles Lorin Cornell,
Willis Herbert Hampton,
John Wilkinson Kirkland,
Louis Benedict Marks, B.S.,
Louis Gilbert Merritt,

Herbert Harrison Morehouse,
Lee Hamilton Parker,
Albert Layton Register,
Fred Grant Schlosser,
George Defrees Shepardson, A.M.,
George Leonard Teeple,
John Winter Upp,
Charles Reginald Van Trump,
Albert Vickers,

Frank Nehemiah Waterman.

BACHELORS OF LAW.

Charles Perry Bennett,
Walter Aloysius Byrne,
Fred Leland Clock,
Albert Julius Coe,
Edward Cornell,
Myron McKee Crandall,
Robert Cushing Cumming,
Frank Cummings,
Peter A Delaney,
Cary B Fish,
Frank Lovwell Freeman,
Charles Searing Gifford,
William Angus Hamilton,
Fred Campbell Hanford,
Keigo Harada,
Dennis P Lynch,
Louis William Marcus,
Lewis Edminster Dantree Mosher,

Masayasu Narusé,
Ossian Gregory Noble,
James Power O'Connor,
Ernest Clifford Page, Ph.B.,
James Douglas Pardee, B.S.,
Robert Swan Parsons,
Earl Silas Peet,
Owen Lincoln Potter,
William Robertson,
Charles Warner Smith,
Harry Leland Smith,
Sanford Willard Smith,
Frank Edgar Thomas,
Clark Holmes Timerman, A.B.,
James Van Benschoten,
John Benham Van Cleft,
Elton Dean Warner,
Robert Henry Wilson.

GRADUATE IN PHARMACY.

Byron Lansing Barber.

ADVANCED DEGREES.

MASTER OF ARTS.

Andrew Estrem, A.B.

MASTERS OF SCIENCE.

Isaac Martin Bridgman, B.S.,
Ida M Metcalf, Ph.B.,
Hatsuné Nakano, M.E.,

Franklin Sheble, B.S., M.E.,
Julia Warner Snow, B.S.,
Edward Daniel Wightman, B.S.

MASTER OF MECHANICAL ENGINEERING.

John Henry Barr, B.M.E., M.S.

DOCTOR OF PHILOSOPHY.

Eliza Ritchie, A.B.

PRIZES AWARDED.

The Horace K. White Prizes in Veterinary Science :

- 1st Prize, HOXIE WILBER SMITH
- 2d " HENRY CARPENTER GRAY

The Sibley Prizes in Mechanic Arts :

- 1st Prize, OLIN AMES STRANAHAN
- 2d " LOUIS LEES BENTLEY
- 3d " OLIVER MOWAT MOWAT
- 4th " WILSON FREEMAN HIGGINS
- 5th " CHARLES W H BLOOD

The Prize offered by the New Shakspere Society of London :

OLIVER FARRAR EMERSON, A.M.

The Mrs. A. S. Barnes Shakespeare Prize :

OLIVER FARRAR EMERSON, A.M.

The Eighty-Six Memorial Prize in Declamation :

FRANK HIRAM CALLAN

The Woodford Prize in Oratory :

HOWARD AMES OPPENHEIM

Prize for the best Thesis in the School of Law :

EDWARD CORNELL

CERTIFICATES AWARDED.

Certificates for the Medical Preparatory Course :

- | | |
|-----------------------|-----------------------|
| FRANK SIDNEY FIELDER, | MOSES ROSENBERG, |
| GUSTUS BRINTON HEPP, | ARTHUR ROSCOE THOMAS. |

Teachers' Certificates :

- | | |
|------------------------|-----------------|
| IDA BELLE HADLEY, | History |
| JENNIE HOLLISTER, | History |
| GRANT SHERMAN HOPKINS, | Zoology |
| EARL JOHN KELSEY, | Latin |
| ANNE ELIZABETH MORSE, | Greek and Latin |
| MILA FRANCES TUPPER, | Philosophy |
| MARY ELOUSIA WRIGHT, | History |

Certificates for Proficiency in Military Science :

JOHN HURD DROWN,	JOHN TAYLOR NICHOLS,
WILLIAM ANGUS HAMILTON,	HENRY NEELY OGDEN,
CLAUDE JONES,	CHARLES EDWARD SHINAMAN,
FRANK MCFARLAND,	LEON STERN,
CHARLES EDWARD TREMAN.	

Special Certificates :

FRANK AUGUSTUS GREEN,	Architecture
ARTHUR FREDERICK HUSSANDER,	Architecture
EDNA PORTER,	Architecture
EDWARD PALMER YORK,	Architecture

HONOR LISTS.

THESES OF DISTINGUISHED EXCELLENCE.

- SIMON LOUIS ADLER : Coins and Money of Account in the American Colonies.
- WILLIAM KIBBEE ARCHBOLD : Study of Phenomena Resulting from the Introduction of a Ball and Point into an Alternating Current Circuit.
- ALLEN CHRISTOPHER BALCH : Constant Current Regulation of Dynamos by Means of a Third Brush.
- NATHAN BANKS : Protective Resemblance and Mimicry in Spiders.
- BRYANT HARMON BLOOD : Temperature Coefficients of Ferro-Manganese-Copper Alloys.
- LIZZIE HARWOOD BOYNTON : Detail of the Ornament in the Romanesque.
- WILLIAM WILBERFORCE CHURCHILL : A Report upon the Performance of the University Steam Heating Plant.
- CHARLES LORIN CORNELL : On Alternating Currents.
- ELMORE DAVID CUMMINGS : The Smithfield Street Bridge, Pittsburgh, Pa.
- JOHN HURD DROWN : The Religion of Horace.
- ROBERT ERNEST ESTERLY : The Thirteenth Amendment to the Constitution of the United States.
- FRANK SIDNEY FIELDER : The Principles of the Romantic Drama as shown in Victor Hugo's *Hernani*.

JOHN FILLMORE HAYFORD : A Discussion of Magnetic Results at Cornell University, preceded by a General Discussion of the Phenomena of Terrestrial Magnetism.

GRANT SHERMAN HOPKINS : A Comparison of the Chimpanzee's Arm with that of Man.

HENRY JESSEL : The Decomposition of some Diaze Compounds by Stannous Chloride.

CLARENCE HERBERT LEE : The Lingula of the Brain in Man and some other Animals.

ALBERT KINGSBURY : Design of a Sixteen-Inch Engine Lathe.

JOSEPH ALEXANDER LINDQUIST : Convict Labor.

MINERVA WOODRUFF MCCHAIN : The monastery of St. Gall, and German Monastic Life in the Middle Ages.

LOUIS BENEDICT MARKS, B.S. : The Life and Efficiency of Arc-Light Carbons.

ANSON MARSTON : Study on the Variation of the Modulus of Elasticity of Steel.

VOJTA FRANK MASHEK : Bohemia in the Thirty Years' War.

ANNE ELIZABETH MORSE : The Extension of the Ionic Alphabet.

HENRY NEELEY OGDEN : Present Methods of Sewage Disposal.

CHARLES HENRY PARSHALL : Courts of Justice in England under the Anglo-Saxon and Norman Kings.

JAMES VERNER SCAIFE : On the Natural History of Copper.

GEORGE DEFREES SHEPARDSON, A.M. : Electricity from Heat.

GEORGE ANTHONY SMITH : The Fifteenth Amendment to the Constitution of the United States.

HOXIE WILBER SMITH : The Products of the Dairy Cow as affected by her Food, and Butter as a Food for Man.

HARRY SNYDER : A Chemical Examination of some of the Tea offered for Sale in the American Markets.

PERRY POST TAYLOR : The Virginia and Kentucky Resolutions of 1798-1799.

GEORGE LEONARD TEEPLE : Study of Phenomena Resulting from the Introduction of a Ball and Point into an Alternating Current Circuit.

FREDERICK EUGENE TURNEAURE : Study on the Variation of the Modulus of Elasticity of Steel.

BERTIS RUPERT WAKEMAN : A Study of the Relative Values of Seeds of Different Weights and Colors.

FRANK NEHEMIAH WATERMAN : Constant Current Regulation of Dynamos by means of a Third Brush.

IN THE SCHOOL OF LAW.

ALBERT JULIUS COE : Legal Property in Intellectual Conceptions.

EDWARD CORNELL : Consideration.

ROBERT CUSHING CUMMING : The Issue of Fictitiously Paid up Stock Certificates.

FRANK CUMMINGS : Liability of a Master to his Servant for Damages suffered through the Negligence of another Servant.

PETER A DELANEY : The Jury System.

CHARLES SEARING GIFFORD : An Historical Sketch of the Law of English Evidence.

KEIGO HARADA : The Treaty between Japan and the United States.

WILLIAM ANGUS HAMILTON : The Constitutionality of Prohibitory Liquor Legislation in the United States.

CHARLES WARNER SMITH : Subrogation of Junior Incumbrances.

SANFORD WILLARD SMITH : Fraudulent Conveyances.

ELTON DEAN WARNER : Impeaching a General Assignment for Defects upon its Face.

SPECIAL MENTION.

(Awarded for special study in particular lines during the last two years of the course.)

KATHERINE BATES, English Language and Literature

CHARLES SMITH BENSLEY, Chemistry

HELENE BOILEAU, Chemistry

IDA BELLE HADLEY, History

JENNIE HOLLISTER, History

GRANT SHERMAN HOPKINS, Zoology

EARL JOHN KELSEY, Latin

ANTOINETTE LAWRENCE, Latin

ANNE ELIZABETH MORSE, Greek and Latin

DEELTON VAN CAMP SEEGER, History

HARRY SNYDER, Chemistry

CHARLES EDWARD SHINAMAN, History

PERRY POST TAYLOR,	History and Political Science
MILA FRANCES TUPPER,	Philosophy
FRANK EDWARD WADE,	History
ALBERT HENRY WASHBURN,	History
MARY ELOUSIA WRIGHT,	History

THESES OF CANDIDATES FOR ADVANCED DEGREES.

- JOHN HENRY BARR, B.M.E., M.S. : The Prevention of Smoke.
- ISAAC MARTIN BRIDGMAN, B.S. : The Growth of the Royal Prerogative under George the Third.
- ANDREW ESTREM, A.B. : The Relations of the United States and Great Britain during the Civil War 1861-5.
- IDA M METCALF, Ph.B. : The Illumination of Surfaces on the Theory of Reflected and Refracted Light.
- HATSUNÉ NAKANO, M.E. : The Efficiency of Arc Lamps.
- ELIZA RITCHIE, A.B. : The Problem of Personality.
- FRANKLIN SHEBLE, B.S., M.E. : Exploration of the Field of the Alternating Dynamos.
- JULIA WARNER SNOW, B.S. : Sphaerella Fragariae, a Fungus Disease of the Strawberry Plant.
- EDWARD DANIEL WIGHTMAN, B.S. : A Study of Certain Periodic Functions by their Addition-Formulæ.

ASSOCIATE ALUMNI.

By the charter of the University the graduates are entitled to elect one of the Board of Trustees each year. At a meeting called for the purpose, and held on Wednesday, June 26, 1872, the day preceding the Annual Commencement, representatives of all the classes that had graduated being present, the following organization was effected :

ARTICLES OF ASSOCIATION AS ADOPTED JUNE 26, 1872, AND AFTERWARDS AMENDED.

I. The Alumni of Cornell University hereby constitute themselves an association to be known by the name of the Associate Alumni of Cornell University.

II. The object of this association is declared to be to promote in every proper way the interest of the University, and to foster among the graduates a sentiment of regard for each other, and attachment to their Alma Mater.

III. All graduates of this University, who, by their diplomas, are entitled electors of the University, are members of this association. All members of the Faculty of this University are honorary members of this association.

IV. The officers of this association shall consist (1) of a president ; (2) vice-presidents to be elected as follows : one vice-president from the classes numbered from '69 to '74 inclusive, and one from each succeeding group of five classes, provided that when the last group shall number three classes it shall thereafter be entitled to a vice-president ; (3) a corresponding secretary ; (4) a recording secretary ; (5) a treasurer.

V. This association shall meet annually on the day preceding Commencement, at ten o'clock in the forenoon.

VI. Any proposition to alter or amend these articles of association must be made at a regular meeting and have the assent of two-thirds of the members present.

By an amendment to the charter of the University, passed May 15, 1883, permitting members of the Alumni, not present in person, to vote

by written ballot at the annual election of Trustees, the Treasurer is required to keep "a registry of the signature and address of each alumnus." It is therefore important that each alumnus keep the Treasurer informed of his full address (in cities, street and number) and notify him immediately of any change.

The following ordinance was adopted by the Board of Trustees, October 24, 1888 : All graduates of the first degree, in any of the departments of Cornell University, and all persons who have been admitted to any degree higher than the first in said University shall be alumni of said University, and as such be entitled to vote for alumni trustees under and in pursuance of the provisions contained in Chapter 763 of the Laws of New York passed in 1867.

OFFICERS FOR 1888-89.

President—W. C. Kerr, '79.

Vice-Presidents—G. B. Turner, '73 ; C. D. Marx, '78 ; E. F. Carlson, '82 ; C. H. Hull, '86.

Corresponding Secretary—W. T. Hewett, '79.

Recording Secretary—G. W. Harris, '73, Ithaca.

Treasurer—H. M. Hibbard, '74, Ithaca.

Executive Committee—W. C. Kerr, W. T. Hewett, G. W. Harris, H. M. Hibbard, *ex-officio* ; S. Smith, '73 ; F. J. Whiton, '80.

Auditing Committee—D. F. Van Vleet, '77 ; C. S. Wagner, '78 ; A. B. Comstock, '86.

OFFICERS OF LOCAL ALUMNI ASSOCIATIONS.*

CENTRAL NEW YORK ASSOCIATION.

President—Hamilton S. White.

Vice-President—S. F. Belknap.

Secretary—C. C. Chase.

Treasurer—W. K. Pierce.

ITHACA ASSOCIATION.

President—C. E. Van Cleef.

Vice-President—William R. Dudley.

Secretary—D. F. Van Vleet.

Treasurer—Wm. Hazlitt Smith.

Members of Executive Committee—Above named officers, *ex officio* ; G. W. Harris, J. S. Waterman.

*As last reported.

MICHIGAN ASSOCIATION.

President—Chas. S. Cobb, '77, Eaton Rapids, Mich.

Secretary—Delos D. Jayne, '81, Orchard Lake, Mich.

MINNESOTA ASSOCIATION.

President—F. H. Remington, '71.

Vice-President—D. J. Callahan, '73.

Secretary—Jas. A. Haight, '79, Gilfillan Block, St. Paul.

Treasurer—J. H. Skinner, '81.

Directors—A. B. Coe, '82 ; I. W. Kelley, '80 ; C. W. Ames, '78 ; G. F. Gifford, '80.

NEBRASKA ASSOCIATION.

President—A. C. Wakeley, '79.

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Secretary—Frank Irvine, '80, Omaha.

Treasurer—C. L. Saunders, '80.

NEW ENGLAND ASSOCIATION.

President—Mary E. Roberts, '80.

Vice-President—Howard P. Bellows, '75.

Secretary—Joseph Ness, '78, 147 Summer street, Boston, Mass.

Executive Committee—Alla W. Foster, '77, and C. B. Wheelock, '76.

NEW YORK ASSOCIATION.

President—John D. Warner, '72.

Vice-Presidents—G. P. Serviss, '72 ; John W. Boothby, '73 ; Asa A. Alling, '83.

Secretary—Chas. H. Johnson, '80, Temple Court, New York City.

Treasurer—Otto M. Eidlitz, '81.

Executive Committee—Dudley R. Horton, '75 ; President, Secretary and Treasurer, *ex officio* ; Chas. D. Baker, '73 ; Merritt E. Haviland, '77 ; Frank A. Wright, '80 ; Ira A. Place, '81 ; John T. Sackett, '86.

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President—F. L. Brown, '82.

Vice-Presidents—J. L. Stone, '74 ; T. J. McConnon, '72 ; R. Taft, '71.

Recording Secretary—R. H. Patterson, '83.

Corresponding Secretary and Treasurer—H. M. Streeter, '82, Equity Building, Scranton, Pa.

Executive Committee—R. B. Howland, '72 ; J. L. Stone, '74 ; G. B. Davidson, '84.

NORTHWESTERN ASSOCIATION.

President—T. Worthington, Jr., '73.

Secretary—Hobart C. Taylor, '86, Chicago, Ill.

Treasurer—George D. Bills, '74.

Registrar—D. F. Flanuary, '76, 94 Illinois Bank Building, Chicago.

PHILADELPHIA ASSOCIATION.

President—Charles Barclay, '76.

Vice-Presidents—A. J. Loos, '77 ; M. R. Conable, '76.

Corresponding Secretary—J. L. Knapp, '80.

Recording Secretary—G. B. Davidson, '84.

Treasurer—J. M. Dodge, '72.

Executive Committee—M. M. Garver, '76 ; E. M. Howard, '73 ; W. C. Russell, Jr., '80 ; W. H. Smith.

SOUTHWESTERN ASSOCIATION.

President—Leverett G. Boies, Kinsley, Kan.

Vice-Presidents—Frank W. Cooper, Topeka, Kan. ; Geo. B. Richards, Kansas City, Mo.

Secretary—Ed. A. Wagener, Topeka, Kan.

Treasurer—Win. S. Elliott, Topeka, Kan.

Registrar—Eugene L. Hopkins, Topeka, Kan.

WASHINGTON ASSOCIATION.

President—Wallace Greene, '74.

Vice-Presidents—Alex T. Cowell, '82 ; C. D. White, '86 ; Geo. H. Wright, '82.

Secretary and Treasurer—Percy E. Clarke, '81, Room 249, U. S. Patent Office.

Members of Executive Committee—Above named officers, *ex officio*.

WESTERN NEW YORK ASSOCIATION.

President—C. C. Wood, '74.

Vice-President—Eugene Cary, '78.

Secretary—A. C. Good, '85, 18 W. Swan St., Buffalo.

Treasurer—W. B. Hoyt, '80.

Executive Committee—James F. Gluck, '74 ; W. C. Ely, '78 ; S. A. Simons, '79 ; D. J. Matteson, '80 ; H. H. Seymour, '71.

Other associations have not reported their officers.

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