

## REGISTER

1891-92

#### KEY.

- 1. Protestant Episcopal Chapel.
- 2. Inlet Mission Chapel.
- 3. Depot,-Ithaca Division, Lehigh Valley Railroad (Geneva, Ithaca and Sayre Railroad).
- 3-24. Electric Street Railway.
- 4. Depot,-Auburn and Ithaca and Cayuga Branches, Lehigh Valley Railroad.
- 5. Depot,-Ithaca Branch, Delaware, Lackawanna and Western Railroad.
- 6. African Methodist Episcopal Zion Church.
- 7. Central Public School.
- 8. Roman Catholic School.
- 9. State Street Methodist Episcopal Church.
- 10. Congregational Church.
- 11. Roman Catholic Church.
- 12. Clinton House.
- 13. Post Office.
- 14. City High School.
- 15. St. John's Protestant Episcopal Ch.
- 16. Presbyterian Church.
- 17. Court House.
- 18. County Jail.
- 19. First Baptist Church.
- 20. Young Men's Christian Associat'n.
- 21. Police Station.
- 22. Tompkins House.
- 23. Cornell Public Library.
- 24. Ithaca Hotel.
- 25. South Hill Public School.
- 26. East Hill Public School.
- 27. Unitarian Church.
- 28. First Methodist Episcopal Church.
- 29. Free Methodist Church.
- 30. Tabernacle Baptist Church.
- 31. Fall Creek Public School.
- 32. Residence of Ezra Cornell.
- 33. Residence of Frank C. Cornell.
- 34. Chi Phi Lodge.
- 35. Delta Upsilon Lodge.
- 36. Prof. Simon H. Gage.
- 37. Prof. Edward L. Nichols.
- 38. Sigma Phi Lodge.
- 39. Psi Upsilon Lodge.
- 40. Cascadilla Place.
- 41. The Cascadilla School.
- 42. Kappa Alpha Lodge.
- 43. Armory and Gymnasium.
- 44. Prof. Albert N. Prentiss.
- 45. Prof. John L. Morris.
- 46. Prof. James E. Oliver.
- 47. Prof. Thomas F. Crane.
- 48. Prof. George C. Caldwell.
- 49. The University Library.
- 50. Morrill Hall.
- 51. McGraw Hall.



### KEY.

- 52. White Hall.
- 53. Franklin Hall.
- 54. Morse Hall.
- 55. McGraw-Fiske Mansion.
- 56. Franklin Hall Annex.
- 57. The Sibley College.
- 58. Dynamo Laboratory, Engine Room and Machine Shop.
- 59. Blacksmith Shop and Foundry.
- 60. Wood-working Shop and Testing
- Laboratory.
- 61. Magnetic Laboratory.
- gineering and School of Archi-
- tecture.
- 63. Astronomical Observatory.
- 64. College of Agriculture.
- 65. School of Law.
- 66. Prof. Charles Babcock.
- 67. The Sage Chapel.
  - 68 Barnes Hall-Cornell University Christian Association.
  - 69. The Sage College.
  - 70. The Sage Conservatories.
  - 71. Prof. J. Laurence Laughlin.
  - 72. Prof. Edward Hitchcock.
  - 73. Prof. Brainard G. Smith.
  - 74. Prof. Harry B. Hutchins.
  - 75. Forcing House of the University Gardens.
  - 76. The Garden Barn, or South Barn.
  - 77 Prof. Henry S. Williams.
  - 78. Prof. Liberty H. Bailey.
  - 79. Prof. Moses C. Tyler.
  - 80. Prof. William G. Hale.
  - 81. Prof. Jacob G. Schurman.
  - 82. Prof. Herbert Tuttle.
  - 83. Prof. Estevan A. Fuertes.
  - 84. Prof. Robert H. Tnurston.
  - 85. Prof. Horatio S. White.
  - 86. Ex-President Andrew D. White,
  - 87. Prof. Spencer B. Newbury.
  - 88. Prof. Waterman T. Hewett.
  - 89. Prof. James Law.
  - 90. Prof. Lucien A. Wait.
  - 91. Prof. Issac P. Roberts.
  - 92. Prof. Benjamin I. Wheeler.
  - 93. President Charles Kendall Adams.
  - 94. Prof. John H. Comstock.
  - 95. Cornell Farm House.
  - 96. Insectary.
  - 97. Prof. James M. Hart.
  - 98. Prof. Henry H. Wing.
  - 99. The Farm Supt's House.
  - 100. The Dairyman's House. 101. The Dairy House.

  - 102. The University Farm Barn, or North Barn.
  - 103. Depot-Elmira, Cortland & North . ern Railroad.





## THE

# CORNELL UNIVERSITY

## REGISTER

## 1891-92

"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

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## THE UNIVERSITY CALENDAR.

### 1891–92.

#### FALL TERM-1891.

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Sept.	23	Wednesday	Entrance Examinations begin.
Carl of		Mondau	REGISTRATION of new Students in the School
Sept.	Sept. 28 Monday		of Law, and of matriculated Students.
Sept.	29	Tuesday	Last day of REGISTRATION of matriculated Students. University Scholarship Exam- inations begin.
Sont on Wedne		Wednesday	MATRICULATION of new Students, (except
Sept	sept. 30 weunesday		Students in the School of Law).
Oct.	I	Thursday	Instruction begins.
Nov. Nov.	26 30	} ThuMon.	Thanksgiving Recess, from the evening of Wednesday, Nov. 25, to the morning of Tuesday, Dec. 1.
Dec.	I	Tuesday	Latest date for announcing subjects of Theses for advanced degrees.
Dec.	16	Wednesday	Term Examinations begin.
Dec.	23	Wednesday	Term ends.

#### WINTER TERM-1892.

4-5 Mon.-Tues. **REGISTRATION** for the Term. Jan. Instruction begins. 6 Wednesday Jan. FOUNDER'S DAY. 11 Monday Jan. Latest date for announcing Subjects of The-Jan. 15 Friday ses for baccalaureate degrees. March 18 Friday Term Examinations begin. March 25 Friday Term ends.

#### THE CAL'ENDAR.

## SPRING TERM—1892.

April	4-5	MonTues.	<b>REGISTRATION</b> for the Term.
April	6	Wednesday	Instruction begins.
April	II	Monday	{Latest date for presenting Woodford Prize Orations.
May	2	Monday	{Latest date for presenting Theses for ad- vanced degrees.
May	9	Monday	{Latest date for presenting Commencement Theses.
May	14	Saturday	{Latest date for receiving applications for Fellowships.
May	20	Friday	Eighty-Six Memorial Prize Competition.
May	30	Monday	Decoration Day.
June	ł	Wednesday	Latest date for receiving applications for Teachers' Certificates, for Special Mention, for degrees in History and Political Science and in Natural History, and for Medical Preparatory Certificates.
Juue	3	Friday	Term Examinations begin.
June	10	Friday	{ Term Examinations end. { Entrance Examinations begin.
June	I 2	Sunday	Baccalaureate Sermon.
June	14	Tuesday	Class Day.
June	15	Wednesday	Alumni Day. Annual Meeting of the Trustees. Woodford Prize Competition.
June	16	Thursday	Twenty-fourth Annual Commencement.
			Summer Course.
June	22	Wednesday	Summer course in Entomology and Inverte- brate Zoology begins.
Aug.	31	Wednesday	Summer course ends.

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FALL TERM—1892.

Sept.	21	Wednesday	Entrance Examinations begin.
Sept.	26	Monday	{ REGISTRATION of new Students in the Schoolof Law, and of matriculated Students.
Sept.	27	Tuesday	Last day of REGISTRATION of matriculated Students. Matriculation of new Students iu technical courses. University Scholar- ship Examinations begin.
Sept.	28	Wednesday	MATRICULATION of new Students in gen- eral courses (except Students in the School of Law).
Sept.	29	Thursday	Instruction begins.
Nov. Nov.	24 28 }	ThuMon.	Thanksgiving Recess, from the evening of Wednesday, Nov. 23, to the morning of Tuesday. Nov. 29.
Dec.	I	Thursday	Latest date for announcing subjects of Theses for advanced degrees.
Dec.	14	Wednesday	Term Examinations begin.
Dec.	21	Wednesday	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* 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 Director of the College of Civil Engineering is in Lincoln Hall, first floor, south entrance.

The office of the Director of the College of Agriculture is No. 20 Morrill Hall.

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 No. 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 ninc hundred aud 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 script. 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 iu 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.

#### FACULTIES.

The Faculties consist of professors, acting professors, associate professors, and assistant professors, and are aided by non-resident professors and lecturers, and by instructors, assistants, and examiners.

#### 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 rerequired 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 condi-

tions 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) was 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. In the year 1890-91 provision was also made for seven additional fellowships and fifteen additional scholarships. Details concerning these fellowships and scholarships, and the manner in which they are awarded, will be found in their appropriate places, by referring to the index.

#### 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 are actually 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.

Iu order to give Sage College more of the safeguards of a wellordered home, aud to bring its inmates directly under an influence akin to that of the family, the trustees, in the year 1884-85, 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 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 Hygiene and 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 ground, to be called Percy Field after the son of one of the donors, has recently been provided and equipped for out-of-door sports by the joint gifts of Mr. J. J. Hagerman and Mr. W. H. Sage. The field has an area of nearly ten acres, including a quarter-mile cinder track and a grand stand seating about twelve hundred persons, and is arranged for football, baseball, tennis, and general athletics.

#### 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 the 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 demoninatiou, 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 demoninations.

#### 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, a carefully selected library, and a well equipped reading-room of religious and secular journals. A committee of this Association is in attendance at Barnes 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 St. Andrew's Brotherhood, 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, the Fortuightly Club, and the Ethical Culture Society, are organizations of professors and students for mutual assistance and improvement in the several lines indicated by the names of the associations. These all hold regular meetings, and are guided and directed in their work by members of the Faculty, whenever such as sistance is practicable and desirable.

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## BOARD OF TRUSTEES.

The Hon. Alonzo B. Cornell,	New York City.
The PRESIDENT of the University,	Ex officio.
His Excellency the GOVERNOR of New York,	<b>« «</b>
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 W. SAGE, Ithaca. DAVID S. JORDAN, LL.D., Bloomington, Ind. The Hon. SAMUEL D. HALLIDAY, Ithaca. WILLIAM H. SAGE, A.B., Ithaca. DANIEL F. SALMON, D.V.M., Washington, D. C.	Term of office expires in 1892. Term of office expires in
Gen. Alfred C. Barnes, Brooklyn.	] 1893.
The Hon. STEWART L. WOODFORD, LL.D., New York. HIRAM W. SIBLEY, Esq., Rochester. FRANK H. HISCOCK, A.B.,	Term of office expires in 1894.

#### BOARD OF TRUSTEES.

#### OFFICERS OF THE BOARD.

HENRY W. SAGE,	٠	•	•	•	٠	•	•	•	•	•	•	•	•	•	٠	. Chairman
WILLIAM R. HUMPHREY,	•	•	•	•	٠	٠	•	٠	٠	٠	٠	•	•	•	•	. Secretary
EMMONS L. WILLIAMS, .	•	•	•		•	•	•	•	•	•	•	•		•	٠	. 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,	WILLIAM H. SAGE,
SAMUEL D. HALLIDAY,	ROBERT H. TREMAN,

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THE HON. GARDINER G. HUBBARD: South America,

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PROFESSOR ALBERT B. HART : The Causes for the Military Failure of the South in the Civil War, <i>Cambridge, Mass.</i>
FREDERICK W. HOLLS : Compulsory Voting, Yonkers
ALEXANDER GRAHAM BELL : Visible Speech Elucidated, Washington
DR. FRANK B. TARBELL: The Grave Monuments of Ancient Athens, Cambridge, Mass.
PROFESSOR RICHARD G. MOULTON: University Extension, Oxford, England
JAMES M. ALLEN: The Strength and Structure of Boilers, Hartford, Conn.
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L. W. MILLER : Art from an Educational Standpoint,

- PROFESSOR J. S. STERRETT: Asia Minor as a Field for Archæological Explorations, *Austin, Texas*
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#### 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 use 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, aud arboriculture.

#### BUILDINGS.

THE UNIVERSITY LIBRARY BUILDING.—This is the generous gift of the Hon. Henry W. Sage, and is situated at the south-west corner of the quadrangle. It is of stone, and the construction is fire-proof throughout. It is lighted by electricity, and heated by steam supplied from the central heating station. A thorough system of ventilation is also provided for. The extreme dimensions of the building are one hundred and seventy feet by one hundred and fifty-three feet. The general outlines are somewhat in the form of a cross, the book stacks occupying the southern and western arms, the reading-rooms the eastern. In the tower at the southeast corner of the building

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are placed the chime of bells presented at the opening of the University by Mrs. Jennie McGraw-Fiske, and the University clock. The basement beneath the reading-room is occupied by the Museum of Classical Archæology. The building provides storage for at least 475,000 volumes, or nearly five times the present extent of the library, with facilities for almost indefinite extension of the book stacks in the future. It contains also a number of seminary rooms, which are described in connection with the University Library.

MORRILI, 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.

MCGRAW HALL.—This building is the gift of the late John McGraw, of Ithaca. 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, fiftysix wide, and nineteen in height; and another above it of the same length and breadth, but nearly forty feet high, and containing two galleries with an average height of twelve feet each. The first floor of the main building is occupied by the museums of geology, economic geology, mineralogy, paleontology, invertebrate zoology, and the Newcomb couchological collection. The second floor of the main building is occupied by the museum of physiology, comparative anatomy, and vertebrate zoology.

The whole of the north wing is devoted to the use of the department of physiology and vertebrate zoology. The south wing is occupied as follows: In the basement, the east room by the museum and laboratory of department of veterinary science; the west room by the laboratory of blowpipe analysis and introductory mineralogy; the main floor by the geological lecture-room, and lower laboratory; the second floor by the two laboratories of paleontology and mineralogy, and economic geology. 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 regulating 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 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 two stories in height. The main building contains on the first floor two large museums, 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, the drawing rooms of the departments of electrical engineering and of industrial drawing and art, and the lecture-rooms of the professors of electrical and mechanical engineering. The third floor is occupied by the drawing-rooms for the younger classes in freehand drawing aud 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. The forge and the foundry are in a separate structure, built in 1890. An additional building, one hundred and fifty feet by forty in dimensions, and two stories in height, has its second floor devoted to 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. The tools and machinery are described fully under the head of Sibley College Collections. At the bottom of Fall Creek gorge is-

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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. The large engine and dynamo room, containing all the engines and dynamos employed in lighting the University, is adjacent to the shops, and beside the boiler-room in which are placed the 60 > H. P. boilers.

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 aud medallions of distinguished scientists. The building contains, in addition to the amply-equipped laboratories of the department of physics, two large lecture rooms, seating about one hundred and seventy students each. A fire-proof, one-story annex, built of brick, is situated behind Franklin Hall. It contains, in addition to the assay laboratory of the chemical department, a large room devoted to applied electricity, also the instrument making and repair shops and the storage-battery room of the department of physics.

MORSE HALL.—This building, for the exclusive use of the chemical department, stands west of Franklin Hall. It is built of brick, with slow burning construction throughout, and is therefore nearly fireproof. It is one hundred and eighty fect long, and seventy feet wide, with high basement and two stories, and contains forty rooms, besides a large sub-basement. For the internal arrangements see the description of the chemical laboratory.

LAW SCHOOL BUILDING. — For the purposes of the School of Law accommodations have thus far been provided in Morrill Hall. These consist of lecture-rooms, offices for the several professors, and rooms for the Law Library. But the growth of the School has been such that a separate building, to be devoted exclusively to its use, has become necessary. The Board of Trustees have made a liberal appropriation for this purpose. It is expected that the building will be finished and ready for occupancy during the coming year. It is to be built of Cleveland sandstone, is to contain three large lecture-rooms, offices, consultation and recitation-rooms, a library and reading room capable of accommodating 25,000 volumes and 250 readers, and is to be complete in all its appointments.

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. The botanical laboratory contained in the building is elsewhere described.

THE SAGE CHAPEL.—This chapel, the gift of the Hon. Henry W Sage, aud 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 and 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 iu white marble, by Franklin Simmons, of Rome. A vault undemeath 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. The main portion is of brick, on 2 hundred and fifty feet long, sixty feet wide, and fifty feet high. The Annex, joining the main hall on the south, is a three-storied building, having an area of seventy-four by

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eighty feet. The main building, 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, aud gives a clear space for floor room in the gymnasium of one hundre 1 and fifty by sixty feet. The Annex contains the offices of the Department of Physical Culture, examination rooms, faculty dressingroom, bath-rooms, swimming bath, lavatory, closets, general repair room, base ball batting cage, crew practice room, and dressing-rooms which contain locker accommodations for one thousand 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. This building 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 accommo lations 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 assemblyrooms 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 second floor of Morrill Hall and four rooms in the basement. It contains, I. THE RAU MODELS, being one hundred and eighty-seven models of plows made at the Royal Agricultural College of Würtemberg, 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 aud 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 Edinburg, 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 subject 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 MUSEUM OF CLASSICAL ARCHÆOLOGY occupying the basement floor of the Library building is composed chiefly of casts representing the history of Greek and Roman sculptural art, but is also supplied with various plans, models, reconstructions, fac-similes of coins, etc. The nucleus of the collection was purchased with a fund of seven thousand dollars donated for the purpose by the Hon. Henry W Sage. The instruction in archæology and the history of art is given in part in the museum itself.

THE ARCHITECTURAL MUSEUM contains over three hundred and

fifty models, in wood, stone, and plaster, illustrating the various constructive forms of the different styles, and one hundred and fifty of ornamental forms, sculpture, leaf-work, mouldings, etc., in stone, plaster and terra cotta, besides numerous specimens of tiles, mosaic work, marbles, granites, and other materials used for decorative and constructive purposes. The collection of architectural photographs numbers about fifteen hundred, many of which are of large size. THE BOTANICAL MUSEUM.—The means of illustrating the instruc-

tion 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 Kny; a lime lantern with five hundred views, illustrating different departments of botany; twenty compound and dissecting microscopes; a collection of fruits, 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 MUSEUM OF CHEMISTRY AND PHARMACY occupies a large room, specially designed for this purpose, on the second floor of Morse Hall. In this room are displayed, I. THE APPLIED CHEMIS-TRY COLLECTION, which includes a full series of typical organic compounds, and also a great number of specimens illustrating the leading chemical industries, such as the manufacture of the various acids, alkalies and salts, pigments, glass, pottery, soap and stearine, the chemical processes of bleaching aud dyeing, photography, etc. 2. THE COLLECTION OF PHARMACY AND MATERIA MEDICA, consisting of specimens of dried medicinal plants, drugs, active principles and pharmaceutical apparatus. 3. THE METALLURGICAL COLLECTION, which includes the typical fuels, ores, slags and finished products necessary to illustrate the processes of extraction of the useful metals.

In the arrangement, display, and labeling of these collections especial pains have been taken, in order that the significance of each specimen may be evident to all vistors to the museum.

THE MUSEUM OF CONCHOLOGY, one of the most complete in existence, is on the first 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 COLLEGE OF CIVIL ENGINEERING contain the following collections: I. The MURET collection of models iu descriptive geometry and stoue cutting. 2. The DE LAGRAVE 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 college 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 rail-

road bridge of twenty-five feet span, the scale being one-fourth of the natural size, 6. The DIGEON collection of movable dams and working models in hydraulic engineering. 7. Working models of water-wheels, turbines, and other water engines. 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 Troughtou 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, a large zenith telescope of improved construction for latitude work, 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, two new base line bars designed and constructed in the laboratories of this college, 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, eliptographs, arithmometers, computing machines, altazimuths, sextants, hypsometers, and self-recording meteorological instruments of all descriptions. 12. A very complete set of all appliances and instruments for making reconnaissances in topographical, hydrographical and mining surveys, iu addition to the instrumental equipment which is common to the museums, and the ten laboratories of this College, which are described elsewhere.

THE MUSEUM OF ENTOMOLOGY AND GENERAL INVERTEBRATE The entomological cabinet contains, in addition to many ZOOLOGY. exotic insects, specimeus of a large proportion of the more common species of the northeastern United States. The collection includes many sets of specimens illustrative of the metamorphoses and habits of insects. The general collection of invertebrates comprises a wellselected 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 manufacturing, and collections exhibiting processes and methods, new inventions, forms of motors, and other collections of value in the courses of technical instruction. In the west museum are placed a full Reuleaux collection of models of kinematic 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 parts of machinery, the construction of steam engines and other machines. In the east museum are placed a large number of samples of machines constructed to illustrate special forms and methods of manufacture. Among these are several beautifully finished samples of steam-pumps "sectioned" to exhibit their internal construction, steam-boiler injectors similarly divided, governors for motors, devices for lubrication, and apparatus for the transmission of power, both by shafting and by wire-rope transmission. The lecturerooms of Sibley College, each being devoted to a specified line of instruction and list of subjects, are each supplied with a collection of materials, drawings, models and machines, especially adapted to the wants of the lecturer. Thus, the lecture-room of the instructor in Materials of Engineering contains a large collection of the metals in common use in the arts, with samples of ores and of special products, exhibiting processes of reduction and manufacture. Among these are 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 by the Committee on Alloys of the U.S. Board appointed 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 of instruction in mechanical engineering is illustrated by a fine collection of steamengines of our own make and 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 also include a large variety of studies of natural and conventional forms, shaded and in outline, geometrical models, casts aud 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 one hundred and fifty students of the first year, in woodworking; in the foundry and forge, all needed tools for a class of over one hundred in the second year; in the machine shop, machine tools from the best builders, and others made in the University shops, and a great variety of special and hand tools, which are sufficient to work a class of one hundred in the third year, and sixty or eighty seniors and graduate students.

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, dynamometers, 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. These collections are elsewhere described.

THE MISEUM OF GEOLOGY, PALEONTOLOGY AND MINERALOGY 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. 6. THE SILLI-MAN COLLECTION of minerals accumulated by the late Benjamin Silliman, Jr., and illustrating the rarer and commoner mineral species. Notable additions have been made to it from year to year by purchase and donation. 7. The collections in economic geology are intended to illustrate the ores and useful minerals of the United States, and although of recent date already begin to represent in detail the resources of the country.

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

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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 struct. ures, 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 plgs. 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 VERTEBRATE ZOOLCGY .- The collections are as follows : 1. About thirty-seven hundred examples of about twenty-five 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 fish 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, oruithorhynchus, echidna, jacana, sphenodon, monitor, heloderma, crocodile, alligator, draco, axolotl, proteus, megalobatrachus, siren, amphiuma, pipa, ceratodus, protopterus, flyingfish, polypterus, calamoichthys, thalassophryne, chimæra, cestracion, myxine, bdellostoma, and branchiostoma. 2. 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, cryptobrazchus, necturus, cæcilia, and amia. 3. More than one thousand preparations of the brain. 4. Large series of dissections of the lamprey, necturus, and cat. 5. 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. 6. About one thousand microscopical preparations, chiefly from the cat, frog, and necturus. 7. More than eleven hundred mounted skins, including orang, tiger, cheetah, otter, moose, trangulus, camel, beaver, hyrax, centetes, galeopithecus, 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 maché models by Auzoux mentioned above, there are several Bock-Steger models in plaster, a Buechi model of the brain, and wax models by Weisker and Ziegler, as follows ; the brain cavities, the pelvis, the diaphragm, the development of the frog, trout, branchiostoma, and man. 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 the neighborhood, all venomous forms, and preparations illustrating the resemblances and differences between man and apes.

#### LABORATORIES.

THE ANATOMICAL LABORATORIES are in the north wing of Mc-Graw Hall. 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 micro-photographic apparatus, and apparatus for determining the results of aquatic or combined aquatic and aerial respination. 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 supplied with microscopes and other apparatus necessary for study and investigation in the several departments of botanical science. Connected with the laboratory are the green-houses, which at all seasons of the year furnish material for illustration and for laboratory use.

THE CHEMICAL LABORATORY.—The new chemical laboratory contains two lecture-rooms, one seating three hundred, and the other eighty students. Both rooms are supplied with all the necessary appliances for the illustration of the lectures, by experiments or the lantern. On the second floor, besides the large lecture-room, there is a laboratory for the work of students in introductory chemistry, with two hundred and sixty-four places, and adjoining this the private laboratory of the instructor in that course; on this floor are also the office and laboratory of the professor of general chemistry, apparatus and preparation rooms in connection with the lecture-room, a room for occasional special work, and, finally, the chemical museum for the collections illustrating the courses in applied chemistry and pharmacy.

On the first floor is the general quantitative laboratory, with places for one hundred and forty students, besides twelve special places for analysis by electrolysis. Adjoining this room are the balance room for students, and the private laboratory of the assistant professor of analytical chemistry; next follow the general supply room for all departments of the laboratory in general, the office and private laboratory of the professor of agricultural and analytical chemistry, the women's cloak room, the chemical library, the combustion and muffle room, the special room for iron analysis, with places for eight students, the sanitary laboratory and distilling room, with places for ten students, the room for analysis by optical methods, the smaller lectureroom, and the men's coat room.

On the basement floor is the qualitative students' laboratory, with places for two hundred and fifty-six students, if it is necessary to crowd them, but accommodating easily one hundred and eighty-four; and it is so arranged that in the terms when the quantitative laboratory is liable to be overcrowded, and fewer students are working at qualitative analysis, a large number of quantitative students can work here, with all the advantages enjoyed by the beginners in the regular quantitative room, and for whose use balances are placed in an adjoining room. On this floor are also the private laboratory of the instructor in qualitative analysis, the laboratory of the agricultural experiment station, and a room for gas analysis, with a northern exposure. In the eastern section of the building on this floor the organic laboratory is located, with places for twenty-four students, a combustion room, a room for advanced organic work, and the private laboratory of the assistant professor of organic chemistry. In a sub-basement is ample space for a cool, fire-proof room, and

other store-rooms for chemical stock in bulk; and in the attic story are rooms for photographic work.

Every room in which unwholesome or offensive fumes are liable to be evolved is connected with a special system of ventilation for their rapid removal. Distilled water is conducted in block tin pipe to all the more important rooms on each floor, from a tin-lined tank in the uppermost story where the distilling apparatus is placed.

Every student's place is furnished with all the essential apparatus for his general work, and with water, and in the quantitative rooms with suction; oxygen, hydrogen, and air-blast are supplied wherever required, from reservoir tanks in the basement.

The chemical library contains complete sets of all the important journals, aud works of reference; and such additions are made to it from year to year, as are necessary to keep it abreast with the times. It is accessible to all students, under such restrictions only as are necessary to secure it against any detriment.

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, mouthpieces, 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 done already at the great laboratories of Professors Tetmayer and Bauschinger, at Zurich and Munich. 4. A BRIDGE LABORATORY for the study of stresses in many types of trusses. the determination of the effect of permanent and variable 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 connection 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 LABO-RATORY in which is acquired the skill necessary to use the Kew mag-

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netometer 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, provided with line and end comparators and dividing engines with independent microscopes mounted on isolated piers. This room is built with hollow double walls, and provision has been made to maintain it at a constant temperature. Telescopic observations may be made through tubes in the walls, which avoid the necessity of entering the room, thus disturbing its temperature. 9. A BACTERIOLOGICAL LAB-ORATORY in which students may become acquainted with bacterial forms and such portions of this subject as bear upon sanitary engineering. The optical apparatus has been expressly manufactured for us by Reichert, of Vienna; and, as the result of consultation with biologists, physicians and sanitary engineers, the balance of the equipment for the special purposes of this laboratory has been made by Dr. Rolirbeck of Berlin. 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 progress photos of engineering structures owned by this college.

THE SIBLEY COLLEGE LABORATORIES OF ELECTRICAL ENGINEER-ING, including the apparatus of the Department of Electrical Engineering of Sibley College and also that available in the Department of Physics, comprehend many special collections of apparatus. The collections include a great number of large and small dynamos, of arc and incandescent lighting types, including a five hundred light and a twenty five light Edison, two Thomson-Houston, three Weston, a Ball, a Mather, a Waterhouse third brush, a Gramme, a Siemens and Halske, a six hundred and fifty light Westinghouse alternate current machine and its complement of converters, and a Westinghouse forty arc light alternator with its full complement of lamps; a variety of motors including two ten H. P. automatic Sprague motors, a Brush five H. P. constant current, and a Tesla alternate current motor. Storage batteries are of the Julien, Gibson, Sorley, and "accumulator" types; aggregating one hundred cells in number. There are arc and incandescent lamps of the various types, and commercial electric meters. The great tangent galvanometer and electro-dynamometers, and the potential instrument at the Magnetic Observatory, and the authorized copies of the British Association standards of resistance afford every

#### MATERIAL EQUIPMENT OF THE UNIVERSITY. 49

facility for making measurements in absolute measure of current, E. M. F., and resistance with the highest attainable accuracy.

There are large numbers of ammeters, voltmeters, Wheatstoue bridges, electrodynamometers, electric balances, long range electrometers, etc., that have been built or procured for general use, that are always kept in correct adjustment by comparison with the above standardizing apparatus. Apparatus is provided for all delicate testing, for the exact study and determination of alternate current energy, for conductivity and insulation tests, and for the determination of the properties of the magnetic materials. Means for making quantitative measurements are supplied through a well equipped 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 a working resistance with a capacity ranging from twenty-two hundred ohms and four ampères, to fourtenths of an ohm and three hundred ampères. The apparatus of electrical measurement is the property of the Department of Physics, as are many of the dynamos.

The Sibley College machinery, and the dynamos of the Department of Physics, are placed in large apartments adjacent to the steam-boiler "plant" of the University and the College.

THE LABORATORY OF ENTOMOLOGY AND GENERAL INVERTE-BRATE ZOOLOGY occupies the entire second floor of the north division of White Hall. It is equipped with microscopes, 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 INSECTARY OF THE AGRICULTURAL EXPERIMENT STATION affords facilities to a limited number of advanced students for special investigations in the study of the life history of insects, and for experiments in applied entomology.

THE LABORATORIES OF GEOLOGY, PALEONTOLOGY, AND MINER-ALOGY are situated in the south wing of McGraw Hall. The laboratory for introductory work in mineralogy and blowpipe analysis occupies the west basement and is equipped with study collections and facilities for blowpipe determinations. Here are also placed the study collections in economic geology. The advanced work in mineralogy and crystallography is provided for in the west laboratory on the second floor-where collections and instruments are arranged for higher investigation in these lines. In the laboratory on the first floor are machines for preparing rock sections and microscopic slides.

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The main laboratory on the east room of the second floor, is provided with collections and facilities for the study of Paleontology, and in the museum on the first floor of the main part of the building are the large collections arranged systematically for advanced investigation in both Paleontology and Mineralogy.

Special advantages are present for comparative studies of the Paleontology of the upper Paleozoic of North America, furnished by the large collections of Devonian and Carboniferous fossils of the United States Geological Survey, temporarily deposited at Cornell University, which are in part accessible to students prepared for such investigations.

THE SIBLEY COLLEGE MECHANICAL LABORATORIES constitute the department of demonstration and experimental research of Sibley. College, in which not only instruction but investigation is conducted. They are principally 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, occupying the entire lower floor, a space of one hundred and fifty feet long by forty feet wide. They are supplied with the apparatus for experimental work in the determination of power and efficiency of motors, and the turbine driving the machinery of the establishment; with the boiler-testing plant and instruments; and with numerous machines, of the various staudard types, for testing the strength of metals, including one each of 50, 100, and 150 tons capacity, and of great accuracy and delicacy. Several steam engines and boilers, air and gas engines, several kinds of dynamometers, lubricant-testing machines, standard pressuregauges and a large collection of steam engine indicators and other apparatus and instruments of precision employed by the engineer in such researches as he is called upon to make, are collected here. All the motors of the University, and its 600 horse-power boilers, are available for test trials. The steam engines are set up, with the heavy lighting dynamos, adjacent to the boilers, among which are a 200 H. P. "experimental eugine," and several of smaller power. THE PHYSICAL LABORATORY.—Franklin Hall, is devoted exclusively to the use of the department of physics. Piers are provided in several of the rooms for apparatus requiring immovable support, and some of the rooms in the basement and in the annex 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 three large apparatus rooms. On the first floor are several laboratory rooms, equipped with reference to various special lines of work, among which may be mentioned one for electric light photometry, without windows, and painted black throughout.

The laboratory rooms in the western end of the main building are devoted to advanced work, those on upper floors of the eastern end, to elementary practice. On the fourth floor is a suite of rooms arranged for the study of photography, with special reference to its application to physical investigation. Work in applied electricity is carried on chiefly in the basement laboratories, in the annex, and in the dynamo rooms of the department.

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 maguetic needle, a special building free from iron hasbeen 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 mechanician is constantly employed in making apparatus. Some of the most valuable instruments in the collection havebeen made in this shop.

## THE UNIVERSITY LIBRARY.

The Library, including the President White collection, described below, contains about one hundred and seven thousand volumes, besides thirty thousand pamphlets. It is made up largely of the follow-

ing 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 LI-BRARY 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 PUBLI-CATIONS 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 twelve hundred volumes relating to architecture and kindred branches of science, given by ex-President White; THE KEL-LEY 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 COLLEC-TION, 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 folk-lore, Russian history and literature, presented by the Hon. Eugene Schuyler in 1884; THE LAW LIBRARY, containing over seven thousand five hundred volumes of legal works. The number of periodicals and transactions, literary and scientific, currently received at the Library is five hundred and thirty, 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 the reference library in the main reading room, of eight thousand volumes, comprising encyclopædias, dictionaries, and standard works 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.

In the north wing of the Library building are the seminary rooms assigned to the historical and literary departments, containing collections of works and periodicals selected with reference to the needs of students engaged in special work. In the departments of architecture, agriculture, botany, civil engineering, and mechanical engineering, reference collections of books most needed by students have been formed.

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 Librarian, *c.r officio*, one member chosen by the Board, and four members 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 until their successors are chosen.

The income of an endowment fund of three hundred thousand dollars, the gift of the Hon. Henry W. Sage, is devoted to the increase of the Library, and secures a future measure of growth much larger and more uniform than has hitherto been possible.

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 invaluab e 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

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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 Supersition, 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 ten acres of land, exclusive of that under the charge of the Professor of Horticulture, and is devoted to the uses of the agricultural department, for experimental purposes, and for the illustration of the principles and practice of agriculture. 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, the grain, straw and hay, and the sheep pens. 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 Its equipment embraces a steam boiler, an engine, a Deventilation. Laval separator, two creamers, an automatic cream ripening vat, and other modern appliances for the manufacture of butter and cheese.

### MATERIAL EQUIPMENT OF THE UNIVERSITY. 55

### 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 dwarf pear orchard of 300 trees occupies a commanding site. Two steam heated forcing-houses, each 20 by 60 feet, with their adjuncts, belong to the horticultural department, and a garden-house, with work-rooms, office, and photographic rooms, is attached. 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 graftingroom, tool-room, and rooms for the storing of vegetables. A portion of the ground adjoining the forcing-house is used 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 received a field of about nine acres, situated on the north side of

Fall Creek gorge, which has been enclosed and graded. A grand stand and a cinder track have also been provided. The field, which is admirably adapted to the purpose, contains 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. CLASSICAL ARCHÆOLOGY AND HISTORY OF ART.

The courses in this department are entirely elective, but generally presuppose such an acquaintance with Greek and Latin language and literature, and ancient history, as students who have completed the earlier courses in classics possess. The course in the History of Ancient Architecture is, however, planned primarily for technical students, who may perhaps elect the course in Greek and Roman Art with equal advantage. The latter is the best introduction to the studies of the department, and also connects directly with the courses in Private Life, or Antiquities of the Ancients, which are offered in the Latin aud Greek departments. The newly organized University Museum of Classical Archaeology splendidly equips the department with the best possible means of learning to recognize the beauties, spirit and meaning of ancient art, through frequent contemplation of the best examples of Greek and Roman sculpture in a series of fine casts taken directly from the originals in the great European galleries. Other faithful reproductions ou a smaller scale, and in materials suited to the special character of the objects represented, will greatly increase the usefulness of the museum, which will stand second only to the larg st similar collectious in the United States. Other materials enable the instructor to accompany his systematic courses with the needed illustration by lantern slides, charts, etc. All members of the University are encouraged to make the utmost use of these facilities of the department for serious study, and its assistance is tendered both in the availability of the Curator of the Museum for personal consultation at regular hours, and iu the talks and lectures to be given at stated times in the museum or elsewhere. The progressive course in Greek and Roman Mythology and Religion will be accompanied by museum studies.

The seminary work in Archæology is intended primarily for advanced classical students, who contemplate adding some thorough

## METHODS OF INSTRUCTION.

training in this subject to their acquirements in the linguistic and historical branches of classical scholarship. The object of the course as a whole is to place the student in a position to perform independent investigation along lines pertaining to classical archaeology and art.

#### II. 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 and Plato as representatives of the purest Attic type, and the Odyssey of Homer of the Epic. The first term of the year will include in connection with the reading of Lysias and Plato, a thorough review-drill in the fundamentals of accidence and syntax, aud exercises in Greek composition will be re quired throughout the year. The class will be divided on the basis of scholarship into two numerically equal sections at the beginning of each term.

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 of Athenian literature 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. Five reading courses accompanied by lectures are offered, three of which are given each year; viz., a third-year course with readings from Plato, Aeschylus, Sophocles and Demosthenes, a course in the historians and biographers, a course in the orators, a course in the epic aud lyric poets, a course in New Testament Greek. Beside these the study of some one Greek author (this year Aristophanes) is taken up in alternate years in the Seminary, and the philosophical department makes provision for an advanced course in the reading of Plato and Aristotle.

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. The department of Classical Archæology offers also courses in Greek art and archæology, mythology, religion, and topography, and the department of Architecture a course in ancient architecture.

3. The language. A course in Advanced Prose Composition will give maturer students an opportunity for practicing the writing of Greek under the direct personal supervision of a teacher, and for instruction in special questions of syntax and style. 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.

#### III. 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 the study of the origin and development of the syntactical uses of the language, and of the beginnings of their decay.

Provision for the study of Latin grammar on the side of forms and inflections is made by the Department of Comparative Philology. Provision for the study of Roman topography and Roman art and religion is made by the department of Classical Archæology.

#### IV. 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 1 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 1. 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. The course in Gothic grammar is intended both for students of comparative philology and for specialists in Germanic, including English, philology. Attention is called to the courses offered by the English department in Gothic, in English philology, and in the history of the English language; also to the philological courses offered by the departments of Germanic Languages and Romance 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 Brandt's Grammar and Reader are used, accompanied by exercises in writing German, and translation at sight, and followed by some special work, containing easy novels or plays.

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 provided in Middle High German and the older Germanic dialects.

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.

Instruction in French during the first year is essentially the same for all courses. It is expected that students in the technical courses, who take but one year of French, will be enabled to read ordinary French scientific works and the French text-books which may be used in their courses. In the second year the object of study is more literary than grammatical; 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 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 XVIIth 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.

#### I. RHETORIC.

The instruction given in the first two years is chiefly practical. It aims at training students to express themselves clearly and concisely, and with discrimination in the use of terms. Text-book work is supplemented by lectures and discussions. Special attention is given to the construction of the paragraph and the theme. The greater part of the work in these two years consists in the preparation of brief essays upon topics assigned by the instructor. Each essay is read and criticised privately with the writer. Instruction is thus adapted to the needs of the individual student.

The Rhetoric of the junior and senior years is more literary and historical in its nature. It aims at tracing the formation and development of English style, chiefly prose, beginning with the Elizabethan period. The relations between English style and classic and modern continental theories are touched upon. In the senior year some one group of authors (varying from year to year) is read critically, with a view to ascertaining and formulating stylistic characteristics. In both years much collateral reading is required, and in the senior year some original research, to be embodied in theses. These theses are criticised in class and become the property of the department, to be used as the basis of subsequent investigation.

It may be observed that the junior and senior classes, while open to all properly qualified students, are planned with direct reference to .such as are aiming at specific literary culture.

#### II. PHILOLOGY.

The aim of this course is to train both undergraduate and graduate students in the methods of philological science as applied to English. The English language is studied in its historic evolution, from the earliest recorded monuments down to and including Chaucer. Stress is laid upon the relations between English and the cognate languages of the continent. Students are expected to pursue the University courses in Old and Middle High German. In the seminary each member is required to follow throughout the year some line of original research and embody the results in a thesis, which becomes the property of the department.

#### III. 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.

#### IV. ENGLISH LITERATURE.

In the junior and senior years lectures are given on English Literature, from the fourteenth to the nineteenth century, inclusive, the central figures of the several courses, or groups, being, I. Chaucer. 2. Shakespeare. 3. Milton. 4. Dryden. 5. Pope. 6. Wordsworth. 7. Tennyson and Browning. 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 evening readings from the great poets and dramatists and prose writers is given throughout the year. These readings are open to all students and others who may wish to avail themselves of them.

Seminary Work.—There are two literary seminaries, a junior aud a senior, to which juniors and seniors, iu good standing in the regular literary work, special, and graduate students are admitted. The studies are confined to prose authors, from Bacon to Ruskin. A work is assigned to each student, of which he makes a careful study, and embodies the result in a paper, which is read in the Seminary, then criticised by one specially chosen for the purpose, and afterward discussed by the several members, each member having been required to read, in advance, the work in question.

## PHILOSOPHY

Owing to the munificent gifts of the Hon. H. W. Sage, the University has been able to make provision for philosophical instruction and investigation of the most varied kind. There are four professors and four instructors devoting all their time to Logic, Psychology, Ethics, Pedagogics, Metaphysics, and the History and Philosophy of Religion. The evils of emphasizing certain portions of Philosophy to the practical exclusion of others have become very apparent, though the advantages of specialization cannot be overestimated. It is the aim at Cornell to secure both comprehensiveness and thoroughness. All sides of Philosophy will be represented, and every method of discovering truth-observation, experiment, historical investigation, reflection, and speculation-will be welcomed within its appropriate domain. Thoroughness has been guaranteed by the appointment of a large staff of experts, each of whom represents a special subject to which he may devote his best energies without being burdened by other work. Much attention will be given by the members of the staff to making their instruction effective. In the earlier courses lectures are given because deemed most helpful to beginners in Philosophy; but to insure the assimilation by the students of what they have received, there are also regular recitations and frequent discussions. Then follows the writing of essays on the more important themes discussed, which has been found a potent stimulus of independent reflec-In the higher courses lectures fall into the background; and tion. the relations between teachers and students, becoming more individual, partake rather of the nature of couferences and free colloquies

touching the various topics on which the students are all engaged in preparing theses. In the seminaries, laboratory, and symposium, the students are fellow workers with their teachers, who seek to guide them, partly by direct suggestion, but mainly by precedent and example. It will be the persistent aim of the staff to make the School a thoroughly efficient centre for the maintenance, diffusion, and increase of philosophical knowledge and activity in America.

The liberal endowments of the School of Philosophy enable it to secure, along with a large number of specialists, whatever material facilities they require for the successful prosecution of philosophical studies and research. The apparatus for the new Psychological Laboratory has been made in Germany under the personal supervision of Assistant Professor Angell. Every facility is offered for experimental work in Psychology. All the philosophical journals published, both at home and abroad, will hereafter be taken; and complete sets of the more important—American, English, French, and German—are already in the library. The library is also well supplied with philosophical works; and books not on hand are ordered as soon as called for. In the new library building, which has just been completed at a cost of about \$300,000, two large rooms have been set apart for the seminaries and other advanced work in Philosophy.

For further particulars see the Courses of Instruction in Philosophy and the section on the Susan Linn Sage School of Philosophy.

## HISTORY AND POLITICAL SCIENCE.

Instruction in history and political science has three distinct purposes The first is to furnish the general information that is necesin view. sary 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 Constantine 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 are two principal courses : the one, of three hours a week, and extending through two years, devoted to the general history of our country-social, political, and intellectualfrom the earliest colonial settlement down to the end of the war for the union; the other, of two hours a week, and extending through one year, devoted to the development of American constitutional principles and practice during the colonial, revolutionary, and national periods. 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: a general course of three hours a week in the elements of political economy; an advanced course of two hours on unsettled problems in political economy and finance; a course of one hour on the history of tariff legislation; a seminary of two hours for the examination of special problems, and also courses on the historical development of different economic and financial systems. 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 ou the leading principles 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

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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 seminary-rooms contain works selected with special reference to the needs of advanced students of history and political science, and are 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, and of the White Library of History, containing about thirty thousand volumes and ten thousand pamphlets, are also freely accessible to this class of students, whenever they are carrying on investigations in special subjects.

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 suggestiveness as regards intellectual concepts and methods; 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 in mathematics and physics. 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 uaturally 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 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, two hours a week); and by the elective advanced work in algebra, including determinants, imaginaries, and theory of equations (two hours), in trigonometry including hyperbolic functions (two hours), in plane and solid analytic geometry (five hours), and in calculus (five hours); thus forming a tolerably full course in these subjects, which a good student in either of the general courses 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 and Casey's Plane Trigonometry, Salmon's Conic Sections, and selections from his Higher Plane Curves and Analytic Geometry of Three Dimensions, Todhunter's and 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) a course 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) a course in quantics, including the theories of elimination, of canonical forms, and of such relations among functions or values as persist when variables

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.

For the sake of the practical applications, there is instruction in finite differences or in spherical harmonics and the potential function. The elements of vector analysis, or of non-Euclidian 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 a week.

#### ASTRONOMY AND CELESTIAL MECHANICS.

There is yearly a three hour course in descriptive and physical astronomy; and, if desired, 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 College of Civil Engineering.

#### MATHEMATICAL PHYSICS.

The work in mathematical physics is arranged as a continuous course, occupying at least two years; but it may be taken either in whole or part, aud some of the subjects may be simultaneous. It includes: (1) preliminary work in statics, iu the theory of strains and stresses, and in general dynamical principles, with special reference to the motion of a vibrating system; (2) applications to the mathematical theory of sound aud of light; (3) a course in molecular dynamics based on Sir William Thomson's Baltimore lectures; (4) a course in the mathematical theory of electricity and magnetism based on Maxwell's text book.

#### 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 lectures 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 several thousand volumes on pure mathematics, mathematical physics, and astronomy, including many of the most important mathematical journals, and transactions of many scientific societies. Such articles and problems in the current mathematical journals as are best adapted to the purpose, are reported and discussed at the weekly meetings of the mathematical club. A collection of models has been 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 and Letters; the other for students in the various technical courses. 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 engine, 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. INORGANIC CHEMISTRY.

The elements of general chemistry are taught by a course of lectures, accompanied by recitations from the text-book, designed to give an outline of the principles of the science, and to make the student familiar with the most important compounds of the common elements. In the recitations, a large part of the time is given to the writing of reactions and the working of chemical problems. In addition to this course, students who propose to pursue subsequently the study of analytical chemistry 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 is greatly deepened.

In the following year, a course of lectures on advanced inorganic chemistry is given, which is open to all students who have successfully completed the elementary course. In these lectures the subject is treated on the basis of the periodic law, and by more extended study and comparison of typical compounds, and full experimental illustration, the relation between the different groups of elements is brought out more clearly than is possible in the first year.

#### II. ORGANIC CHEMISTRY.

The general subject of organic chemistry is taught by a course of lectures, recitations, and laboratory practice, extending through one year. The theoretical basis of the study is made as thorough as possible, while the full illustration of the lectures by specimens, and constant laboratory practice in the preparation and purification of typical compounds, prevent the study from becoming an abstract exercise of memory. On the completion of the first year, the subject of organic chemistry is continued by a course of lectures on special branches of the subject, and further laboratory practice in the preparation of specimens for the museum, and in following out reactions of particular interest, iu the course of which constant reference is made to original papers published in the leading French and German 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.

#### III. THEORETICAL CHEMISTRY.

The theoretical chemistry, which is naturally given to some extent in connection with the instruction in inorganic and organic chemistry, as above described, is supplemented by a course of lectures with correlative reading in chemical philosophy, including the history of chemical theory and physical chemistry. To the more advanced students especially such as wish to make teaching their profession, the opportunity will be given for laboratory work on some of the lines that have been followed in recent times in the establishment of chemical principles.

#### IV. ANALYTICAL CHEMISTRY.

Elementary Qualitative Analysis.—The course in elementary qualitative analysis occupies about one and a half terms of seven and a half hours a week of actual practice, the work in the laboratory being supplemented by lectures and recitations. It is the purpose of this classroom 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 only mechanically followed the directions in the text-book.

This course being completed, those who intend to make a special study of chemistry are required to take a supplementary qualitative course, for the purpose of making their knowledge of the subject more complete, before passing on to more advanced work in the quantitative laboratory.

Elementary Quantitative Aualysis.—This course extends for all students through at least one and a half terms of seven and a half 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, as follows :

In Agricultural Chemistry.—Practice in the analysis of fertilizers and feeding materials, of foods, of dairy products, and of waters used for the household.

In 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.

In Medical Chemistry.—For students in the Medical Preparatory course practice in the analysis of urine, milk, and drinking water, in the separation of mineral and vegetable poisons from animal matter, aud their identification, and the assay of medicinal preparations.

In Pharmaceutical Chemistry.—For students intending to become Pharmacists, practice in all 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. In Sanitary Chemistry.—For the student of sanitary science 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 the analysis of ores, the useful methods in their commercial condition—especially iron and steel—of alloys, and of gaseous mixtures; in the use of the polariscope and spectroscope, 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.—A short course iu assaying is offered, open only to students who have studied quantitative analysis, in which practice is given in the sampling and assay of ores of lead, silver and gold, and in the assay of gold and silver bullion. A special laboratory, occupying part of the Chemical Aunex, is reserved for this work, and is fully equipped with all necessary furnaces and tools.

#### V. 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.

#### VI. METALLURGY.

During the spring 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 aud embryology). Veterinary-Science is presented under Agriculture.

Collectively, the branches named above form a large part of the fouryear 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 Science and Civil Engineer. In the courses in Architecture and Civil Engineering, 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 <math>(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), are required as preparatory to all the other courses. These latter present the following subjects : systematic and economic botany ; arboriculture ; exotics ; plant physiology ; histology of plants ; higher cryptogams ; fungi ; special advanced work on phænogams and cryptogams.

The herbarium, the collections, the spacious green-houses and 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. GROLOGY.

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 I, 2, 4, in order, according as they make a special study of the mineralogical or biological aspects of the subject. These courses occupy the first year. A second year of advanced study is afforded in courses 5, 6, 7, and 10. Course 1, occupying three hours in the fall term, comprises two hours weekly devoted to the study and determination of about 120 species of commoner minerals, of rocks, and one hour weekly of blowpipe practice and determinations, the latter being, so far as possible, parallel with the former. Course 2, of three hours in the winter term, treats of dynamical and historical geology, and leads naturally either to course 4, which discusses the development of forms of life, or to course 3, which deals with the material resources of the country, and prepares for the subsequent study of metallurgy. Courses 1, 2, and 3 are required of students in Civil Engineering, and courses 8 and 9 of students in Architecture.

The advanced courses, 5, 6, 7, and 10, afford opportunities for those having had the first year, or its equivalent. to pursue advanced work, leading to original investigations. On the biological side the department is equipped with complete and carefully arranged study collections, and the large collection in the museum, to which access may be had. On the mineralogical side the work includes study in the advanced study collection of minerals, in measuring and drawing crystals, and work in the microscopic study of thin sections of the massive and metamorphic rocks. The Silliman collection of minerals is made accessible in an adjoining room. Courses 8 and 9, for students of Architecture, comprise the study and determination of the minerals prominent in rocks; of the rocks themselves; of the geological structure of the United States, and the distribution and character of its building materials.

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#### 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 in entomology occurs in the spring. During both of these terms there is laboratory practice in entomology and invertebrate zoology.

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: I. Physiology, illustrated by painless experiments upon animals, and giving special reference to the structure and functions of the brain. 2. Zoology. In courses I and 2 one-third of the exercises are practical, the students examining under direction the viscera of the cat, the brain, heart, and eye of the sheep, standard preparations of the human brain, 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. Course 9 is designed for those who are preparing to study art as applied to the human form, or to become teachers of physical culture.

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, forcing and dairy houses, under the Professors of Veterinary Science, Botany, Horticulture, Geology, Entomology and Dairy Husbandry. 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 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, Dairy Husbandry, 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 only 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 three years, and thoroughly used in mechanics, stereotomy, and designing. Students in Architecture take two terms of mechanics, one of stereotomy, one of structural details, and three of descriptive geometry, with the classes in the course in Civil Engineering.

The study of the history of architecture and the development of the various styles runs through five terms. The lectures are illustrated by photographs, drawings, engravings, casts and models. A lantern for the purpose of throwing pictures upon a screen before the class is in constant readiness for the use of the lecturer, and the windows are fitted with shades by which the room can be completely darkened in a moment.

Proper attention is paid to acoustics, ventilation, heating, plumbing, decoration, contracts, specifications, and professional practice.

The whole ground of education in Architecture,—practical, scientific, historical, and aesthetic,—is covered as completely as is practicable in a four years' course.

For collections and equipments see "Material Equipment."

A pamphlet giving details in full of the entire course may be had on application to the Registrar.

# THE COLLEGE OF 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 college is mainly to make its students cultured and well balanced professional men, trained to meet the actual demands of

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, "office details" and field work; economics of engineering, and investigations in the library and laboratories of the college are, with only one exception, 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, not as subordinates, merely, but as designers, and contractors of important works; they are thus competent to judge of the needs and best methods for promoting the usefulness of the college. 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 Director of the College, 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 fundamental instruction of a general undergraduate school, five additional special schools for graduates desiring advanced study in the separate branches of their profession. These schools are constantly growing in strength and attracting a steadily increasing number of resident graduates. Under certain restrictions, as to the number of students, admission to these schools is open to civil engineers of this or other institutions having undergraduate courses similar to our own. Advanced and special studies are offered in the following schools : Bridge Engineering, Railroad Engineering, Sanitary and Municipal Engineering, Hydraulic Engineering, and Geodetic Engineering. The object of these schools 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 Director of the College. The work of the students in the undergraduate school is based upon an extended course on the mechanics, and the graphics and economics of engineering. There are no elective studies in this school. 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 defences of coasts, rivers, harbors and lakes; the astronomical determination of geographical co-ordinates for geodetic and other 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, sewering 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. A course of lectures is given in engineering and mining economy, finance and jurisprudence. The latter subject deals in an elementary mauner only, with the questions of easements and servitudes, and 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 college.

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

The material equipment of this college 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 see "Material Equipment."

For additional information upon this subject, address "The Director of the College of Civil Engineering."

# THE SIBLEY COLLEGE OF MECHANICAL ENGI-NEERING 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 about one hundred thousand dollars for the purchase of models, the extension of the Sibley College buildings, and the building and equipping of a complete set of work-shops. The total amount presented to Cornell University is nearly two hundred thousand dollars.

SIBLEY COLLEGE is the School of Mechanical Engineering and of the Mechanic Arts of Cornell University. It includes four principal University 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 shop-work; 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 is intended by the Trustees of the University to be made a college of mechanical engineering, 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. These courses are purely professional and it is advised that every student secure, not only thorough preparation as prescribed, but the most complete general education possible. Maturity and earnestness, and mathematical ability are essential to success in this, which has now become a learned profession.

Elective work can be taken to a limited extent in undergraduate courses, and to any desirable extent in graduate work.

#### 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.

Students are allowed in their senior year, to begin to specialize somewhat, taking work in steam, in marine, or in electrical engineering, for example, with specialists.

(1) Section of Theoretical Engineering:-The lecture-room course of instruction consists of the study, by text-book or 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. The theory of strength of materials is here applied, and the effects of modifying conditionssuch as variation of temperature, frequency and period of strain, method of application of stress—are illustrated. This course of study is followed 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 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 aud 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, iu 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 iu 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 not only to give the student 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 choose, substitute the special work in electrical engineering for the prescribed work 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 tools and of electrical and other physical instruments. The special engineering work of the fourth year comprises the study, under the direction of the Professor of Electrical Engineering, of station design and construction, of the prime-movers, the design 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 measurement, computation and testing, as applied to the construction aud maintenance of electric lighting and power plants aud telephone aud telegraph lines and cables, and to the purposes of investigation; while a large amount of work in the laboratories of the department of physics is given with special reference to the needs of the practical electrician.

All the extraordinary resources of the University and of Sibley College are available for the purposes of this department; and the active coöperation of the Department of Physics, with its great collections and extensive laboratories, gives unexampled facilities for the study of every related branch of physics.

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. Students entering the undergraduate courses for the purposes of the electrician, rather than those of the electrical engineer, should take the course leading to the degree of B. S., and should take its electives in physics.

#### III. DEPARTMENT OF MECHANIC ARTS.

The aim of the instruction in this, the department of practical me-

chanics 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 student easily and exactly to perform any ordinary operation familiar to the carpenter, the joiner, and the patternmaker. 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 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.

(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 Arl :- 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 decoration, in every industrial art, in designing for textiles and ceramics, in modelling, and in other advanced studies introductory to the study of fine art.

(2) Section of Mechanical Drawing :- The course begins with freehand drawing, 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, of 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 practised 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-

#### METHODS OF INSTRUCTION.

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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 the steam engine or other motor, or some important special type of machine. Students often make original designs, and not infrequently put on paper their own inventions.

#### 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.

"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.

The Mechanic Arts courses, or Artisan courses, do not lead to a degree. They are intended for students who are unable to pursue a complete course of preparatory and college work, including higher applied mathematics and the languages, such as is exacted of the candidate for the degree of Mechanical Engineer, but who may be able to undertake the work laid out for those intending to prepare themselves especially for superintendents of shops and establishments, and who are not likely to be called upon to do the work of the mechanical engineer, in designing, etc., demanding a good knowledge of those subjects prescribed in the engineering courses as essential to such higher work. These courses consist mainly of shopwork, drawing, and elementary mathematics; but students sufficiently well prepared may also take other useful studies if found prepared to do so.

#### GRADUATE COURSES.

The following are all purely professional courses. Special attention is also called to the elective courses of lectures, and of instruction, in the University, in its various departments and its several. schools, as those in advanced mathematics, in the sciences, the languages, in political economy and history, and in patent law.

*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.

Graduate School of Marine Engineering and Naval Architecture. At their annual meeting of 1890-91, the Board of Trustees authorized the establishment of this school, and subsequently the organization and scheme suggested by the Director was approved. This school possesses unusual facilities for instruction in the higher branches of the subject. A large collection of drawings, many models, and all the equipment of the College and of the University, so far as required, are at its command Special work in this subject may therefore be taken by such students as desire it. This instruction should form 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 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. Our leading manufacturers 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 students who may be desirous of entering upon this course of study.

Mining Engineering.—Although mining engineering courses have not been formally established, instruction required by the mining engineer is now given, as follows: the professor of civil engineering and his associates lecture on such constructions as are common to the professions of civil and mining engineering; the professor of mechanical engineering and his associates offer instruction relating to machinery; the professors of chemistry give instruction in metallurgy, chemical analysis, and cognate subjects; the professors of geology give instruction in the theory and classification of ores and in those branches relating to chemical geology. Steam Engineering.—The course is an extension of the work of the senior year and includes the study of the design and construction of steam engines and boilers and their accessory apparatus, the theory and the 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.

Non-resident Lecturers, etc.—Supplementing the regular course of instruction, lectures are delivered from time to time by the most distinguished men aud 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, as candidates for degrees, about 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 courses leading to a degree, may enter any other courses, as Mechanic Arts, above, 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 seminaries 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. Students are admitted to graduate study after having taken a baccalaureate degree in this University, or on presenting a diploma giving evidence that a degree fully equivalent 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, Economics, Philosophy, Mathematics, Chemistry and Physics, Natural History, Civil Engineering, Mechanical Engineering, Marine Engineering, Architecture, 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. Fifteen 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.

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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 requirements prescribed by the 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 1891-92, but may be expected in 1892-93.]

CLASSICAL ARCHÆOLOGY AND HISTORY OF ART.

1. Greek and Roman Art: tissues, pottery, metal work, coins and gems, carving, building, painting, and statuary. An introductory course, illustrated with lantern, photographs, etc. Lectures. W., F., 12. Spring term. Associate Professor EMERSON.

See courses 9 under Latin and 7 under Greek, with which this course connects.

2. History of Architecture. Ancient. M., W., F., 10. Fall term. For Mediæval, Renaissance, and Modern, see under Architecture. Professor BABCOCK.

[3. Topography and Archæology of Athens and Attica. An illustrated course, associated with course 7 under Greek. Lectures. M., 11. Fall and Winter terms. Associate Professor EMERSON.]

4. Topography and Archæology of Pagan Rome. An illustrated course, associated with course 9 under Latin. Lectures. M., 12. Fall and Winter terms. Associate Professor EMERSON.

Courses 3 and 4 are given in alternate years.

5. Greek and Roman Mythology and Religion in their relation to the formative arts; museum studies. T., Th., 10. Fall term. Associate Professor EMERSON.

[6. Worship and Religious Antiquities of the Greeks and Romans :

conceptions of the divine, forms of revelation, adoration, service, sacrifice, and superstitions observance. Associate Professor EMERSON.] Courses 5 and 6 are given in alternate years.

7. Archæological Seminary. Classical Archæology in Greek aud Roman Literature from Homer to the Christian Fathers, with cursory readings. Th., 3-5. Fall term. Illustrated interpretation of Pausanias, with reference to extant architecture and sculptural remains: chapters on Corinth, Argos, Tiryns, Mycenæ, Epidaurus, Sparta, Olympia, Megalopolis, and Delphi. Th., 3-5. Winter term. Exercises in exegesis for classical scholars conversant with Greek and Latin literature : interpretation of monuments with and without reference to literary sources. Th., 3-5. Spring term. Associate Professor EMER-SON.

8. As curator of the University Museum of casts from ancient sculpture and other reproductions or original specimens of the antique, Dr. EMERSON will, at regular hours, be ready to meet students wanting direction in the study of the collection. Talks and lectures illustrated by the plaster casts and other specimens will be given at definite intervals. Some of these will be open to all members of the University. Hours to be bulletined. The museum will be open to visitors as soon aud as much as practicable.

#### 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. M., 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., 9. Associate Professor BRISTOL.

4. Advanced Sanskrit. Reading of selections from the Rig-Veda. Grammatical discussions. Lectures upon the private and religious an-

tiquities of the ancient Hindoos. S., 11. Professor WHEFLER.

[5. Gothic. Braune's Gothic Grammar. Reading of selections. Lectures on the relation of the Germanic languages to the Indo-European parent-speech. S., 9. Professor WHEFLER.]

6. Philological Seminary. See under Greek, course 9. Professor WHEELER.

#### GREEK.

A. Elementary Greek. The essentials of the grammar. Simple exercises in composition. The reading of selections from the Anabasis and Memorabilia of Xenophon, and the Euthyphro of Plato. 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.

I. Freshman course. First section. Reading of selected orations of Lysias, accompanied by a careful review of the Attic inflections and syntax. Eight books of Homer's Odyssey. Plato's Apology of Socrates. Greek composition throughout the year. T., Th., S., 10. Associate Professor BRISTOL.

Second section. Reading of selected orations of Lysias, as in first section. Five books of Homer's Odyssey. Plato's Apology of Socrates. 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. Selections from Lucian. The Philippics of Demosthenes. Sophocles' Antigone. The Acharnians of Aristophanes. Greek composition throughout the year. Outline lectures upon the history of Greek literature. M., W., F., 9. Professor WHEELER.

3. Junior course. The Phaedo of Plato. The Prometheus of Aeschylus. The Oedipus Tyrannus of Sophocles. Demosthenes on the Crown. Lectures on Greek philosophical and oratorical prose and on the Greek drama. M., W., F., 10. Associate Professor BRISTOL.

This course is primarily arranged for those who do not intend to specialize in Greek, but is open to all who have completed courses I and 2.

4. History and Biography. Herodotus, selections from books V-IX. Thucydides, books VI and VII. Plutarch, lives of Themistocles and Pericles. Lectures on the style and characteristics of the Greek historians. T., Th., S., 8. Mr. BRONSON.

[5. Greek Oratory. Selected orations of Andocides, Lysias, Isocrates, Isaeus, and Demosthenes. Lectures on the development of Attic oratory, and on Athenian legal antiquities. W., F., 9. Associate Professor BRISTOL.] 6. Greek Poetry. Homer's Iliad, the story of Achilles. Hesiod's Works and Days. Anthologia Lyrica (Bergk). Pindar, selected odes. Lectures and recitations. W., F., 9. Associate Professor BRISTOL. [7. The Private and Political 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 institutions of Athens and Sparta. T., Th., II. Professor WHEELER.] See History and Political Science, course 2.

[8. New Testament Greek. Reading of selected passages from the New Testament, and the Septuagint. Inscriptions of the period. Lectures on the characteristics of Hellenistic Greek. T., Th., 12. Mr. BRONSON.]

[9. Philological Seminary. The Greek dialects, particularly the Attic, Ionic, Doric, and North Greek, studied from the inscriptions. Preparation and discussion of papers by members of the Seminary. W., 3-5 p. m. Professor WHEELER.]

10. Philological Seminary. The reading of several plays of Aristophanes. The preparation and discussion of theses upon topics connected with the subject matter of the author. Each member of the Seminary will be assigned a subject, which will form the basis of his year's work. W., 3-5 p. m. Professor WHEELER.

11. Greek Grammar. Treated from the historical point of view. Professor WHEELER. See under Comparative Philology, course 2.

For the course in Greek Philosophy, see under Philosophy, course 40.

For the course in Greek Art, Attic Topography, etc., see under Classical Archaeology, courses 1, 3, and 7.

For Greek History, see under History aud 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.

I. 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., 10. Assistant Professor ELMER.

2. Rapid Reading of Easy Latin (Nepos). The De Senectute of Cicero. Livy. Translation at hearing. The writing of Latin. W., F., 9. Assistant Professor ELMER. M., 9. Professor HALE. The purpose of this course, which is arranged for students who have given evidence 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 the study of 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 ---OF----

# Aathematics and the Languages,

UNDER THE DIRECTION OF

#### Prof. George W. Jones and Mr. Ellsworth D. Wright,

#### ITHACA, N. Y

#### OBJECTS OF THE SCHOOL.

This school is organized for the benefit of four classes of pupils :

1. Students of Cornell University who are conditioned upon the strance requirements in mathematics and the improges, or in the work the freshman and sophomore years

2. Candidates for admission who wish to review these subjects.

8. Candidates for the university scholarships

4. Teachers who wish to increase their professional attainments, ud who can leave their own schools only during summer.

A special class is formed in the methods of teaching mathematics

Instruction is given to candidates for the university scholarships, pon the express understanding that Prof. JOSES will take the part in the reparation of the question papers for those exactinations nor in reading the answers; and any one who needs this instruction and cannot pay or it, is welcome to these classes free of charge

#### CALENCAR FOR 1892

Instruction begins Thursday, July 14, and end-Wednesday Sept. 21. The time is divided into two terms :

A six-week term, July 14-Aug. 24, for the convenience of teachers the must return to their schools early in September.

A four-week term. Aug 25-Sept 21, for students who wish to review ust before the university examinations.

Those who make a careful study of any subject and then review it horoughly, may well take both terms for it.

#### TUITION FEES.

In Mathematics : (Prof. Jones, Mr. Rappleye, and Mr. Tanner). Individual pupils, each one-hour lessed, \$1

In the ordinary classes, each subject, five one-hour lesson a week : The first term, \$15; the review \$10.

In either of the two scholarship classes, i. c., in arithmetic and elementary algebra, or in plane and solid geometry : Two three-hour lessons a week, ten weeks, \$10

In the Greek and Latin languages (Mr. Wright and n the French and German languages (Dr. Von Klenze :

Individual pupils, each one-hour lesson. \$1.

In either of the four scholarship classes :

Two three-hour lessons a week, ten weeks, \$20.

Dr. Emerson will give instruction in English and Miss Sherman in Physiology; and other teachers will be employed as needed.

#### THE

# CASCADILLA SCHOOL

ITHACA, NEW YORK.

LUCIEN A. WAIT, A. B., Director.

JAMES E. RUSSELL, A. B., Principal.

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The aim of the School in general is the careful and critical preparation of boys for the Colleges and Technical Schools of highest rank, but more especially is it designed to fit young men for Cornell University. It has the unique record of having prepared in the past fifteen years over seven hundred students for Cornell University, or of having given them special help after being admitted to the University.

#### EQUIPMENT.

The new School-house, erected in 1890, embodies every requisite for health and comfort ; it provides for commodious school-rooms, library, gymnasium and bath-rooms. The working equipment of the School is constantly being increased, and no expense will be spared to make it complete in every part. An Athletic Field of eleven acres offers sufficient inducement for the cultivation of all manly athletic sports. Military drill and regular class instruction in gymnastics supplement the ordinary out-door exercise.

#### HOME ACCOMMODATIONS.

To meet the increasing demand for a home under the supervision of

teachers the old large houses in the immediate vicinity of the School-house have been fitted up for the homes of teachers and twenty-six boys. These houses are under the personal supervision of the Principal assisted by the entire corps of Instructors. In point of sanitary arrangements and healthful surroundings it is believed that no more desirable homes can be found in Ithaca.

COURSES OF STUDY.

The School offers four distinct Courses of Study designed to meet the entrance requirements of any college or Law School. A preparatory course is arranged for those not fully qualified to enter the regular courses. the entrance examination at Cornell University.

COURSES IN ARTS AND PHILOSOPHY.

These courses are designed for students who intend to enter the University courses in Arts and Philosophy. Students who intend to enter the Law School of the University without taking a College course, will find either of the above courses, or the Course Preparatory to the Study of Law, adapted to their needs.

COURSE IN SCIENCE.

This course is designed for students who intend to enter the University courses in Science, Letters, Agriculture, Architecture, Chemistry, Civil Engineering, Mechanical Engineering, Electrical Engineering, and the Medical Preparatory course.

#### CALENDAR.

1891-1892.

FALL TERM.—Begins Wednesday, September 30; ends Wednesday, December 28.

WINTER TERM.—Begins Tuesday, January 5; ends Friday March, 18. Spring TERM —Begins Tuesday. March 29; ends Friday, June 10. Fall TERM, 1892.—Begins Wednesday, September 28.

THE SUMMER SCHOOL.

Attention is called to the Summer Term of ten weeks, the August

Review of five weeks, and the September Review of three weeks, particularly designed for those who wish to review rapidly subjects for the September entrance examinations.

SUMMER TERM, 1892.—Begins Thursday, July 7; ends Friday, September 16.
AUGUST REVIEW, 1892.—Begins Tuesday. August 16; ends Friday, September 16.
SEPTEMBER REVIEW, 1892.—Bégins Thursday. September 1; ends Friday, September 16.

# TIMACA HIGH SCHOOL.



The High School is a department of the Public School System of Ithaca, under the control of the Board of Education. Iť ranks fifth in the list of schools under the visitation of the Regents of the University of N. Y State. It occupies a beautiful and commodious building, well provided with apparatus and all other facilities for the most thorough instruction.

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Nearly one-third of the students in attendance are non-residents, many of whom are preparing for Cornell University. The courses of study are so arranged as to accommodate students preparing for any course in the University. Non-resident students, de-

siring to complete their preparation in as short a time as possible, are permitted to select from any of the courses such studies as they are prepared to pursue.

For admission to the High School a fair knowledge of the common English branches is required Certificates of the requisite scholarship from principals of other schools of good standing and the Regents' preliminary certificate are accepted instead of examination. In all other cases, an examination in Arithmetic, Geography, Grammar, Reading and Spelling is required for admission.

Students desiring to make up any deficiencies in the common English studies will find excellent advantages for doing so in the Grammar Department.

Students residing in any part of this State who desire to secure State scholarships in Cornell University can avail themselves of the superior advantages offered by the High School to prepare for the scholarship examination as well as for the University, and still remain eligible to scholarships in the countles of their residence where there is less competition for the scholarships. The school year begins on the first Monday of September, and continues forty weeks, with a vacation of one or two weeks, including Christmas and New Year's Day, and another of one week, including the first day of April. Board and rooms can be obtained for from \$4.00 to \$7.00 per week. TUITION, \$30 per year, payable quarterly, in advance. Text books are loaned to students without extra charge.

For a catalogue of the school or any other information desired, address, L. C. FOSTER, Sup't of Schools, ITHACA, N. Y. 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 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. Wilkins' Primer of Roman Literature. T., Th., S., 9. Assistant Professor ELMER.

Open to students who have completed course 1.

4. 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. Wilkins' Primer of Roman Literature. T., Th., S., 10. Assistant Professor ELMER.

Open to students who have completed course 2.

5. Selections from Cicero's Letters, with accompanying practice in composition in the epistolary form. Assistant Professor ELMER.

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

[6. Selections from the Republican Literature; Plautus, Lucretius, Catullus. Cruttwell's aud 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, Juvenal and Tacitus, with brief selections from other writers of the time. Cruttwell's and Teuffel's Histories of Roman Literature; Capes' Early Empire and Age of the Autouines. T., Th., S., 9. Professor HALE.

Courses 6 and 7 are given in alternate years.

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[8. Teacher's Training Course. After 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, selections will be read from the Cæsar, Cicero, and Virgil of the preparatory course. In connectiou with the reading of the first two authors, a survey of the social and political conditions of the times will be made, and, in connection with the reading of Virgil, a study of the literary characteristics of his work.

Exercises in translation at sight from sentences written upon the board (as in the Fall term in course 2, but with reference to various stages of advancement in the preparatory work) will be conducted from time to time by the instructor and by members of the course.

The general aim of the course is to prepare students who intend to teach to enter upon their first year of work with confidence. F., 12. Professor HALE.

Course 8 alternates with course 9.]

9. 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., 12. Fall and Winter terms. Professor HALE.

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

Course 8 alternates with course 9.

10. Latin Syntactical Seminary. The investigation of unsettled problems in Latin syntax. Lectures, and preparation of papers by members of the Seminary. T., 3-5. Professor HALE.

Open to graduates, and, with the consent of the instructor, to undergraduates of special attainments.

For Latin grammar with reference to the history of sounds and inflections, see under Comparative Philology, course 2.

For Roman Art, Roman Topography, etc., see under Classical Archaeology, courses 1, 4, and 7.

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

#### THE GERMANIC LANGUAGES.

1. Brandt's German Grammar and Reader. Translation from English into German. Reading easy stories, poems, and novels. Committing short poems to memory. M., W., F., 9, 11, 12. T., Th., S., 10, Dr. von Klenze. M., W., F., 10, 11; T., Th., S., 8, 9. Mr. ADAMS.

2. Hermann und Dorothea, Wilhelm Tell, Minna von Barnhelm. Advanced grammar and composition. Writing from dictation. Translation at sight. M., W., F., 9; T., Th., S., 9. Professor WHITE. M., W., F., 10; T., Th., S, 10. Professor HEWETT.

3. Lectures upon German literature from the beginning to the Reformation, with special reference to Germanic antiquities. This course will be accompanied by views illustrating literary history and the institutions and social life of the time. T., Th., 9. Professor HEWETT. 4. The history of German literature from the Reformation, with a brief review of the preceding period. Lectures, with illustrative views. T., Th., 11. Professor WHITE.

5. First half-year. Lessing's Nathan der Weise and writings upon art. Second half-year, German Lyrics from the Reformation to the present time. M., W., 11. Professor HEWETT.

6. Middle High German. Selections from the Nibelungenlied, the epics of Wolfram, Hartmann and Gottfried, and Walter von der Vogelweide's lyrics. To be studied in connection with the literary history of the period. M., W., 10. Professor WHITE.

7. Old High German. Selections from Tatian, Otfrid's Krist, and minor specimens of Old High German literature. To be studied in connection with the literary history of the period. Students electing this course are strongly advised to take course 7a in English during the fall term. T., Th., 8. Winter and Spring terms. Dr. VON KLENZE.

[8. German Seminary. Luther's Life and Works. Two hours weekly in 1892-93. Professor WHITE.]

[9. In 1892-3, continuation of course 3. Lectures on German literature from the Reformation to Goethe's death, T., Th., 10. Professor HEWETT.]

10. Advanced German composition. T., Th., 8. Fall term. Dr. VON KLENZE.

11. Scientific German. Intended for those who by rapid reading wish to acquire a vocabulary of scientific terms. S., 9. Dr. von KLENZE.

[12. Goethe's Faust. Parts I and II. Two hours weekly in 1892-93. Professor WHITE.]

#### THE ROMANCE LANGUAGES.

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

1. Whitney's Freuch Grammar. Super's French Reader. Tableaux de la Révolution Frauçaise. M., W., F., 8. Mr. GIESE. 9. Mr. BAILLOT. 11. Mr. BAILLOT. 12. Mr. W. R. CHAMBERLAIN. T., Th., S., 8. Mr. GIESE. 9. Mr. W. R. CHAMBERLAIN. 10. Mr. GIESE. 12. Mr. GIESE.

2. Le Romantisme Français. Hernani. Halévy's L'Abbé Constantin will be used in connection with Grandgent's system of French composition, one hour a week. M., W., F., 8. Mr. GIESE. 9. Mr. W. R. CHAMBERLAIN. 10. Mr. BAILLOT. T., Th., S., 11. Mr. BAILLOT. 12. Mr. W. R. CHAMBERLAIN. Students in the course in Arts may take this course as a two hour elective by omitting the composition.

3. Literature aud society of the seventeenth century. Lectures and recitations based on Herrig and Burguy's La France littéraire and Crane's La Société Française au XVII<sup>o</sup> siècle. M., W., F., 9. Professor CRANE.

This course is designed as the third year of required French in the course in Letters, and the hour may be changed to suit the convenience of students in that course.

4. Introduction to the study of the French classical drama. Comedy. Lectures on the origin of French comedy, and rapid reading of Corneille's Le Menteur, Racine's Les Plaideurs, Molière's Misanthrope, etc. Seminary work may be arranged in this course for those who desire to make their graduation theses in this subject. T., Th., 9. Professor CRANZ. [In 1892-3 a similar course will be given on French tragedy].

5. Modern French writers. Balzac's short stories. F., 8. Professor CRANE. [In 1892-3 a similar course will be given on George Sand].

6. Modern French literature. About's Le Roi des Montagnes, Daudet's Trente ans de Paris, Peyrebrune's Les Frères Colombe, Coppée's prose and poetry. T., Th., 10. Mr. BAILLOT. This course will be conducted entirely in French, and will be open only to those who have hal courses 1, 2, and are otherwise prepared to attend this course with profit.

7. Readings from the recent French drama. Labiche's Le Voyage de M. Perrichon, Pailleron's Le Monde où l'on s'ennuie. S., 10. Mr. BAILLOT. A number of plays will be read and explained, wholly in French, by Mr. BAILLOT. To this course will be admitted only those who have had courses 1 and 2, and it will count only when taken in connection with some other course in French.

8. French philology. F., 8. Mr. W. R. CHAMBERLAIN. This course is open only to those who have had courses 1, 2, and Latin.

9. Italian. Selections from Dante's Inferno, Petrarch, and Boccaccio. T., Th., 8. Professor CRANE.

10. Italian grammar and reading. T., Th., 8. Mr. W. R. CHAM-BERLAIN.

11. Spanish grammar and reading. M., W., 8. Professor CRANE.

#### ENGLISH.

 Freshman Rhetoric. M., W., 11, 12; T., Th., 11, 12. Dr. EM-ERSON, Mr. COFFIN, and Mr. STRUNK.
 Sophomore Rhetoric. M., Th., 11; T., W., 10. Dr. EMERSON, Mr. COFFIN, and Mr. STRUNK. 3. Junior Rhetoric. Open to students who have passed with distinction in courses I and 2. Lectures upon the history of the formation and growth of English style, with collateral readings and essays. T., Th., II. Professor HART.

4. Senior Rhetoric. Open to students who have passed in course 3. A critical study of the stylistic peculiarities of English authors of prominence, chiefly prose writers. Lectures upon the foreign influences, classical and modern, that have affected English style. Members of the class will be required to investigate collateral topics, involving original research, and to submit the results in the shape of theses. T., Th., IO. Professor HART.

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

Students who expect to study Elocution sometime in their University course are advised to do it in the junior, rather than in the senior year.

Juniors in Elocution who purpose to take Oratory in their senior year, are advised to elect the Junior Rhetoric as a desirable preparation for the work in Oratory.

6. Oratory. Lectures upon the structure of orations, and upon oral discourse. Exercises in writing orations on given subjects. Fall term. Hours to be arranged. Orations, speeches, and addresses. Each production read and criticised with the author. Weekly public oratorical exercises. Winter term. M., 7.30. Other hours as assigned. Designed for seniors and graduates who have taken course 5, or its equivalent. Counting two hours. Associate Professor BRAINARD G. SMITH.

7. Early English Philology. Formation of the English Language. a. Fall term. The Gothic language; Balg's translation of Browne.

b. Winter and Spring terms. Sievers, Old English Grammar;

Sweet, Anglo-Saxon Reader. M., W., F., 9. Professor HART. Course *a* is introductory, and is planned with regard also to students in comparative philology and in Old and Middle High German. Such students are not required to pursue course *b*.

8. Middle English Philology. Open to students who have passed in course 7. Further development of the language. Morris, Specimens of Early English. T., Th., 12. Dr. EMERSON.

8a. The History of the English Language. The development of English from the earliest times, with an outline of its changes in

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sounds, forms, and syntax; designed for students who are not making a special study of English philology. Lectures and recitations. Two hours. M., W., 12. Dr. EMERSON.

9. Seminary in English Philology. Open to students who have passed in course 7. Reading of longer Early or Middle English texts, with investigation of grammatical peculiarities; original research, to be submitted in the shape of theses. M., W., II. Professor HART.

9 a. Icelandic. Open to students who have passed in 7 a. Noreen's grammar; reading of easy prose and selections from the Edda. Winter and Spring terms, M., W., F., 10. Professor HART.

[The hours of Courses 7-9 a may be changed to avoid conflict with other studies.]

10. Junior Seminary in English Literature. The study of prose authors. Two hours. (The day and hours to be fixed after beginning of the Fall term.) Professor CORSON.

11. Senior Seminary in English Literature. The study of prose authors. Two hours. (The day and hours to be fixed after the beginning of the Fall term.) Professor CORSON.

12. Lectures on English Literature, including the period from Milton to the X1X:h century, inclusive. M., W., F., 10. Professor CORSON.

13. Lectures on English Literature, including the period from Chaucer to Shakespeare, inclusive. T., Th., 10. Professor CORSON.

#### PHILOSOPHY.

No course in Philosophy can be taken by freshmen. Course 20 is required of all sophomores, except those in the technical departments. The remaining courses, which are elective, are open to juniors, seniors, and graduates—the fifty-courses to graduates who have taken the corresponding lower courses, the forty-courses to seniors and graduates who have taken the corresponding thirty-courses, which are all open

to juniors.

1. Popular lectures on current Philosophical Topics.

During the Fall term different members of the School will give public lectures in Barnes Hall on the Wednesday evening of every alternate week. They are open to the public, but do not count towards graduation.

20. Physiology, Psychology, Logic. Three hours a week. Physiology, Fall term. Lectures, in two sections, T., Th., 10, 11, and practicums and demonstrations in four sections, Th., F., 2-4, S., 9-11, 11-1. Professor WILDER. Psychology and Logic, Winter and Spring terms.

Lectures, S., 10. Professor SCHURMAN. Recitations, in six sections, M., T., W., Th., F., 10, 11. Messrs. CREIGHTON, CALDWELL, and WILLCOX.

Supplementary examinations for removing conditions in this course are held on Saturday, Oct. 3rd, at 9 a. m., in the Botanical - Lecture Room, and at no other time.

30. Psychology. Lectures, recitations, and experimental illustrations. M., W., F., 9. Assistant Professor ANGELL.

31. History of Greek Philosophy, including the Alexandrian and Roman. Lectures. F., 8. Mr. HAMMOND.

32. History of Modern Philosophy. An account of modern metaphysical theories from Descartes to the present time, in their relation to the development of the sciences and the progress of civilization. Lectures, recitations, discussions, and occasional essays. M., W., 8. Mr. CREIGHTON.

33. Contemporary Philosophy in Europe with a sketch of German Pessimism. Lectures. T., 12. Mr. CALDWELL.

34. History of Religions. For 1891-2, Semitic Religions with special reference to the Religion of Israel. Lectures and recitations. M., W., F., 12. Professor CHAS. M. TYLER.

35. Ethics. An outline of moral facts and moral theory, with an application of principles to life—individual, family, and social. Lectures, discussions, and text-book study. T., Th., S. Professor SCHURMAN.

[36. Christian Ethics. Lectures. Th., 12. Professor CHAS. M. TYLER.

This course, which is altogether of a practical character, will not be given until 1892-3.]

37. The Science and Art of Teaching. Lectures. M., W., F., 2. Professor S. G. WILLIAMS.

38. The Science and Art of Teaching (Advanced). Discussions and essays on educational topics, and reports on visits to schools. Th.,

3-5. Professor S. G. WILLIAMS.

This course, which is intended as an auxiliary to course 37, can be taken only by those who have pursued or are pursuing course 37. 40. The Writings and Philosophy of Plato and Aristotle. Lectures,

and interpretations of the Republic and Nicomachean Ethics. M., W., F., 3. Mr. HAMMOND.

41. Spinoza's Ethics, Leibnitz's Philosophical Works, Hume's Treatise of Human Nature. Recitations, discussions, and theses. T., Th.,

II. Mr. CREIGHTON.

Course 41 is open to juniors as well as seniors.

42. Metaphysics and Epistemology. Lectures, discussions, and essays. M., W., F., 11. Mr. CALDWELL.

[42a. Logic and the Methods of the Sciences. Lectures, discussions, and essays. M., W., F., 11. Mr. CALDWELL.

Course 42a, omitted in 1891-2, will be given in alternate years with course 42.]

43. Kant's Critique of Pure Reason. Readings, discussions, theses. Two or three hours a week. Mr. CREIGHTON.

14. Philosophy of Religion. Discussions and essays on the basis of Martineau's Study of Religion. Thursday evening, 71/2-91/2. Professor CHAS. M. TYLER.

45. Etlics (Advanced). A comparative study of recent moralists for the purpose of reaching a tenable ethical theory. Essays and discussions, with occasional lectures. M., W., 8. Professor SCHURMAN.

46. Practical Ethics. The history and present condition of the institution of the family, a general survey of penology and criminology, and a discussion of the ethical aspects of insanity, suicide, intemperance, and pauperism. Lectures, reports, and discussions. T., Th., 9. Dr. WILLCOX.

47. The History of Education. Lectures. T., Th., 2. Professor S. G. WILLIAMS.

50. Psychological Seminary. For the direction of laboratory work and original research in Experimental Psychology. Two hours a week. Assistant Professor ANGELL.

51. Metaphysical Seminary. For the direction of original investigation in metaphysics. Two hours a week. Messrs. CREIGHTON and CALDWELL.

52. Ethical Seminary. For the direction of original investigation in Ethics. F., 8. Professor SCHURMAN.

53. Pedagogical Seminary. Study of Waitz's Allgemeine Pädagogik or Clemens Nohl's Pädagogik für höhere Lehranstalten. T., 3. Professor S. G. WILLIAMS.

54. General Philosophical Symposium. For the study of the literature of contemporary Philosophy as represented by periodicals and new books. Monday evening, 7-9. Conducted by the professors and instructors.

(A fuller description of the foregoing courses in Philosophy is given in a pamphlet which may be obtained by applying to the Registrar.)
## COURSES OF INSTRUCTION.

### HISTORY AND POLITICAL SCIENCE.

#### HISTORY.

I. The History and Civilization of Greece and Rome. Fall term, Greece. Winter and Spring terms, Rome. T., Th., 9. Associate Professor BURR. Designed for freshmen, and required of all candidates for the degrees of A.B. and Ph.B.

[2. Private and Political 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 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, photographs, 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., 12. 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. Associate Professor BURR.

5 a. Seminary in Mediæval History. The reading of some mediæval chronicler, with a view to an acquaintance with mediæval life and a familiarity with mediæval Latin. For the present year the chronicler (who will be chosen alternately from those of England and the Continent) will be Bede (*Historia ecclesiastica*). Fall term. W., 4-6.

Waile courses 5 a, 5 b, and 5 c have no necessary dependence on each other and may be taken singly by such as are prepared, they are arranged to form a year of continuous seminary work in mediæval history.

5 b. Palæography and Diplomatics (the reading of historical manuscripts aud the interpretation of historical documents, especially those of the Middle Ages). The course is progressive by centuries and based upon actual study of the manuscripts and fac-similes in the University's possession. A knowledge of Latin is an indispensable prerequisite to this course. Winter term. W., 4-6. Associate Professor BURR. 5 c. Seminary in Mediæval History. The critical study of some author, period, or event in mediæval history. For the present year, the topic (which will be chosen alternately from English and from Continental history) will be: Charles the Great and the restoration of the Empire. Spring term. W., 4-6. \* Associate Professor BURR.

## COURSES OF INSTRUCTION.

6. The Political and Social History of England during the Middle Ages. Lectures and examinations. Designed for sophomores and juniors. Fall and Winter terms. T., Th., 10. Associate Professor BURR.

9. American History from the Earliest Discovery to the end of the War for Independence. Lectures and recitations. M., W., F., 3. Professor M. C. TYLER. Open only to those who have taken, or are taking course 6 and course 16.

[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., F., 3. Professor M. C. TYLER. Open only to those who have taken or are taking course 6 and course 16.]

12. American Constitutional History. Lectures and recitations. T., Th., 3. Professor M. C. TVLER. Designed for those who have had courses 9 and 10, 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., 4-6 p. m. Professor M. C. TYLER. Open only to graduates and properly qualified seniors.

13 a. Canadian Constitutional History and Law. From the English occupation in 1760 till the present time. With special reference to contemporary American constitutional development, and prefaced by a brief study of the institutions of Canada under the French, as contrasted with those of the British colonies. Lectures and recitations. Open to all students. Mr. COFFIN. F., 12.

14. General European History since the Middle Ages. Recitations with occasional lectures. Open to sophomores and juniors. T., Th., 11. Professor TUTTLE.

15. Epochs in the history of Modern Europe. Lectures. Fall: The Age of Transition. Winter: The Eighteenth Century. Spring: Social and Political Development since 1815. M., W., F., 11. Professor TUTTLE.

16. Political and Constitutional History of England since 1485. Lectures. Designed primarily for those who are making a specialty of legal and institutional history, and for qualified students in the School of Law. Spring. T., Th., 10. Professor TUTTLE.

17. Seminary. For advanced study and research in subjects connected with modern European history. Open only to graduates and seniors who show evidence of exceptional fitness. Th., 4-6. Professor TUTTLE.

#### POLITICAL AND SOCIAL INSTITUTIONS.

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20. Political Institutions. Fall. Nature and historical development of Political Institutions. Winter. Comparative study of modern political systems, with especial reference to the practical working of Political Institutions in the United States. Spring. Municipal Institutions. M., T., W., 10. Lectures and Reports. Professor JENKS.

21. Social Institutions. Principles and history of social institutions; social problems, including pauperism, crime, savings institutions, race problems, immigration, etc. T., Th., 9. Lectures and **Reports.** Professor JENKS.

22. Elements of International Law. M., 9. Lectures. Professor JENKS.

23. Seminary. Study of Political and Social Questions. Open only to advanced students. T., 4-6. Professor JENKS.

24. Two hours a week will be set aside by Professor JENKS for informal conferences with students in the Library, at which times books of reference can be found; questions regarding methods of work can be answered, etc., to better advantage than iu the class-room. For this time no credit is allowed.

#### ECONOMICS.

30. Elementary course. Principles of Political Economy. Banking. Financial Legislation of the United States. M., W., F., 9 and 10. Two sections. Designed for sophomores and juniors. Professor LAUGHLIN and Associate Professor MILLER.

31. Advanced course. Discussion of economic writers and systems. Investigation of current economic topics: bimetallism, shipping, money, etc. T., Th., 12, and a third hour at the wish of the instructor. Counts for three hours. Open only to students who have passed satisfactorily in course 30. Professor LAUGHLIN.

32. The Industrial and Economic History of Europe and the United States in the last hundred years. Lectures and selected reading. No previous economic study required. T., Th., 2. Associate Professor MILLER.

33. Taxation. Public Finance. Banking. Comparative study of the financial methods of the United States, Great Britain, France and Germany. Open only to those who have passed satisfactorily in course I. T. Th., 8. Associate Professor MILLER. 34. History of Tariff Legislation in the United States since 1789.

W., 12. Open to all students. Professor LAUGHLIN.

35. Railway Transportation and Legislation in the United States and Europe. M., 8. Open to all students. Professor LAUGHLIN.

[36. Lectures on the Economic Problems of American Agriculture. Th., 8. Professor LAUGHLIN. Given in 1892-3].

37. Seminary. Special Investigations. Open only to students who can satisfy the instructor that they are competent to make critical studies of economic problems. M., 4-5.30. Professor LAUGHLIN.

### **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.

The following schedule of hours is made out as nearly as possible for the coming year ; but the Department reserves the right to make whatever changes may be necessary during the year.

1. For students in Arts, Philosophy, and Agriculture.

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

(a) Fall term, Solid Geometry.

(b) Winter term, Algebra.

(c) Spring term, Trigonometry.

2. For students in Science and Letters.

One section, daily ex. S., 9. Mr. RAPPLEYE.

(a) Fall term, Solid Geometry.

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

- (c) Spring term, Trigonometry.
- 3. For students in Architecture, and in Civil Engineering.
- Three sections, daily ex. S., 8. Mr. TANNER, Mr. RAPPLEYE. 9,

## Mr. FOWLER.

- (a) Fall term, Algebra, including the Theory of Equations.
- (b) Winter term, Trigonometry.
- (c) Spring term, Analytic Geometry.
- 4. For students in the Sibley College courses.

Six sections, daily ex. S. 10, Assistant Professor MCMAHON, Mr. Assistant Professor JONES, Mr. RAPPLEYE, and Mr. STUDLEY. II. FOWLER.

## COURSES OF INSTRUCTION.

(a) Fall term, Algebra.

(b) Winter term, Algebra continued.

(c) Spring term, Trigonometry.

5. For students in Agriculture.

One section, M., W., F., 10. Mr. RAPPLEYE.

Spring term, Practical Mensuration.

6. For students in Architecture.

Daily ex. S., 8. Assistant Professor MCMAHON.

Fall term, Differential and Integral Calculus.

7. For students in Civil Engineering.

Two sections, daily ex. S., 9. Professor WAIT, and Assistant Professor MCMAHON.

(a) Fall term, Differential Calculus.

(b) Winter term, Integral Calculus.

8. For students in Sibley College courses.

Five sections, daily ex. S., 8. Professor WAIT. 8, 9. Assistant Professor JONES. 11. Mr. STUDLEY.

- (a) Fall term, Analytic Geometry.
- (b) Winter term, Differential Calculus.
- (c) Spring term, Iutegral Calculus.

#### II. ELECTIVE WORK.

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

10. Analytic Geometry and Calculus, for the convenience of students in the General Courses, and especially of Sophomores. Three hours. Professor OLIVER.

11. Geometric, Algebraic, and Trigonometric Problems, with Applications; including something of Probabilities and Insurance, and of Spherical Astronomy. Two hours. Assistant Professor JONES. 12. Advanced work in Algebra, including Determinants and the Theory of Equations. Two hours. Professor WAIT.

13. Advanced work in Trigonometry. Two hours. Mr. FOWLER. (The equivalents of courses 8 or 10, 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, based upon Salmon; viz :---

(a) First year, Lines and Surfaces of First and Second Orders. Three hours. Assistant Professor JONES. (b) Second year, General Theory of Algebraic Curves and Surfaces. Two hours. Assistant Professor MCMAHON,

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

19. Advanced work in Differential and Integral Calculus.

(a) In Differential Calculus. Three hours. Professor WAIT.

(b) In Integral Calculus. Two hours. Assistant Professor MC-MAHON.

20. Theory of Invariants and Covariants. Requires courses 8 or 10, 12, 14 (a), and preferably also 11, 13, and 19. May be simultaneous with 14 (b). Two hours. Assistant Professor MCMAHON.

21. Differential Equations. Fall term. Three hours.

May be continued through the year, if desired by members of the class.

22. Theory of Functions. Three hours. Professor OLIVER.

(a) First year; General Function-Theory.

(b) Second year; Elliptic, Abelian, and Automorphic Functions.

23. Finite Differences, Factorials, and Difference-Equations, with applications to Practical Computation. Two hours. Professor OLIVER.

29. Theory of Numbers. Two hours. Professor OLIVER.

30. Quaternions and Vector Analysis. Two hours. Winter and Spring terms.

31. Theory of Probabilities and Least Squares, with some applications to philosophy, sociology, and metric science. One hour. Professor OLIVER.

32. Non-Eaclidian Geometry. Two hours. Professor OLIVER.

16. Descriptive and Theoretical Astronomy.

(a) Descriptive Astronomy, requiring but little mathematics. One

hour. Mr. STUDLEY.

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

(c) Celestial Mechanics, requiring the equivalent of courses 10 and 16 (a), and preferably also of 16 (b), 21, 24, 26, and 27. Two hours, for one or two years. Professor OLIVER.

24. The Potential Function, and Spherical Harmonics. Winter term. Two hours. Professor OLIVER.

Course 24 may be continued through the year if desired by members of the class.

26. Rational Statics, or 27, Rational Dynamics. Two hours. Professor WAIT.

28. Molecular Dynamics, and Physical Optics, based upon Sir Wm. Thomson's lectures. Winter and Spring terms. Two hours.

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

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

43. Mathematical Theory of Sound. Two hours. Assistant Professor MCMAHON.

44. Mathematical Theory of Electricity and Magnetism, based upon Maxwell. Two hours. Professor OLIVER.

17. Mathematical Pedagogy. One hour. Professor OLIVER.

Course 17 is required for the Teacher's Certificate in Mathematics.

18. Mathematical Essays and Theses. One hour. Professor OLIVER.

33. The Reading and Discussion of the Mathematical Journals. Once a week. Professor OLIVER.

In most of the above subjects an additional year's instruction, one or two hours a week, may be given if desired, or the further reading of the student will be directed.

### PHYSICS.

#### I. UNDERGRADUATE WORK.

I. 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. Messrs. MERRITT, ——, and HOTCHKISS.

Course I is intended to meet the needs of students in Architecture, Civil Engineering, Mechanical Engineering, Electrical Engineering, Agriculture, and the course preparatory to Medicine. A knowledge of plane trigonometry is required.
2. (a) Mechanics (one term), Electricity and Magnetism (two 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. Messrs. SAUNDERS and GENUNG. May be expected in 1891-92.
(b) Heat (one term), Sound and Light (two 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. Messrs. SAUNDERS and GENUNG. May be expected in 1891-92.

## COURSES OF INSTRUCTION.

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 and Letters. 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 I for (2a) or (2b); and students of whom course I 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. Two to five hours, selected by the students from afternoons, ex. S., 2-6. Messrs. MERRITT, SAUNDERS, and HOTCHKISS.

Course 3 includes laboratory experiments illustrating general laws iu 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 to students who have passed satisfactorily in courses I 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.

Students taking course 5 are advised to attend the lectures announced under course 8.

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

8. Theory of Electrical Measurements. Theory of the Dynamo. Application of Photometry to electric lighting. One hour. Lectures. F., 12. Professor NICHOLS.

Course 8 is open to students who have completed course 3. It forms a part of the prescribed work of Seniors in Electrical Engineering.

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

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.

#### II. GRADUATE WORK.

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

11. Dynamo-Electric Machinery. Two hours. Lectures, supplemented by recitations upon Thompson's Dynamo-Electric Machinery. M., W., 11. Mr. MERRITT.

12. Thermo-dynamics (Clausius). Two hours. Mr. ——.

13. Theory of Electricity and Magnetism (Mascart-Joubert). Two hours. Mr. SAUNDERS.

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

15. Theory of Light (Preston). Two hours. Mr. -----.

16. Advanced Photography. with especial reference to its application to research. Two hours. Assistant Professor MOLER.

Students who have completed courses 1 or 2, 3 and 9, or an equivalent, will be admitted to this class.

17. Readings and Discussions. Two hours. Critical reading of the

standard periodical literature relating to Physics. One evening a week. Professor NICHOLS.

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

19. Thermometry and Calorimetry. Three 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.

20. Advanced Spectroscopy. Three hours. Laboratory practice, devoted to the use of the spectrometer and spectrophotometer. Professor NICHOLS.

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

### CHEMISTRY.

I. General Chemistry. Lectures. M., 12. Acting Professor NEW-BURY.

Recitations, W., Th. and Fr., in sections, by appointment. Assistant Professor ORNDORFF and Messrs. NEWBURY, KORTRIGHT, and YOUNG.

2. Introductory Laboratory Practice in Inorganic Chemistry. One afternoon per week, by appointment. Acting Professor NEWBURY and Messrs. NEWBURY, KORTRIGHT, and YOUNG.

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

3. General Chemistry, advanced course, on the basis of the Periodic Law. Lectures. T., Th., 12. Acting Professor NEWBURY.

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

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

5. Qualitative Analysis. Laboratory work. Daily ex. S., 9-5. Professor CALDWELL, Mr. PRESWICK, and Mr. CHAMOT.

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

Course 5 is open only to those who have had courses 1 and 2.

6. Quantitative Analysis. Laboratory work and recitations. Daily ex. S., 9-5. Professor CALDWELL, Assistant Professor DENNIS, and Mr. CHAMOT.

Course 6 is open only to those who have had course 5:

7. Quantitative Methods. W., 10. Professor CALDWELL and Assistant Professor DENNIS.

Course 7 is for advanced students in course 6.

8. Qualitative and Quantitative Gas Analysis. Lectures. Winter term, F., 12. Assistant Professor DENNIS.

9. Technical Gas Analysis, comprising analysis of air, furnace gases, illuminating gas, generator gas, etc. Laboratory practice. Assistant Professor DENNIS.

Courses 8 and 9 are open only to those who have had course 5 and are taking course 6.

10. Gas Analysis, advanced course. Laboratory work. Two hours weekly. Assistant Professor DENNIS.

Course 10 is open to graduate students, and advanced undergraduates.

11. Spectroscopic Chemical Analysis. Laboratory practice and lectures. Professor CALDWELL and Assistant Professor DENNIS.

12. Agricultural Chemistry, advanced course. Lectures. T., Th., 9. Professor CALDWELL.

Course 12 is open to those who have had courses 1 and 4.

[13. Chemical Theory. Lectures and recitations. T., Th., 12. Professor CALDWELL.]

14. Applied Chemistry. Lectures. M., W., 10. Acting Professor NEWBURY.

Course 14 is open only to those who have had course 1.

15. German Chemical Readings. M., W., 12. Assistant Professor DENNIS.

Course 15 is for advanced students in course 6.

16. Organic Chemistry. Lectures and recitations. T., W., Th., 9. Assistant Professor ORNDORFF.

Laboratory practice daily, ex. S., 9-5. Assistant Professor ORN-DORFF.

Open only to those who have had courses 1, 2, and 5.

17. Special Chapters in Organic Chemistry. Lectures, one hour per week, by appointment. Assistant Professor ORNDORFF.

Open to those who have had course 16.

18. Chemical Journals. F., 10. Required of seniors in course in Chemistry. Professors and Instructors of the Department.

19. Metallurgy. Lectures. Spring term. M., W., 10. Assistant Professor DENNIS.

20. Assaying. Laboratory work. Winter term. Daily, ex. F. and S., 9-1. Acting Professor NEWBURY and Mr. NEWBURY.

## BOTANY AND ARBORICULTURE.

I. Botany. Introductory and General course. Fall and Winter. In the Fall term, the structure of the plant; outline of gross and minute anatomy; grouping of plants based on natural relationships; outline study of the broader groups. In the Winter term, the physiology of plants. Lectures. M., W., 11. Professor PRENTISS. Course I is open to all students.

2. Botany. Introductory laboratory and field work. Spring term. Practical studies of seeds, seedlings, roots, underground parts, stems, leaves and flowers; followed by a study of the Spring flora of Ithaca and vicinity, with practice in the identification of species. Two to four hours per week. M., II. Additional hours and sections by appointment. Mr. ROWLEE.

Course 2 is a continuation of course 1, and is open only to students who have taken that course. Both courses are required of all students before admission to subsequent courses.

3. Systematic and Economic Botany. Lectures, laboratory and seminary work, three hours per week. In the Fall term, taxonomy, with special studies of compositæ and gramineæ. Winter term, representative natural orders and groups of economic plants; seminary work on some assigned natural order, or some economic group, or on medicinal plants. Spring term. Field, herbarium and laboratory work, and excursions. Lectures. T., Th., 9. Professor PRENTISS. Laboratory work by appointment. Mr. ROWLEE.

4. Arboriculture and Forestry. Trees and shrubs, their structure, characteristics, cultivation, and uses; planting for ornamental and landscape effect; forests and forest economy; elements of forestry. Spring term. Lectures. F., 9. Additional work by appointment. Professor PRENTISS.

[5. Advanced Plant Physiology. Lectures, experiments, and reports. Professor PRENTISS.]

6. Exotics. A study of conservatory plants, their propagation and cultivation; management of plant-houses; practical green-house work; preparation of papers and reports on special subjects. Hours and subjects by appointment. Professor PRENTISS and Mr. SHORE.

7. Histology of Plants. Lectures and laboratory work. The laboratory work includes methods of hardening, imbedding, sectioning, and permanently mounting, besides the careful study and drawing of representative preparations of plant tissues. Fall term. Three hours per week. Lectures. M., 9. Laboratory work by appointment. Assistant Professor DUDLEY.

Course 7 or its equivalent is required of students before taking courses 5, 8, aud 9.

8. Higher Cryptogams. Both lectures and laboratory work take up the structure, development and morphology of the ferns and allied plants; and opportunity is given for the identification of native species, besides representative tropical forms. Winter term. Three hours per week. Lectures. M., 9. Laboratory work by appointment. Assistant Professor DUDLEY.

9. Fungi. The lectures, as far as possible, follow DeBary's classification, and treat of the development of typical species, and the history of economically important ones. The laboratory work follows the same lines; and each student is required to make permanent microscopic preparations whenever practicable, also a small herbarium of native parasitic fungi. Spring term. Three hours per week. Lectures, M., W., 9. Laboratory work by appointment. Assistant Professor DUDLEY.

10. Special advanced laboratory work ; investigations and thesis. For graduate and advanced students.

a. Phanerogams and Plant Physiology. Professor PRENTISS.

b. Cryptogams and Histology of Plants. In addition to the subjects named in courses 7, 8, and 9, this may include studies of the Mosses and the Fresh-water Algae. Assistant Professor DUDLEY.

### ENTOMOLOGY AND GENERAL INVERTEBRATE ZOOLOGY.

I. Invertebrate Zoology. General course. Fall term. Lectures. M., W., F., IO. 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. M., W., F., 8-1; T., Th., 2-6. Professor COMSTOCK.

3. Entomology. Lectures on the characteristics of the orders, suborders, and the more important families, with special reference to those of economic importance. Spring term. M., W., F., 10. Professor COMSTOCK.

Course 3 is open only to students who have taken course 1. Those special students in agriculture who do not take course 1, but who wish to study entomology, are recommended to take at least three hours of laboratory work (course 4) in the Fall term, and to join the Entomological Seminary (course 5) in the Spring term.

4. Entomology. Laboratory work, insect anatomy, determination of species, and the study of the life-history of insects. Fall and Spring terms. M., W., F., 8-1; T., Th., 2-6. Professor COMSTOCK.

5. Entomological Seminary. The literature of entomology. Recent advances in the practical application of entomology. Preparation and discussion of papers by members of the Seminary. Spring term. T., 2.30-4.30. Professor COMSTOCK. Course 5 is open only to students who have taken course 4.

#### SUMMER COURSE.

6. Summer Course in Entomology and General Invertebrate Zoology. Lectures M., W., F., 9; field work, T., Th., 8.30-11; laboratory work, daily ex. S., 8-5. Professor COMSTOCK. **II4** 

The laboratory and field work is arranged with reference to the needs aud 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. The Summer Course begins the Wednesday following Commencement, and lasts ten weeks.

Only those students of this University who have taken courses 1 and 3 are admitted to course 6. Teachers and others desiring to take this course without previously attending the University, should state in their applications the amount of zoological work they have done. Registration for the course will close June 1st.

The tuition fee for the Summer Course is \$25. Undergraduate students that have been members of the University during the preceding year, and graduate students that have been admitted by the Faculty as candidates for an advanced degree are excused from the payment of this fee.

### PHYSIOLOGY AND VERTEBRATE ZOOLOGY.

1. Physiology. Fall term. Thirty-three lectures, demonstrations and practicums. Lectures, two sections; T., Th., 11 and 12: practicums, three sections; Th., 2-4, and S., 9-11 and 11-1. Professor WILDER and Instructor FISH.

2. Vertebrate Zoology. Winter term. Twenty-two lectures, M., W., 10; eleven practicums, T., 2.30; laboratory work, two hours a week. Professor WILDER and Instructor FISH.

Course 2 must be preceded by course 1, or by Invertebrate Zoology, course 1.

3. Morphology of the Brain. Spring term. Seventeen lectures, T.,

2.30, Th., 11; eight practicums, T., 3.30-6; laboratory work, two hours a week. Professor WILDER and Instructor FISH.

Course 3 must be preceded by courses 1 and 2.

4. Anatomical Methods and Gross Anatomy. Fall term. Three hours per week. Laboratory work, with a weekly recitation or lecture, Th., 4.45. Associate Professor GAGE and Instructor HOPKINS.

Course 4 must be preceded or accompanied by course 1 and freehand drawing (Mechanic Arts, course 9).

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 and Instructor HOPKINS. Course 5 is open only to students who have taken course 1 and freehand drawing. Course 4 is also desirable.

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

Course 6 is open only to students who have taken courses 1, 2, 4, 5, and 8.

7. Human or Comparative Anatomy, or Systematic Vertebrate Zoology. Laboratory work, daily throughout the year. Professor WIL-DER, Associate Professor GAGE, and Instructors HOPKINS and FISH.

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. At least one term required as a preparation for course 6. Associate Professor GAGE and Instructor HOPKINS.

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

9. Anatomy for students of Art and Physical Culture. Winter term. Three or four hours per week. Laboratory work upon the manikin and dissected preparations of the muscles, with lectures. Professor WILDER and Instructor FISH.

Course 9 is open only to those who have taken course 1.

## GEOLOGY, MINERALOGY, AND PALEONTOLOGY

I. Mineralogy and Blowpipe Analysis. Fall term. Three hours. Lectures and conferences. Two hours are devoted to mineralogy proper, and one hour to practice and determinations with the blowpipe. (Required of Engineers). If desired by three or more students an additional hour will be given with the blowpipe. Assistant Professor J. F. WILLIAMS and Mr. MARSTERS, M., W., F., 2-4.

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. Three hours. (The course is intended to follow courses 1 and 2. Required for Engineers). M., W., F., 9. Assistant Professor J. F. WILLIAMS.

4. History of Organisms. An introduction to the study of organisms, including a discussion of the principles of geographical distribution and geological succession, the relations of organisms to ancestry and environment, the nature and causes of morphological characters and of organic growth, and the principles of classification; considered from a paleontological standpoint. Lectures, two hours throughout the year, T., Th.. 11. Professor H. S. WILLIAMS

Course 4 open, for the first year, to all juniors and seniors. A general knowledge of botany and zoology is desirable. This course is designed to supply a demand for instruction in the general principles of natural history. The elaborate specialization of this subject into botany, arboriculture, horticulture, entomology, invertebrate and vertebrate zoology, anatomy, physiology, and paleontology has practically excluded natural history from a place in a four years course of liberal education. This course is therefore designed to explain the chief problems regarding organisms in such a manner as to meet the needs of the general student, as well as to form an introduction to the special studies already provided for in the separate departments of natural history.

5. Pileontology. Liboratory 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, Crystallography, Crystal Measurement and Optical Properties. Fall term. Lectures on minerals and petrography. Winter and Spring terms. Three lectures weekly throughout the year. Additional hours of laboratory work may be elected at the option of the student and are earnestly Such work will be given personal supervision. recommended. Courses 1 and 2 or an equivalent are required, as preliminary. Course 6 is intended especially for seniors and resident graduates, candidates for advanced degrees. (Hours to be arranged). Assistant Professor J. F. WILLIAMS.

7. Geological Laboratory. Original investigations by advanced students, with excursions under the direction of the department. Hours to accommodate students. Assistant Professor J. F. WILLIAMS and Mr. MARSTERS.

8. Lithology for Architects. One hour. Winter term. Mr. MARSTERS.

9. Geology. Special course; required for architects. Three hours. Lectures and laboratory work. Spring term. M., W., F., II. Assistant Professor J. F. WILLIAMS.

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

## AGRICULTURE.

I. Wheat culture : preparation of soil, seeding, insects, harvesting, marketing; farm buildings, location, plans, construction, liability of contractors; fields, shape and size; fences and gates, construction, repairs, durability of wood; farm and public roads, bridges, aud culverts; farms, selection and purchase, location with regard to markets, roads, schools, society; farm yard manures, composition, manufacture, preservation, application; commercial fertilizers, composition and use. Lectures. Fall term. Daily except Saturday 11. Five hours. Professor ROBERTS.

2. Farm accounts, business customs, rights, and privileges, employment and direction of laborers; swine husbandry, breeds, feeding, management; the horse, breeds and breeding, feeding, education, care and driving; sheep husbandry, breeds and varieties, management and care, early lamb raising.

Three lectures on real estate and three lectures on contracts and personal property by the Faculty of the Law School. Lectures. Winter term. Daily except Saturday, 11. Five hours. Professor ROBERTS.

3. Farm drainage, mapping, construction, material, cost and utility, plows and plowing; farm implements and machinery, use, care and repairs; corn, oat, barley, flax, hop and tobacco culture; grasses and forage plauts; wee'ls and their eradication. Lectures. Spring term. Daily except Saturday, 11. Five hours. Professor ROBERTS.

4. Practice in fields and barns. Thursday afternoon of each week of each term, 2-5. One hour. Inspection tours to points of technical interest throughout the State. Must accompany Courses 1, 2, and 3. Professor ROBERTS.

5. Animal industry, principles of breeding, history and development, crossbreeding, improvement and creation of dairy and beef breeds of cattle; principles of feeding, care, selection and management of dairy and beef cattle. Winter term. Lectures, T., Th, 12; practice T., 2-5. Three hours. Assistant Professor II. H. WING.

6. Dairy husbandry; milk aud butter. Lectures one hour per week and practice one hour by appointment. Fall term, T., 12. Two hours. Assistant Professor H. H. WING.

7. Dairy husbandry; cheese. Lectures one hour per week and practice one hour by appointment. Spring term, T., 12. Two hours. Assistant Professor H. H. WING.

8. Dairy husbandry. Laboratory work on special problems. By appointment. One to three hours. Open only to students who have had course 6. Winter term. Assistant Professor H. H. WING.

9. Experiment Station Methods. Seminary. Critical study of the work of the Agricultural Experiment Stations as found in the published reports and bulletins. Winter term, S., 10. Assistant Professor H. H. WING.

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10. Poultry, breeding, feeding and management; construction of henneries. Lectures. Spring term, Th., 12. Mr. RICE.

### HORTICULTURE.

1. Variation of Plants under Culture. A discussion of the principles which underlie the modification and amelioration of plants under the hand of man. The course includes a consideration of the number and characters of plants under cultivation, the modification of plants by spils, latitude, climate, and treatment, selection, hybridization, heredity, etc., with some account of the labors of Knight, Naudin, Darwin, Wallace, Weismann, and others. Fall term. Lectures. M., T., Th., IO. Professor BAILEY.

Course 1 is open to all students in all courses who have taken courses 1 and 2 in Botany.

2. Principles of Horticulture. Intended as an introductory course to subsequent courses, comprising a consideration of such points of plant nutrition and physiology as underlie the practice of horticulture; also a discussion of the principles of constructing, heating, and ventilating greenhouses; general discussion of pathology. Fall term. Lectures. W., 10. Professor BAILEY.

Open only to students who have taken courses 1 and 2 in Botany.

3. Pomology. Winter term. Lectures and other class work. M., W., F., 10. Professor BAILEY and Mr. LODEMAN.

4. Olericulture or Vegetable Gardening. Spring term. Lectures and other class work. M., W., F., 10. Professor BAILEY and Mr. LODEMAN.

5. Propagation of Plants. A practical laboratory course in nursery work in the Winter term. One hour per week by appointment. Mr. LODEMAN.

6. Hundicraft. Practical training for students who intend to follow horticulture as a business. An extension of either course 3 or 4, or

both. By appointment. Mr. LODEMAN.

7. Investigation incident to previous courses. For graduates and advanced students. By appointment. 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

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systems of organs in the domestic animals. Lectures. Daily ex. S., 8. Clinical demonstrations as opportunity offers. Professor LAW.

#### ARCHITECTURE.

#### FRESHMAN YEAR.

I. Instrumental Drawing. Winter. T., Th., 2-5. Mr. YOUNG.

2. Projection and Lettering. Spring. M., W., F., 11-1. Mr. YOUNG.

#### SOPHOMORE YEAR.

3. Building Materials and Construction. Winter. Lectures. M., W., F., 9. Professor BABCOCK. Drawing. M., W., F., 2-5. Mr. YOUNG. Spring. Recitations and Drawing. M., W., F., 8-11. Mr. YOUNG.

4. Shades, Shadows, and Perspective. Spring. Lectures and Drawing. M., W., 2.30-4. Assistant Professor OSBORNE and Mr. YOUNG. Additional drawing, four hours per week.

#### JUNIOR YEAR.

5. History of Architecture. Lectures by Professor BABCOCK. Fall. M., W., F., 10. Winter. Daily, ex. S., 11. Spring. M., W., F., 9. Six hours drawing per week.

6. Theory and Practice of Architectural Design. Fall and Winter. Lectures and Drawing. T., Th., 2-6. Additional drawing and library work, six hours per week. Spring (last half of term). Lectures and Drawing. M., W., F., 2-5. Additional drawing aud library work, ten hours per week. Assistant Professor OSBORNE.

6a. Application of Mechanics to Building. Spring (first half of term). Professor BABCOCK. Lectures and Examinations. M., W., F., 12. Teu hours drawing per week.

6b. Advanced Building Construction. Fall and Winter. At hours to be arranged. Mr. YOUNG.

7. Ornament. Spring. Lectures by Professor BABCOCK. T., Th., 10.

#### SENIOR YEAR.

 8. History of Architecture. Lectures by Professor BABCOCK. Fall. M., W., F., 12. Winter. T., Th., 9.
 9. Advanced Problems in Architectural Design. Fall and Winter. Lectures and Drawing. M., W., F., 9-12. Additional drawing, six hours per week. Spring. Graduation Design. W., 11. Drawing, twelve hours per week. Assistant Professor OSBORNE.

9a. Advanced Building Construction. Fall and Winter. At hours to be arranged. Mr. YOUNG.

10. Heating, etc. Fall. Lectures by Professor BABCOCK. T., 9 and 12, Th., 9.

11. Stereotomy. Winter. Lectures by Professor BABCOCK. T., Th., 2.30, and six hours drawing per week.

12. Professional Practice. Lectures by Professor Babcock. T., 12.

### CIVIL ENGINEERING.

#### FRESHMAN YEAR.

2. Linear Drawing and Tiuting. Fall term. Drawing ten hours per week. M., W., 9-12; F., 9-1. Mr. VEDDER.

5. Land Surveying. Lectures, recitations and field work. Fall term, six hours per week. T., Th., 9-12. Spring term, eight hours per week. M., W., 9; T., Th., 9-12. Mr. VEDDER.

1 b. Lettering. Wiuter term. Drawing, eight hours per week. M., W., 9-12; F., 11-1. Mr. OGDEN.

4. Pen Topography. Winter term. Drawing, eight hours per week. T., Th., 9-12.; F., 9-11. Mr. VEDDER.

1 a. Lettering, Round Writing. Spring term. Drawing, two hours per week. F., 11-1. Mr. VEDDER.

6. Colored Topography. Spring term. Drawing, six hours per week. M., W., 10-12; F., 9-11. Mr. VEDDER.

#### SOPHOMORE YEAR.

3. Descriptive Geometry. Recitations, two hours per week. Fall term. M., W., 8. Assistant Professor JACOBY and Mr. HILL. T., Th., 8. Assistant Professor JACOBY, Mr. VEDDER, and Mr. HILL. M., W., 9. Assistant Professor JACOBY and Mr. HILL. T., Th., 9. Assistant Professor JACOBY, Mr. OGDEN, and Mr. HILL.

Winter term. M., W., 8. Assistant Professor JACOBY and Mr. HILL. T., Th., 8. Assistant Professor JACOBY, Mr. VEDDER, and Mr. HILL. M., W., 9. Mr. VEDDER and Mr. HILL. T., Th., 9. Assistant Professor JACOBY, Mr. OGDEN, and Mr. HILL.

Spring term. For Architects and Civil Engineers. T., Th., 9. Mr. OGDEN and Mr. HILL.

Original Problems, four hours per week. Fall term. M., W., 9-11. Associate Professor CRANDALL. M., W., 10-12. Assistant Professor JACOBY and Mr. HILL. T., Th., 9-11. Mr. COMSTOCK. T., Th., 10-12. Mr. OGDEN and Mr. HILL. Winter term. M., W., 9-11. Assistant Professor JACOBY and Mr. COMSTOCK. M., W., 10-12. Mr. HILL. T., Th., 10-12. Assistant Professor JACOBY, Mr. OGDEN, and Mr. HILL. Spring term. For Sibley College Students. M., W., 8. Assistant Professor JACOBY and Mr. HILL. T., Th., 8. Assistant Professor JACOBY, Mr. VEDDER, and Mr. HILL. M., W., 9. Assistant Professor JACOBY and Mr. HILL. T., Th., 9. Assistant Professor JACOBY and Mr. HILL. T., Th., 9. Assistant Professor JA-COBY. M., W., 9-11. Mr. OGDEN and Mr. COMSTOCK. M., W., 10-12. Assistant Professor JACOBY. T., Th., 10-12. Assistant Professor JACOBY and Mr. HILL. For students in Civil Engineering and Architecture. T., Th., 10-12. Mr. OGDEN.

4. Pen Topography. Winter term. Drawing, five hours per week. M., 10-1; W., 10-12. Mr. VEDDER.

5. Land Surveying. Lectures, recitations, and field work, nine hours per week. M., W., F., 9-12. Mr. OGDEN.

6. Colored Topography. Winter term. W., 12; F., 10-12. Mr. VED-DER.

8. Shades, Shadows, and Perspective. Spring term. Lectures and drawing, six hours per week. M., W., 11-1; F., 10-12, Mr. HILL.

9. Technical Reading. Spring term. Critical study of foreign technical literature, three hours per week. M., W., F., 8. French, Italian, Spanish, Professor FUERTES; German, Mr. VEDDER; French, Mr. OGDEN.

#### JUNIOR YEAR.

7. Mechanics of Engineering. Lectures and recitations, daily except S. Fall term, 8, 10. Associate Professor CHURCH. 10. Assistant Professor WING. 10, 11, 12. Mr. WEBB. 8, 11, 12. Mr. COM-STOCK. Winter term. 8, 10, 11. Associate Professor CHURCH. 10. Assistant Professor WING. 10, 11, 12. Mr. WEBB. 8, 12. Mr. COM-STOCK. Spring term. 10, 11. Associate Professor CHURCH. 10. Assistant Professor WING. 10, 11, 12. Mr. WEBB. 8, 12. Mr. COM-STOCK. Spring term. 10, 11. Associate Professor CHURCH. 10. Assistant Professor WING. 10, 11, 12. Mr. WEBB. 8, 12. Mr. COM-STOCK. Spring term. 10, 11. Associate Professor CHURCH. 10. Assistant Professor WING. 10, 11, 12. Mr. WEBB. 8, 12. Mr. COM-STOCK.

9. Technical Reading. Fall term. Critical study of foreign technical literature, two hours per week. T., Th., 12. French, Italian, Spanish, Professor FUERTES; German, Mr. VEDDER; French, Mr. OGDEN.

10. Structural Details. Winter term. Lectures and drawing, six hours per week. M., W., F., 11-1. Assistant Professors JACOBY and WING.

II. Forms and Proportions of Structures. Spring term. Lectures, three hours per week. M., W., F., 8. Assistant Professor WING.
I2. Railroad Location, Railroad Construction, and Railway Economics. Lectures, recitations, drawing and field work. Fall term.

T., Th., 9-12. Associate Professor CRANDALL. S., 8-5½. Associate Professor CRANDALL and Mr. HILL. Winter term. T., Th., 9-12. Associate Professor CRANDALL. 12-1. Mr. HILL. Spring term. M., W., F., 9. Associate Professor CRANDALL.

13. Bridge Stresses. Spring term. Lectures and recitations, five hours per week. Daily, ex. S., 12. Assistant Professor JACOBY.

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

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, Associate Professors CRANDALL and CHURCH, Assistant Professor WING, and Messrs. WEBB, OGDEN, and COMSTOCK.

#### SENIOR YEAR.

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

16. Stereotomy and Theory of the Arch. Fall term. Lectures and drawing, six hours per week. M., W., F., 11-1. Associate Professor CRANDALL.

17. Civil Engineering. Lectures. Winter term. T., Th., 11. Professor FUERTES.

18. Hydraulics. Fall term. Lectures and recitations. Daily, ex. S., 9. Associate Professor CHURCH.

1Sa. Bridge Designing. Fall term. Lectures and drawing, five hours per week. T., Th., 11-1; F., 8. Assistant Professor JACOBY.

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

<sup>•</sup> 20. Theory of Oblique Arches, Masonry Designs, and Stone Cutting. Winter term. Lectures and designs, six hours per week. M., W., F., 8-10. Associate Professor CRANDALL.

21. Hydraulic Motors. Spring term. Lectures and recitations. M., T., W., Th., 9. Associate Professor CHURCH.

23. Hydrographic Mapping and Chart Making. Winter term. Drawing, four hours per week. T., Th., 8–10. Assistant Professor WING.

24. Theses. Spring term. The subject to be approved by the Director of the College.

14a. Geodetical practice, etc. Spring term. Two weeks field work in the C. U. Surveys of Central New York, twelve hours per day. Office work, one week, five hours per day. Professor FUERTES, Associate Professors CRANDALL, CHURCH, and Assistant Professor 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. Winter term. Lectures. M., W., F., 11. Professor FUERTES.

28. Hydraulic Engineering. Spring term. Lectures. M., T., W., Th., 10. Professor FUERTES.

29. Geodetic Office Work. Spring term. M., T., W., Th., 11-1. Associate Professor CRANDALL.

### MECHANICAL ENGINEERING AND THE MECHANIC ARTS.

I. Kinematics. Juniors. Recitations and lectures. Fall term. Daily, 9. Assistant Professor BARR.

2. Materials of Construction. Juniors. Recitations and lectures. Winter term. Daily, 9. Assistant Professor BARR.

3. Machine Design\*. Fall and Winter terms. Seniors. As assigned. Assistant Professors BARR and ——. Spring term. Juniors, daily, ex. S., 9. Assistant Professor BARR.

4. Electrical Machinery†. Fall and Winter terms. Seniors. Lectures. T., Th., 11. Assistant Professor RYAN.

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

6. Applied Theory of the Steam and other Engines\*. Winter term. Lectures. Daily, ex. S., 10. Structure and operation. Spring term. M., W., F., 10. Professor THURSTON.

7. Steam Generation. Design, construction, and operation of the steam boiler. Spring term. T., Th., 10. Professor THURSTON.

8. Shopwork. (a) Freshmen. Woodworking; use of tools; car-

pentry; 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; brass-work, etc. (d) Juniors and seniors. Machinist's work; use of hand and machine tools; working to form and to gauge; finishing; construction; assemblage; erection. Daily, as assigned, 8-1, 2-6. Professor MORRIS; Messrs. —, WOOD, VANDERHOEF, GRANGER, CHESEBROUGH, and POLLAY.

• Open to students who have completed course 7, C. E. † Open to students who have completed course 7, C. E., and Junior Physics. 9. Freehand Drawing. (a) Freshmen. Daily, 8-11, 3-5 ex. S. Associate Professor CLEAVES, Messrs. GUTSELL, NOVES, and WILLIS. (b) Pen and Ink. (c) Decoration, Modelling, Water-colors, as assigned.

10. Instrumental Drawing. Required of freshmen in Mechanical and Electrical Engineering. Spring term. Daily, 8-11; M., W., F., 2-5. Associate Professor CLEAVES, and Messrs. NOVES, and WILLIS.

II. Mechanical Drawing. Specials. Daily, as assigned. Assistant Professor H. D. WILLIAMS, and Mr. REID.

12. Junior Designing and Drawing as assigned. Assistant Professor H. D. WILLIAMS, and Mr. REID.

13. Senior Designing and Drawing as assigned. Assistant Professors BARR, RVAN, and ——.

14. Mechanical Laboratory. Juniors. Fall term. Lectures. Strength of materials, tension and transverse testing, calibration dynamometers, steam gauges, weirs and meters. Winter term. Lectures. Strength of materials, compression, torsion and impact testing, oil testing, flue gas analysis, calorimetry thermometer calibration, valve setting and indicator practice. Spring term. Lectures. Strength of large specimens, special research, strength of materials, test of durability of lubricants, efficiency tests, water motors, centrifugal pumps, gas engines, injectors, steam pumps, and indicator practice. Daily, 2-5. Associate Professor CARPENTER, Mr. BISSELL, Mr. PRESTON, and Mr. ROYSE.

15. Mechanical Laboratory<sup>\*</sup>. Seniors. Fall term. Lectures. Efficiency tests, steam boilers, steam engines, turbine water-wheels, air-compressor hot air engines, transmission of power by belting and gearing. Winter term. Lectures. Test of steam engine and application of Hirn's analysis, power required to drive machine-tools, test of a steam-heating plant, test of power plants not at the University, efficiency test of injectors. Spring term. Special research, thesis work. Daily, 2-5. Associate Professor CARPENTER, Mr. BISSELL, Mr. PRESTON, and Mr. ROYSE.

Advanced work and research, as assigned by the DIRECTOR.

16. Electrical Engineering. Graduates, as assigned. Assistant Professor RYAN.

 17. Advanced work in special courses and graduate work in Mechanical Engineering, as may be assigned by Professor THURSTON.
 18. Special Research; Commercial Tests. Graduates and advanced students. Associate Professor CARPENTER.

\* Open to students who have completed course 7, C. E.

19. Consulting Engineering. Seniors. Lectures, T. and Th., 11-12. Mechanical laboratory practice and research. Daily, 2-5. Associate Professor CARPENTER.

20. History of the Development of Electrical Engineering. Lectures. Seniors and graduates. Spring term. Th., II. Assistant Professor RYAN.

21. Finance of the Production and Utilization of Electrical Energy. Lectures. Seniors and graduates. Spring term. T., 11. Assistant Professor RYAN.

22. 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.

I. Infantry Drill. School of the soldier. School of the company. School of the battalion and small arm target practice. Fall and Spring terms. M., W., F., 4.15. Captain TUTHERLY.

2. Artillery Drill. School of the soldier dismounted. Saber exercise and target practice. School of the battery dismounted for selected detachments. Fall and Spring terms. M., W., F., 4.15. Captain TUTHERLY.

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

4. Military Science. Lectures. Winter. M., W., 4.30. Captain 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 credit of three 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. On the graduation of each class, the names of such students as have shown special aptitude for military service will be reported to the Adjutant General of the Army and to the Adjutant General of the State of New York, and the names of the three most distinguished students in military science and tactics will, when graduated, be inserted on the U.S. Army Register and published in general orders from headquarters of the army.

## 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. Professor HITCHCOCK.

2. Physical Examinations.' Students of all classes by special appointment. Gymnasium office. Daily, 10 to 12, and 2 to 4, ex. W. and S. 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 and immaturity. Daily, ex. S., 5-6. Mr. NELLIGAN.

5. Gymnastic Exercises. Winter term. Sophomores, T., F., 4.30 to 6. 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. Freshmen and sophomores. Sage College gymnasium. Throughout the year. Instruction is given in class exercises, with and without apparatus. Daily, ex. S., 5. Professor HITCHCOCK.

7. Physical Education and Hygiene. For students expecting to become teachers. Recitations. Winter term. M., T., Th., and F. Hours to be assigned. Professor HITCHCOCK.

8. Methods and Appliances. Recitations. Spring term. M., T., Th., and F. Hours to be assigned. Professor HITCHCOCK and Mr. NELLIGAN.

9. Practical Gymnastics and Athletic Exercises. Only for students taking courses 7 and 8, and 1 and 9 in Physiology. Winter term. M., W., F. Hours to be assigned. Spring term. Daily ex. S. Hours to be assigned. Mr. NELLIGAN.

## 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, with marked proficiency during the last two years to any single subject, and pass the requisite examinations, may, upon application on or before June I, receive mention of the fact in their diplomas. The applicant must have taken an average of at least five hours of work throughout the two years, and in no term have fallen below four hours. Certificates of scholarly fitness to teach, will, upon application on or before June I, be given to such graduates as have successfully pursued the first course on the Science and Art of Teaching, 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.

## THE COURSE LEADING TO THE DEGREE OF BACHELOR OF ARTS.

Freshman Year. 1st Term.	. 2d Term.	3d Term.
Latin		. 2
Greek 3 .		. 3
Mathematics 3 .		. 3
French 3 .		. 3
English 2.		. 2
Greek history 2 Ro	oman history 2	. 2
Hygiene I .	· · · · · · · · <del>·</del> · · · · · · ·	
17	16	16
Military drill 2 Ph	uvsical training. 2 Military drill.	. 2
		1.00
Sophomore Fear. 1st lern	n. 20 Term.	3d Term.
Latin 3 .	· · · · · · · · · · · · · · · · · · ·	• 3
Greek 3 .		• 3
German 3 .		• 3
English 2 .		. 2
Physiology, Psychology and 3. Logic		• 3
14	14	14
Military drill 2 Ph Elective o to 4 eac	ysical training . 2 Military drill . ch term.	. 2
Senior Year	2d Term	ad Term
Thesis		ju zerm, 2
Military esience	· · · · · · · · · · · · · · · · · · ·	• 4
The remaining work of th	he junior and senior years is electiv	ve.

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## 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 or their equivalent in hours counted toward graduation.

Freshman Year. 1st Te	erm.	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	ng 2 Military dri	11 2
	i nysicar trainin	ng . 2 minitary un	11 2
Sophomore Year. Ist Te	27111.	2d Term.	3d Term.
Latin 3	• • • • • • •	•• 3 •• •• •	3
French or German 3	• • • • • • •	3	• • 3
History 3		3	3
English 2		2	2
Physiology, Psychology and Logic } 3		3	3
 IA		11	11
Military drill 2	Physical training	ng . 2 Military dri	11 2
Elective o to 4	each term.	0	
Senior Year.		2d Term.	3d Term.
Thesis	• • • • • • • •	· · 2 · · · · · · · · · · · · · · · · ·	2
The remaining work of	of the junior and	d senior years is ele	ctive.
Those who at entrance	e offer mathema	atics instead of Fre	nch or Ger-
man, must take two yea	rs of each of th	ose languages in t	heir course.

man, must take two years of each of those languages in their course. They must also elect at least one hour a term in place of the mathematics assigned for the freshman year.

THE COURSE LEADING TO THE DEGREE OF BACHELOR

## OF LETTERS.

Freshman Year.	ıst Term.	2d Term.	3d Term
<b>Mathematics</b> .	5	•••••5•••	• • • • 5
French	••3•••	3	3
German	••3•••	3	• • • • • 3
Chemistry	••3•••	3	••••3
English	2	2	2
Hygiene	I	–	
	17	16	16
Military drill .	2 Physical	training . 2 Militar	y drill 2

9

#### , COUR E OF STUD.

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Sophomore Year. 1st Term.	2d Term. 3	d Term.
French 3		• 3
German 3	• • • • • • • • • • • • • • • • • • • •	• 3
English 2		. 2
Physics	••••••• <b>3</b> •••••	• 3
Physiology,		•
Psychology and $\{3,\ldots\}$	• • • • • • • • • • • • • • • • • • • •	• 3
Logic )		•
14	14	14
Military drill 2 Phys	ical training . 2 Military drill .	. 2
Elective o to 4 each	term.	
Senior Year.	2d Term.	3 Term.
Thesis		. 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.

For the course iu Letters, two years of both French and German are required, in addition to the entrance requirements in those languages.

Those who at entrance offer mathematics instead of one of the modern languages, must take three years of that language in their course. They must also elect at least three hours a term in place of the mathematics assigned for the freshman year.

## THE GENERAL COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE.

Students in the course in Science who in their sophomore year elect invertebrate aud vertebrate zoology, and at least two terms of freehand drawing, 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 I, receive the degree of Bachelor of Science in Natural History.

Freshman Year.	I	st	Te	ern	1.						2	d '	Ter	m,	•					3	Jd	Term
Mathematics .	٠	•	5	•	٠	•	٠	٠	•	•	•	•	5	٠	•	•	٠	٠	•	٠	•	5
French	٠	•	3	•	٠	٠	٠	•	•	٠	٠	•	3	•	٠	•	•	•	•	٠	•	3
German	٠	•	3	•	٠	٠	٠	•	٠	٠	٠	٠	3	٠	٠	٠	٠	٠	٠	•	٠	3
English	٠	•	2	•	٠	٠	٠	•	٠	•	٠	٠	2	٠	٠	٠	٠	٠	٠	٠	٠	2
Chemistry	٠	•	3	٠	٠	٠	•	٠	٠	٠	•	٠	3	٠	٠	٠	٠	٠	•	٠	٠	3
Hygiene	•	٠	Ι	٠	٠	٠	٠	٠	٠	٠	٠	٠	-	٠	٠	٠	٠	٠	٠	٠	•	-
		•	_										_									_
			17										10									16
Military drill .	٠	•	2	Pł	<b>1</b>	sic	al	tr	ai	ni	ng	•	2	M	ili	ta	ry	dı	ril	1,	•	2

Sophomore Year.	Ist Term.	2d Term.	3d Term.
French or Germ	an 3	3	3
English .	2	2	2
Physics	3	3	3
Botany Physiology.	2	2	2
Psychology and Logic	} 3	3	3
SE:1:4 Ju:11	- Dhanical Aminin	-3 	• 3
Elective	2 Physical trainin 1-5 each term.	g 2 Military drill	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 students must devote at least nine hours continuously to scientific subjects.

For the course in Science, two years of French and one year of German, or two years of German and one year of French are required, in addition to the entrance requirements in those subjects.

Those who at entrance offer mathematics instead of one of the moderu languages must take the full amount of both French and German as indicated above. They must also elect at least three hours a term in place of the mathematics assigned for the freshman year.

## II. THE TECHNICAL COURSES.

## THE COURSE IN AGRICULTURE.

Leading to the degree of Bachelor of Science in Agriculture.

Enclose Very at Many at Many at Many

resaman year. Is	t Term.	2d Terr	n. 3	d Ter	Π
French, German or Mathematics	3	3		3	
Invertebrate Zool.	3 Ver	tebrate Zool. 3 1	Entomology	3	
English	2	2		2	
Physiology	3 Fre	ehand drawing 3		3	
Chemistry	3	3		3	
Hygiene	I	-		-	
	-				
	15	14		14	
Military drill	2 Phy	sical training 2	Military drill	2	

Sophomore Year. 1st Te	erm. 20	l Term.	3d Term.
English 2	• • • • • • • •	. 2	2
Physics 3		. 3	3
Agricultural chem. 3		. 3	••3
Political economy 3		. 3	3
Anat. methods I	Micros. methods	. I	–
Anatomical lab 2	Microscopical lal	b. 2 Applied Ma	th 3
Botauy 2	• • • • • • • •	. 2	2
16		16	16
Military d'ill 2 Elective 0-2	Physical training each term.	7. 2 Military dri	11 2
Junior Year.			3d Term.
Freehand drawing .			••• 3
Senior Year.	2	d 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, a list of which is given below (the studies being arranged in the general order in which they should be taken):

Agricultural chemistry : advanced lectures ; laboratory work in qualitative and quantitative analysis. Courses 4, 5, and 6.

Botany: compositæ and graminæ; arboriculture and landscape gardening; vegetable physiology, vegetable histology; fungi and algæ, and systematic and applied botany. Courses 3, 4, 5, 6, 7, 9, aud 10.

Geology, economic : lectures. Course 3.

Entomology : lectures and laboratory practice. Courses 1, 2, 3, 4, 5, and 6.

Horticulture : lectures and field work. Courses 1, 2, 3, 4, 5, 6, and 7. Veterinary studies : anatomy and physiology ; pathology ; sanitary science ; parasites ; medicine and surgery. Course 1. Agriculture : lectures and field work ; dairy husbandry and laboratory work ; experiment station methods (for seniors). Courses 1 to 10 inclusive.

Land surveying. Civil Engineering, course 5. Of the three advanced subjects, French, German, and Mathematics, included among the requirements for admission, two must be offered at entrance, and the third taken during the first year.

### THE COURSE IN ARCHITECTURE.

Leading to the degree of Bachelor of Science in Architecture.

#### FRESHMAN YEAR.

FALL TERM.—French or German, 3; algebra, 5; rhetoric, 2; freehand drawing, 3; hygiene, 1; chemistry, 2; drill, 2.

WINTER TERM.—French or German, 3; trigonometry, 5; rhetoric, 2; freehand drawing, 3; instrumental drawing, 2; chemistry, 2; physical training, 2.

SPRING TERM.—French or German, 3; analytic geometry, 5; rhetoric, 2; pen drawing, 3; chemistry, 2; projection and lettering, 2; drill, 2.

#### SOPHOMORE YEAR.

FALL TERM.—Calculus, 5; descriptive geometry, 3; mechanics and heat, 3; botany, 2; figure drawing, 2; drill, 2.

WINTER TERM.—Building materials and construction, 6; descriptive geometry, 3; electricity and magnetism, 3; botany, 2; pen drawing, 2; blowpipe analysis, 1; physical training, 2.

SPRING TERM.—Construction, 4; descriptive geometry, 3; acoustics and optics, 3; shades, shadows, and perspective, 3; geology, 3; drill, 2.

#### JUNIOR YEAR.

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

WINTER TERM.—Mechanics, 5; Byzantine and Romanesque architecture, 5; designing, 6; structural details, 2.

SPRING TERM.—Gothic architecture, 5; decoration, 2; photogra-

## phy, I; designing, 7; water color drawing, 2.

#### SENIOR YEAR.

FALL TERM.—Renaissance architecture, 5; theory of the arch, 3; designing, 8; heating, ventilation, etc., 3.

WINTER TERM.—Modern architecture, 2; stereotomy, 3; designing, 8; thesis, 2; military science, 2.

SPRING TERM.—Professional practice, 1; modelling, 2; designing, 7; decoration, 3; surveying, 2; thesis, 2.

### COURSE IN CIVIL ENGINEERING.

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

#### FRESHMAN YEAR.

FALL TERM.—Algebra, 5; linear drawing and tinting, 4; land surveying, 3; chemistry, 2; rhetoric, 2; hygiene, 1; military drill, 2.

WINTER TERM.—Trigonometry, 5; pen topography, 3; lettering, 3; chemistry, 2; rhetoric, 2; physical training, 2.

SPRING TERM.—Analytic geometry, 5; land surveying, 4; colored topography, 3; lettering, 1; chemistry, 2; rhetoric, 2; military drill, 2.

#### SOPHOMORE YEAR.

FALL TERM.—Calculus, 5; descriptive geometry, 3; experimental mechanics and heat, 3; mineralogy and blowpipe analysis, 3; botany, 2; military drill, 2.

WINTER TERM.—Calculus, 5; descriptive geometry, 3; electricity and magnetism, 3; general geology, 3; botany, 2; physical training, 2.

SPRING TERM. — Descriptive geometry, 3; shadows and perspective, 2; acoustics and optics, 3; economic geology, 3; metallurgy, 2; technical reading in foreign languages, 3; military drill, 2.

#### JUNIOR YEAR.

FALL TERM.—Mechanics of engineering, 5; railway location, 3; civil constructions, 3; engineering laboratory work, 3; political economy, 3.

WINTER TERM.—Mechanics of engineering, 5; railway construction, 4; structural details, 2; engineering laboratory work, 3; political economy, 3.

SPRING TERM.—Mechanics of engineering, 4; form and proportion

of structures, 2; bridge stresses, 4; railway economics, 2; political economy, 3; topographical practice, two weeks, and office work, one week, 3.

#### SENIOR YEAR.

FALL TERM.—Hydraulics, 5; spherical astronomy, 5; practical astronomy, night observations, 2; bridge designing, 3; cartography, 3.
WINTER TERM.—Hydraulic motors, 2; hydraulic engineering, 3; theory of right and oblique arches, 3; higher geodesy, 5; special engineering laboratory work, 3.

SPRING TERM.—Municipal engineering, 3; sanitary engineering, 3; stone cutting, 3; geodetic and astronomical computations, 3; special engineering laboratory work, 3; trigonometric and hydrographic surveys of Central New York, two weeks, and office work, one week, 3; preparation of theses, 4.

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 watersupply 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 TRRM.—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 Director of the Department of Civil Engineering.

## COURSES IN MECHANICAL ENGINEERING.

Professional courses leading to the degree of Mechanical Engineer.\*

REGULAR COURSE.

#### FRESHMAN YEAR.

FALL TERM.—French or German, 3; algebra, 5; chemistry, 3; freehand drawing, 3; shopwork, 3; hygiene, 1; drill, 2.

\*All elections to be approved by the Director. Students will report for instructions. Students are advised and encouraged to take shop practice in vacation. Three hours in the shop or drawing room, or two and a half in the laboratory, count as one in the schedule.
WINTER TERM.—F.ench or German, 3; algebra, 5; chemistry, 3; freehand drawing and machine sketching, 3; shopwork, 3.

SPRING TERM.—French or German, 3; trigonometry, 5; instrumental drawing, 3; chemistry, 3; shopwork, 3; drill, 2.

#### SOPHOMORE YEAR.

FALL TERM.—Analytic geometry, 5; descriptive geometry, 3; experimental mechanics and heat, 3; chemical laboratory, 3; shopwork, 3; drill, 2.

WINTER TERM.—Differential calculus, 5; electricity and magnetism, 3; chemical laboratory, 3; descriptive geometry, 3; shopwork, 3.

SPRING TERM.—Integral calculus, 5; acoustics 'and optics, 3; descriptive geometry, 3; chemical laboratory, 3; shopwork, 3; drill, 2.

### JUNIOR YEAR.

FALL TERM.—Mechanics of engineering, 5; kinematics, 5; designing and drawing, 2; physical laboratory, 2; mechanical laboratory, 2; shopwork, 3.

WINTER TERM.—Mechanics of engineering, 5; materials of construction, 5; mechanical laboratory, 2; physical laboratory, 2; designing and drawing, 2; shopwork, 3.

SPRING TERM.—Mechanics of engineering, 5; machine design, 5; physical laboratory, 2; mechanical laboratory, 2; designing and drawing, 2; shopwork, 3.

#### SENIOR YEAR.

FALL TERM.—Steam engine and other motors, 5; physical laboratory, 2; mechanical laboratory, 2; mechanical engineering and machine design, 5; shopwork, 3; elective, 0 to 3.

WINTER TERM.—Steam engine and motors, 5; physical laboratory, 2; mechanical laboratory, 2; mechanical engineering and drawing, 5; shopwork, 3; elective, 0 to 3.

SPRING TERM.—Thesis; designing and drawing; mechanical laboratory investigations; shopwork; (time divided optionally, but subject to approval of head of the department<sup>†</sup>), 12; elective, 5 to 8.

†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, including, if so arranged, the "graduating piece," 3 each; total for the term, 17.

# COURSES OF STUDY.

### SPECIAL 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, and advanced electrical engineering work introduced.

#### 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; shop-work, 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, as above, and preparation of thesis), 12; elective, o to 3.

### GRADUATE COURSE IN ELECTRICAL ENGINEERING.

#### ONE YEAR.

FALL TERM. —Structure and theory of electrical apparatus and maehinery, 3; experimental work in laboratory, 5; contracts and specifications, 3; elective, 4 to 6.

WINTER TERM.—Construction, erection, and management of lines and plant, 3; laboratory, 5; contracts and specifications, 3; elective, 4 to 6.

SPRING TERM.—Designing dynamo-electric machinery and establishments, 5; experimental work, 3; preparation of reports or thesis, 3; elective, 4 to 6.

Choice of elective studies, as well as of the special courses of engineering, is subject to the approval of the Director.

\* Students taking this course are entitled to the degree of M.E.; and the statement that they have given especial attention to electrical work is engrossed on their diplomas. None should apply unless strong in both mathematics, pure and applied, and in physics.

† This term is devoted largely to the preparation of a thesis which must be approved by the Director and the Committee on theses. If not otherwise arranged the student will take shopwork, laboratory work, and drawing, 3 each.

### COURSES OF STUDY.

### 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; elective, 3 to 6.

WINTER TERM.—Naval architecture (resistance and speed of vessels, as affected by size, form, material of surfaces and power), 3; mechauical 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 engineering, 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.

### COURSES OF STUDY.

# 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.

FAIL 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, 3; freehand drawing, 3; anatomical methods, 3; chemistry, 3; physiology, 3; botany, 2; hygiene, 1; military drill, 2.

WINTER TERM.—French or German, 3; microscopical methods and histology, 3; vertebrate zoology, 3; vertebrate zoology, laboratory practice, 2; chemistry, 3; botany, 2.

SPRING TERM.—French or German, 3; botauy (lectures, 2, laboratory work, 2), 4; brain (lectures and practicums, 3, laboratory, 2), 5; chemistry, 3; military drill, 2.

#### SECOND YEAR.

FALL TERM.—Systematic and economic botany, 3; physics, 3; chemistry, 3; invertebrate zoology, 3; advanced anatomy or his-tology, 3.

WINTER TERM.—Systematic and economic botany, 3; physics, 3; chemistry, 3; logic and psychology, 3; advanced anatomy or histology, 5.

SPRING TERM.—Systematic and economic botany, 2; physics, 3; chemistry, 3; logic and psychology, 3; fungi, 3; embryology, 4.

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 aud 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 pages 64 and 101.

#### FRESHMAN YEAR.

# Course I. History and Civilization of Greece and Rome. Required of all candidates for A B. and Ph.B. T., Th., 9.

#### 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. M., W., F., 9. Course 14. General European History since the Middle Ages. T., Th., 11.

Course 2. Private and Political Antiquities of the Greeks. T., Th., 17.

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 6, desire five hours of elective work in history. W., F., 11.

Course 6. The Political and Social History of England during the Middle Ages. T., Th., 10.

### JUNIOR YEAR.

Courses 2, 3, 4, and 6. (When not taken in the sophomore year.)

Course 9. American History from the Earliest Discovery to the eud of the War for Independence. M., W., F., 3. Open to those who have taken, or are taking, course 6 and course 16. Course 9 is given in alternate years with course 10.

Course 10. American History from the end of the War for Independence to the eud of the War for the Union. Designed for those who have taken, or are taking, course 6 and course 16. M., W., F., 3.

Course 20. History of Institutions. Designed for students who have taken course 4, and who take, or have taken, course 6. M., T., W., 10.

Course 30. The Elements of Political Economy. Required as a prerequisite to all the advanced courses in this subject. M., W., F., 10.

Course 22. International Law. M., 9.

Course 34. History of Tariff Legislation. W., 12.

#### SENIOR YEAR.

Courses 10, 14, 15, 16, 21, in case they have not been taken in the junior year.

Course 5 a, b, c. Palæography and Diplomatics. W., 4-6. Course 12. The Development of American Constitutional History and Constitutional Law from the Colonial Time to the Civil War. T., Th., 3.

Course 13. Seminary in American History. Designed for seniors specially prepared and for graduates. T., 7-9 P. M. Course 31. Advanced course in Political Economy. Open to those who have taken course 19. T., Th., 12. Course 17. Seminary. For advanced study and research in subjects connected with modern European history. Open only to graduates and seniors who show evidence of exceptional fitness. Th., 4-6.

Course 37. Economic Seminary. For the study of difficult problems in applied economics. M., 4-5.30. Open only to advanced students.

#### 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.

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# THE SUSAN LINN SAGE SCHOOL OF PHILOSOPHY.

FACULTY.

CHARLES KENDALL ADAMS, LL.D., President.

- JACOB GOULD SCHURMAN, A.M., D.Sc., Professor of Philosophy, DEAN.
- SAMUEL GARDNER WILLIAMS, A.B., Ph.D., Professor of Pedagogy.
- THE REV. CHARLES MELLEN TYLER, A.M., Professor of the History and Philosophy of Religion and of Christian Ethics.

FRANK ANGELL, B.S., Ph.D., Assistant Professor of Psychology.

JAMES EDWIN CREIGHTON, A.B., Instructor in Modern Philosophy.

WILLIAM CALDWELL, A.M., Instructor in Modern Philosophy.

- WILLIAM A. HAMMOND, A.M., Ph.D., Instructor iu Greek Philosophy.
- WALTER FRANCIS WILLCOX, A.B., LL.B., Ph.D., Instructor in Logic.

HISTORY.

This School owes its existence to the generosity of the Hon. H. W. Sage, chairman of the Board of Trustees. At a meeting of the Board held on Oct. 22d, 1890, Mr. Sage signified his intention of adding to the endowment of the Susan Linn Sage professorship, which he had established in 1886 in memory of his wife, a further gift of \$200,000 to the Department of Philosophy. His object was to provide permanently at Cornell University for philosophical instruction and investigation of the most varied kind and of the highest order. To that end he stipulated that the Trustees should for all time supplement the proceeds of his endowments with generous annual appropriations from the general funds of the University. The Trustees accepted the gift with the condition attached, and, to commemorate the munificence of Mr. Sage, and his deep interest in the subject of philosophy at Cornell University, they reorganized the department into a School which they designated "The Susan Linn Sage School of Philosophy," —this legislation to take effect in September, 1891. These formalities were concluded in a series of resolutions, which, after expressing the thanks of the Board to Mr. Sage for his latest gift, ended as follows : "That the Board renew the expression of its gratitude to him for the many munificent gifts he has already made, and for his long-continued and steadfast devotion to the highest interests of the University."

## AIMS AND METHODS.

It is the purpose of the Trustees to make this School a thoroughly efficient centre for the maintenance, diffusion, and increase of philosophical knowledge and activity in America. Recognizing the advantages of specialization they have appointed experts for every branch of philosophy, each of whom devotes his best energies to his own special subject, without being unduly burdened by teaching or examining. Recognizing also the evils of emphasizing certain portions of philosophy to the practical exclusion of others, the Trustees have endeavored to secure comprehensiveness as well as thoroughness. All sides of philosophy are represented in the courses of instruction, and every method of discovering truth-observation, experiment, historical investigation, reflection, and speculation-is welcomed within its appropriate domain. Attached to the chair of Psychology is a laboratory equipped with all the latest and best apparatus, which has just been made in Germany under the personal supervision of the professor. Ample provision has been made for the historical study of philosophy. One instructor devotes all his time to the history of ancient, and two all their time to the history of modern philosophy along with systematic metaphysics. There is a professor of the history and philosophy of religion and also a professor of pedagogy. Another professor gives most of his time to ethics, offering for the present year three graded courses, in addition to which there is a course in practical ethics by the instructor in logic. It may be fairly said there is no branch of philosophy which some member of the staff is not especially cultivating. With such a large Faculty of specialists the School will of necessity be a centre for philosophical activity and production. The teaching corps is devoted to investigation as well as to instruction, and advanced students are encouraged to undertake original research. It is expected that in this way the influence of the School will extend considerably beyond the immediate circle of its members. The Philosophical Review, which appears under the editorship of Dr. Schurman, and which is supported by the Sage endowment, will supply a ready medium for the publication of original investigations or digests and reviews of current literature by members of the School, though it is so far from being an organ of this or any School that it is intended to be a catholic journal, national aud international, of contemporary philosophy.

Much attention will be paid by the members of the School to making their instruction effective. In the earlier courses lectures are given because deemed most helpful to beginners in philosophy; but to insure the assimilation by the students of what they have received, there are also regular recitations and frequent discussions. Then follows the writing of essays on the more important themes discussed, which has been found a potent stimulus to independent reflection. In the higher courses lectures fall into the background; and the relations between teachers and students, becoming more individual, partake rather of the nature of conferences and free colloquies touching the various topics on which the students are all engaged in preparing theses. In the seminaries, laboratory, and symposium, the students are fellow-workers with their teachers, who seek to guide them, partly by direct suggestion, but mainly by precedent and example. It is believed, too, that students will receive much instruction, as well as enjoyment and benefit, from the close personal intercourse which it is an object of the School to cultivate between graduates and the members of the philosophical Faculty.

## COURSES OF STUDY.

The courses of study are enumerated elsewhere in this REGISTER, and they are fully described in a separate pamphlet which may be obtained on application to the Registrar of Cornell University. It will suffice to observe here that they are intended partly for undergraduates in Cornell University who desire a general acquaintance with the elements of the philosophical sciences, but mainly for graduates of this and other institutions who are preparing themselves for positions as teachers, professors, or other leaders of thought, and who can give a protracted period of time, (not less, it is recommended, than two, three, or four years,) to exclusive study and investigation of the great problems of philosophy. The reason for the designation of this department as a separate School in Cornell University, is to be found, apart from the propriety of the compliment due its great benefactor, in the plan and purpose of making it a School of Philosophy for graduates of American Colleges and Universities. The work arranged for such graduate students may be seen by referring to the "Courses of

# THE SUSAN LINN SAGE

Instruction," pages 98-100; Philosophy, courses 40 to 54, and even courses 30 to 40, but especially courses 50 to 54. It should, however, be added that the advantages of this School may be enjoyed by special students, (provided they are sufficiently mature), who are neither graduates nor regular undergraduates.

### EQUIPMENT.

The liberal endowments of the School of Philosophy enable it to se-·cure, along with a large number of specialists, whatever material facilities they require for the successful prosecution of philosophical studies and research. Reference has already been made to the new psychological laboratory and its fine apparatus. The library is well supplied with philosophical works; and books not on hand are ordered as soon as called for. All the philosophical journals published, both at home and abroad, are taken; and complete sets of the more important-American, English, French, and German-are already in the library. The new library building, which has just been completed at a cost of about \$300,000, furnishes ample accommodation for all readers, but especially for advanced students engaged in the work of independent investigation. Two beautiful rooms in it have been set aside as seminary rooms in philosophy. One of them, containing a select library, is open at all times to the Fellows, Scholars, and other advanced students in philosophy.

### FELLOWSHIPS AND SCHOLARSHIPS.

For the encouragement of higher studies and research in every branch represented by the School of Philosophy, there have been established for award to distinguished graduates of this and other Universities six scholarships of the annual value of \$200 each, and three fellowships of the annual value of \$100 each, both scholarships and fellowships being tenable for one year, but subject to renewal in exceptional cases. (Scholars and fellows who are candidates for advanced degrees, are also exempted from the tuition fee, \$100.) The scholarships are intended for college graduates who, during their undergraduate course or subsequently, have given evidence of special attainments in Philosophy, or in any of its branches. The fellowships will, it is expected, ordinarily be awarded to those who have already distinguished themselves as scholars in the School, but they are not restricted to this class, being open to graduates of any college or university. Candidates, however, who have not devoted at least a year to graduate study in Philosophy will scarcely be able to satisfy the minimum requirements for a Fellowship.

The Fellows for 1891-92 are :

- ERNEST ALBEE, A.B., Vermont University 1887, Scholar 1889-90, and Fellow, Clark University 1890-91.
- FERDINAND C. FRENCH, A.B., Brown University 1885, Teacher 1885-88, Student of Philosophy at Berlin and Strassburg Universities, 1888-90.
- FRANK THILLY, A.B., Cincinnati University 1887, Student of Philosophy at Berlin and Heidelberg Universities 1887-91, Ph.D., Heidelberg 1891.

The Scholars for 1891-92 are :

L. H. GALBREATH, B.L., Cornell, 1890, Resident Graduate 1890-91.

LOUISE HANNUM, B.S., Wellesley College 1891.

- R. J. KELLOGG, A.B., Cornell 1891.
- J. A. LEIGHTON, A.B., Trinity University 1891.
- A. W. MACLEOD, A.B., Dalhousie College 1888, Student of Theology 1888-90, Student of Philosophy at Harvard University 1890-91.
- T. W. TAYLOR, Jr., A.B., Manitoba University 1887, Resident Graduate 1890-91.

## THE TRAINING OF TEACHERS.

The graduate students who have held Fellowships in Philosophy at Cornell during the past four years have all received appointments as instructors or professors of Philosophy in different parts of the country. And the Dean of the School is in receipt of new applications for well-trained teachers of Philosophy. While these facts are not synonyhous with the assurance of a position to every Doctor of Philosophy who goes out from the Sage School, they do seem to show that the supply of properly qualified philosophical teachers is not in excess of the demand. And, as in the past, so in the future, the Dean of the School will be glad to act as mediator between trustees of colleges and universities who have positions in philosophy to fill, and well-trained graduates in philosophy who are competent to occupy them.

# GENERAL NOTICE.

For degrees and all other subjects passed over in this account of the School of Philosophy, see elsewhere in the REGISTER.

# SCHOLARSHIPS, FELLOWSHIPS, AND PRIZES.

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## 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, grant leave of absence after an applicant has been regularly admitted to the University. The scholarship will then be kept good; but will not be extended for more than four years from its date, unless application is made after at least one year from the time of entrance, in case of applicants who have acquitted themselves creditably in the University during this period. Those holding scholarships are therefore advised, if possible, to enter the University at once, and to postpone asking for leave of absence until after one year in the University has been completed.

# 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, nine scholarships of the value of two hundred dollars each. 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 name of every successful competitor for these scholarships is 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 these names remain in the Register so 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 the 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.

The statute in regard to Scholarships is as follows :

1. There have been established by the University thirty-six University Scholarships, and six Susan Linn Sage Scholarships, each of the annual value of \$200.

2. The University Scholarships are named as follows: The Cornell Scholarships; the Lord Scholarships; the McGraw Scholarships; the Sage Scholarships; the Sibley Scholarships; the President White Scholarships; the Horace Greeley Scholarships; the John Stanton Gould Scholarships; and the Stewart L. Woodford Scholarships.

3. The University Scholarships are given :

(a). For the first two years of any course, on the basis of excellence in special examinations held at the beginning of the Freshman year.

(b). For the third and fourth years on the basis of highest general standing in the first two years, including all the required work, and as much elective work as may be necessary to complete an aggregate amounting to sixteen hours a week taken in the University during two years. Work for which credit is given in consequence of having been done before coming to the University, is not to be considered in the computation.

4. Applicants for a University Scholarship must be free from conditions at the time of making application.

5 Scholarships for the first two years will be given for passing examinations which shall average the highest in any three of the following groups, of which group (a) must be one:

# 152 SCHOLARSHIPS, FELLOWSHIPS, AND PRIZES.

(a). Arithmetic, and algebra through quadratic equations;

- (b). Plane and solid geometry;
- (c). Greek;
- (d). Latin;
- (e). French;
- (f). German.

6. The holder of a University Scholarship shall forfeit the right to the same in case said holder shall at any time change the course in which he or she was registered at the time of receiving the award, unless the records of entrance examinations shall show that, at the time of the holder's admission to the University, all the subjects required for admission to the course last chosen were passed by him or her, and all candidates must state before the Scholarships are awarded what course they intend to pursue.

7. The holders of University Scholarships must be candidates for the first degree, and shall not be recommended by the Faculty for such degree, except after a residence of the full period of four years at the University.

8. All persons shall be debarred from the competition for University Scholarships, for the first two years of any course, who shall have participated in any previous competition for the same, or shall have been in the previous year or years registered as a student in this University, or in any other University or College.

9. A University Scholarship will be forfeited at any time in case two-thirds of the Faculty present at any meeting, notice having been given at the meeting immediately before, shall decide that the holder has been guilty of negligence, or of conduct of any kind that is unbecoming a student holding such Scholarship.

10. Whenever any University Scholarship shall for any reason become vacant, the vacancy can be filled by the Faculty only from the students of the same course as that in which the vacancy occurred.

11. The Susan Linn Sage Scholarships are awarded by the General Faculty on the recommendation of the Faculty of the Susan Linn Sage School of Philosophy; and are awarded to students who have already taken the baccalaureate degree, and are pursuing studies in philosophy and ethics with a view to a higher degree.

12. The moneys due on Scholarships are paid at the office of the Treasurer of the University in three equal payments, on 15th of December, 15th of March, and 15th of June.

# UNIVERSITY FELLOWSHIPS.

The fellowships hereinafter described are intended to offer to young

men and women of exceptional ability and decided purpose 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 choseu subjects which will lead them to exceptional usefulness and success.

The Fellows are required to reside at the University, and to engage in advanced work, 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 eutire life of the University.

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 statute in regard to Fellowships is as follows :

1. There have been established at this University four classes of Fellowships, as follows :

(a). Eight University Fellowships, denominated respectively, the Cornell Fellowship; the McGraw Fellowship; the Sage Fellowship; the Schuyler Fellowship; the Sibley Fellowship; the Goldwin Smith Fellowship; the President White Fellowship; and the Erastus Brooks Fellowship.

# 154 SCHOLARSHIPS, FELLOWSHIPS, AND PRIZES.

(b). Two President White Fellowships, denominated: first, the President White Fellowship of Modern History; second, the President White Fellowship of Political and Social Science.

(c). Three Susan Linn Sage Fellowships in Philosophy and Ethics.

(d). Two Fellowships in Political Economy and Finance.

2. The President White Fellowships in History and Political and Social Science have an annual value of \$500.00 each; the others have an annual value of \$400.00 each, the money being payable to the holders thereof in three equal parts, one part on the 15th of December, one on the 15th of March, and one on the 15th of June.

3. All candidates for Fellowships must be graduates of this University, or of some other institution having equivalent courses of instruction, and must be men or women of high character and marked ability in some important department of study.

4. Fellows will be selected by the General Faculty on the recommendation of the head of that department in which the applicant desires to carry on the principal part of his work.

5. All applications and testimonials must be filed with the Registrar on or before the 15th of May of the collegiate year preceding the one for which the application is made.

6. The term of each Fellowship is one year; but the term may be extended to two years, providing the extension does not increase the number of Fellows beyond that named in paragraph I of this act.

7. In view of the fact that practical University instruction will be of use in training said Fellows for future usefulness, each holder of a Fellowship shall be liable to render service to the University in the work of instruction or examinations to the extent of four hours per week through the collegiate year. The distribution and assignment of this service shall be determined by the head of the department in which the Fellow is doing his principal work. It is expected that the President White Fellows in History and Political Science will do a large part of their study in the President White Library, and to this end, it is required, that, except when, with the consent of the Librarian of the University, they are excused or assigned to other duties by the Faculty of History and Political Science, said Fellows shall be in attendance in the Library not less than four hours each per day. 8. No person shall hold at one time more than one Fellowship, except in the case hereafter specified under paragraph 12 of this statute, and any Fellow may be dispossessed of the income of his Fellowship by action of the Faculty, if he shall be guilty of any offence, or if he shall continue in any course of conduct which in the opinion of the Faculty shall render him unworthy of holding such Fellowship; but final action in such cases by the Faculty shall be by ballot, and shall require a two-thirds vote.

9. Vacancies in Fellowships that occur after October 1st, in order to be filled, shall require a three-fourths vote of the Faculty.

10. All persons elected to Fellowships are required, upon accepting their appointments, to file a bond to repay the University in case of their resignation before the expiration of the time for which they were appointed, any sums which they may have received.

It. In all cases where Fellowships are not awarded, or when from any cause the income of one or more Fellowships may cease to be paid, or when the aggregate sum paid shall be less than the amount contemplated by this act, the surplus thus accruing shall be added to the principal of the loan fund for needy and meritorious students.

12. Either or both of the President White Fellowships in History and Political Science may in the discretion of the Faculty be made a travelling Fellowship for the purpose of study and investigation, the holder thereof making from time to time to the Faculty such reports of his progress as may be required. In case of a student of very exceptional ability and promise in the fields of either of these Fellowships, the two Fellowships may, in the discretion of the Faculty, for the sake of enabling very thorough research, be combined for a single year into one.

13. The three Susan Linn Sage Fellowships in Philosophy and Ethics shall be awarded by the General Faculty on the recommendation of the Faculty of the Susan Linn Sage School of Philosophy.

## 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 :

1. Any member of the senior class who is to receive a degree at the coming Commencement, may be a competitor, provided he has taken at least one course of instruction in Elocution and Oratory.

2. Every competitor shall be required to submit, at the Registrar's office, on or before noon of the first Monday of the Spring term, an original oration upon a subject which shall have previously been approved by the Professor of Elocution and Oratory.

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3. The competing orations shall be limited to fifteen hundred words; shall be written with a type-writer; shall be signed with a fictitious name; and be accompanied with a sealed envelope containing the fictitious name of the writer without, and the real name within.

4. From the orations submitted, a committee appointed by the Faculty, shall select the best, not to exceed six in number, for delivery in public, and the names of the successful writers shall be announced as early as is practicable after the beginning of the Spring Term.

5. The prize shall not be conferred unless the successful competitor shall complete his course and take his degree at the Commencement next following.

6. The contest for the prize will take place on the evening of the Wednesday preceding Commencement Day, under the direction of the President of the University.

7. The prize shall be awarded by a committee of three appointed by the President from persons not resident in Ithaca, whenever practicable.

8. A copy of each of the orations selected for the competition shall, within one week after the selection, be deposited by its author with the committee charged with the selection, who shall, after the completion of the competition, deposit the successful oration permanently in the University Library.

# 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 auuually. The conditions of the contest are as follows,

viz.:

1. The Associate Professor of Elocution and Oratory is empowered to select from the students in the classes of Elocution, 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.

# SHOLARSHIPS, FELLLOWSHIPS, AND PRIZES. 157

### 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 iu 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, offered by Mrs. A. S. Barnes, is given annually, 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 iu a sealed envelope.

The subject of the Barnes Shakespeare Prize Essay, for 1891-92, will be: The Dramatic Perspective of Shakespeare's Plays, (including their narrated elements, their dramatic-time system, as set forth by Rev. N. J. Halpiu, in his time-analysis of The Merchant of Venice, and by Professor John Wilson, in his double-time-analysis of Macbeth and Othello: the employment of dramatic contrast; etc.)

# VI. THE NEW SHAKSPERE SOCIETY PRIZE.

The prize offered by "The New Shakspere 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. 7 and 164. Specimen copies of examination papers will be sent on application to the Registrar.

### ADMISSION ON EXAMINATION.

I. THE PRIMARY ENTRANCE EXAMINATIONS.

(Required for all courses, but not sufficient for admission to the University without the advanced examinations indicated on pp. 161-163.)

I. 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 1892 the subjects will be drawn from one or more of the following works: 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 Scene's from Clerical life, Hawthorne's House of the Seven Gables. 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 1893 and 1894 are the following :

For 1893: Shakespeare's Julius Cæsar aud Twelfth Night, 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, Emerson's American Scholar, Irving's Sketch Book, Scott's Ivanhoe, Dickens's David Copperfield.

For 1894: Shakespeare's Julius Cæsar and Merchant of Venice, Scott's Lady of the Lake, Arnold's Sohrab and Rustum, the Sir Roger de Coverley Papers in the Spectator, Macaulay's second Essay on the Earl of Chatham, Emerson's American Scholar, Irving's Sketch Book, Scott's Abbot, Dickens's David Copperfield.

It is the special aim of the examination to test the candidate's practical, rather than his theoretical, knowledge of English, though due account is taken of the latter.

No student markedly deficient in English will be admitted to any of the courses in the University.

2. In *Geography*, political and physical; as much as is contained in Harper's School Geography or iu 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." The treatises of Hutchinson, Huxley, and Walker are accepted as equivalents of Martin.

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, Oluey, 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 VII, §§ 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  $\infty$ , 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 sec 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 redundance one step follows as a logical consequence of another.]

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7. In *American History*; Montgomery's "Leading Facts in American History," 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:

# ADMISSION AND CLASSIFICATION 161

# To the Course leading to the degree of Bachelor of Arts:

I. In *Greek*; candidates are expected (I) to have read at least one hundred pages of Attic prose and eighteen hundred lines of Homer; (2) to have acquired such facility in reading at sight as will enable them to read without previous preparation, but with the aid of a vocabulary of all unusual words, simple passages of Attic prose; (3) to be thoroughly familiar with the inflectional forms, the principles of derivation, and the outlines of the syntax; (4) to have completed Jones's Greek Prose Composition, or the first two parts of Allinson's.

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 cau 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 <i>father</i> .			Short a as in <i>Cuba</i> .	
i	" "	machine.	i '' pin.	
0	"	dole.	o " obey (not as in sob	۶.)
4	"	rule.	u '' full.	

 $\mathcal{A}$  like ay,  $\alpha$  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 verebalur, amabalur, 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 Coursc 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 course in Agriculture.

In two of the three subjects following :

1. In *French*: the amount of French necessary for entrance would be represented approximately by the whole of Whitney's Practical French Grammar, and by the first hundred pages of Super's French Reader, and the whole of Crane aud Brun's Tableaux de la Révolution Française. For the examination no specific authors or works are designated; but candidates are expected to be able to read easy French at sight, and to translate readily simple English into French. Pronunciation, aud translation and writing of French from dictation will be included.

All candidates are required to present a statement from their teachers of the amount of French previously read, the text-books used, and the proficiency attained.

2. In German: the amount of German necessary for entrance would be represented approximately by the amount of reading matter in Brandt's Reader, or by the larger portion of Whitney's Reader, and by the amount of grammar in Brandt's, Joynes—Meissner's, or Whitney's Grammar. Preparation by the so-called "natural" method should be supplemented by a thorough drill in syntax. A satisfactory preparation will require in general a considerable reading of simple German prose and verse, and the careful study of one or more modern dramas. An accurate knowledge is also required of the principles of grammar, embracing inflections, syntax, the composition of words, the force of prefixes and suffixes, and the laws of consonantal change in cognate words, as well as the ability to render **e**asy narrative prose from English into German, to translate ordinary German at sight, and to pronounce readily and correctly. The practice of committing to memory a number of short poems and anecdotes should constantly be cultivated.

For examinations no specific authors or works are designated. The writing of German from dictation will be included. All applicants are required to present a statement from their teachers of the amount of German previously read, the text-books used, and the proficiency attained.

Applicants for admission to the technical courses are advised to direct their preparatory study so as to enlarge their vocabulary, and to obtain a good reading knowledge of the language.

3. In Mathematics : Solid Geometry, as much as is contained in Newcomb's Elements of Geometry, or in the treatises of Chauvenet (old edition), Wentworth, Davies, or Robinson; Advanced Algebra, as much as is contained in those parts of Oliver, Wait, and Jones's, or Hall and Knight's Treatise on Algebra which are read at the University (a list is sent ou application to the Registrar), or in the larger Treatises of Olney, Ray, or Wells; and Plane Trigonometry, as much as is contained in the unstarred portions of Oliver, Wait, and Jones's Treatise on Trigonometry, or in the Treatises of Wells, Wheeler, Olney, or Davies.

# To the Courses in Engineering and Architecture :

1. In Malhematics, Solid Geometry, as above. 2. In French or German as above. For the course in Architecture, French is considered to be more desirable than German; and in that course Latin to the amount of four books of Cæsar's Gallic War and Sallust's Catiline, or an equivalent, may be substituted for the French or German required.

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.

# 161 ADMISSION AND CLASSIFICATION.

# 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. 7.

First Day. -2 P. M., Arithmetic; 4 P. M., Geography.

Second Dav.-9 A. M., English; II A. M., Plane Geometry; 3 P. M., American History.

Third Day.-9 A. M., Algebra; 11.30 A. M., Physiology; 3 P. M., Grecian and Roman History.

Fourth Day.—8 A. M., Solid Geometry; 10.30 A. M., German; 3 P. M., Latin.

Fifth Day -8 A. M., Greek and Advanced Algebra; 10.30 A. M., French; 3 P. M., Trigonometry.

Candidates for admission to the University, instead of passing the entire examination at one time, may present themselves in different years under the following conditions :

1. For the purposes of the division between two years the examinations in June and September in the same year may count as one series, the applicant, at his option, taking a part in June and a part in September.

2. Candidates are expected at their first presentation to take all the seven prescribed subjects of the primary entrance examinations before trying the advanced examinations.

3. No account will be taken of the result of such preliminary examinations unless at least four subjects are satisfactorily passed.

Candidates intending to offer Greek at this preliminary examination may present themselves for examination in the Anabasis. Those intending to offer Latin may offer Cæsar, or either Virgil or Cicero.

Applicants may be admitted conditionally to the University in spite of deficiencies iu 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 deficiences 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. A statement from the teacher of the work done in these two subjects should be presented by the holder of the diploma.

# 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. Candidates for admission as special students are advised to correspond directly with the professors in whose departments they expect to take work. Such students may graduate in any of the courses, on condition of passing all the required examinations, including those for admission. Special students expecting to enter courses in which English is required are earnestly advised to take that study immediately.

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.

1. 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 165.

**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.

Graduates in the several courses of this University, or of institutions offering courses substantially equivalent, will, upon the recommendation of the Committee on Graduate. Work, be admitted to graduate study, and may also, on recommendation of the same committee, be admitted to candidacy for au advanced degree in any department in which they are prepared to enter upon advanced work, subject, however, to the following condition : In case the requirements of the course in which the applicant has been graduated are essentially different from those demanded in this University for the first degree corresponding to that for which he applies, he will be obliged to make up such deficiencies before being admitted to his final examination. The plans of work of graduate students not candidates for a degree are to be presented to the Faculty for approval through the Committee on Graduate Work and Advanced Degrees, at the beginning of the University year. (See p. 89.) For a statement 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 been once 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.**

Studeuts 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 from fourteen to seventeen hours; of the sophomore, from fourteen to eighteen; of the junior, from twelve to eighteen; of the senior, from ten to eighteen. But uo 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 statement 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.

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.

The annual tuition fee, in the School of Law, in the Medical Preparatory course, and in the courses in Arts, Philosophy, Letters, and Science, is \$100, \$40 to be paid at the beginning of the first term, \$35 at the beginning of the second, and \$25 at the beginning of the third; in all other courses, including Optional and Special students, it is \$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. These fees are payable within ten days after registration.

Students taking work in Sibley College 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 au advanced degree is \$10, and it must in all cases be paid before the degree is conferred.

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.

The expense of text-books, instruments, etc., varies from \$25 to \$75 per annum.

The cost of living in Ithaca, including board, room, fuel, and lights, varies from \$3 to \$7 per week. By the formation of clubs students are sometimes able to reduce their expenses to \$3 per week for room and board, and occasionally to even less than that amount.

A fair estimate of the yearly expenses is from \$325 to \$500, but much depends upon the personal tastes of the student.

The cost for board, rent of furnished room, fuel, aud lights, at the Sage College, which is exclusively for women, varies from \$5 to \$6.50

# 170 RESIDENCE AND GRADUATION.

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 announced, and accepted by the Faculty, without whose permission no change in the subject can thereafter be made. 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 copy of the thesis presented to the Faculty shall, if accepted, become the property of the University. 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

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these two points of view, will be taken into account in determining the standing of the student for graduation. A standard form and size for theses has been adopted, said size to be eight by ten and one-half inches.

### COMMENCEMENT ORATIONS.

### RULES AS TO COMMENCEMENT SPEAKERS.

1. Any member of the senior class who is to receive a degree on the coming Commencement may compete for a place on the Commencement stage, providing proof of satisfactory oratorical ability has been given to the teacher of Elocution and Oratory.

2. Each competitor must present at the Registrar's office, at or before noon of the last Friday in April, a production of no more than 750 words on any subject approved by the head of the department in which the subject lies.

3. From such productions a committee from the Faculty will select no more than nine to be delivered ou the Commencement stage.

### 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, 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 Lauguages aud Literatures, Comparative Philology, History and Political Science, Philosophy, Mathematics, Chemistry and Physics, Natural History, Civil Engineering, Mechanical Engineering, Agriculture and Architecture. Candidates for advanced degrees must present themselves for examination in one major and two minor subjects, (except for the Master's degree, for which one major and one minor are to be required,) which must have been determined upon, with the approval of a committee of the Faculty, as early as November I 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.

# *RESIDENCE AND GRADUATION.*

The work of candidates for advanced degrees in the general courses must be devoted to those subjects (one major and one or two minor), which may be comprised within the limits of one department of instruction, or may extend to two or three; with the provision, however, that, except iu case of special permission to the contrary, granted by the Faculty, the subjects shall be so related to one another as to imply a definite aim on the part of the student. 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.

The degree of Master is intended to represent a year of faithful work of an advanced character performed by a student who has previously taken a degree fully equivalent to that which is given in this University at the completion of four years of undergraduate work. The degree of Doctor is intended to represent not a specified amount of work, covering a specified time, but long study and high attainment in a special field, proved, in the first place, by the presentation of a thesis that displays the power of independent investigation, and in the second place, by the passing of corresponding examinations upon the ground covered by the three subjects chosen at the beginning of the candidacy and approved by the Faculty. And it may therefore happen, through deficiencies existing at the outset, that a student who is entirely competent to accomplish work of this character may find it necessary to devote to it more than the minimum number of years (two) hereinafter mentioned.

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, on the recommendation of the examining committee, 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, on the recommendation of the examining committee, 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. These examinations oc-
cur in the second week before Commencement, except in the case of candidates who take their examination in the year subsequent to that in which the required amount of resident study was completed. In case of necessity, the examination may be held during the week next preceding that now fixed for holding them.

The special requirements for these degrees will be as follows :

THE DEGREES OF MASTER OF ARTS, OF PHILOSOPHY, OF LETTERS, OF SCIENCE, OF CIVIL ENGINEERING, OF MECHANI-CAL ENGINEERING, OF ARCHITECTURE, OF AGRICULTURE.

The degree of Master of Arts, Master of Philosophy, Master of Letters, 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, Master of Science in Architecture, or Master of Science iu Agriculture is conferred on candidates who have received the corresponding first degree, upon presenting a satisfactory thesis and passing the required special final 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 : I. In order to become a caudidate, 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 place 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 special final examinations.

The degree of Doctor of Science is conferred on graduates of this University, and of other institutions whose course of study for the baccalaureate degree is substantially equivalent to the course for the degree of Bachelor of Science in this University, and who are prepared to pursue advanced work in Chemistry, Physics, Mathematics, or Natural History, on the following conditions:

I. The candidate must possess a knowledge of Latin and Greek at least equivalent to that required for graduation with the degree of Bachelor of Science in Natural History (see page 130).

2. He must spend at least two years at this University, pursuing a course of study marked out by the Faculty, in the departments of Chemistry, Physics, Mathematics, or 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 special final examinations.

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# 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.
- CHARLES E. HUGHES, A.M., LL.B., Professor of Law.
- WILLIAM A. FINCH, A.B., Assistant Professor of Law.
- MOSES COIT TYLER, LL.D., Professor of American Constitutional History and Law.
- HERBERT TUTTLE, A.M., L.H.D., Professor of International Law and of English Constitutional History.

JEREMIAH W. JENKS, PH.D., Professor of International Law.

BRAINARD GARDNER SMITH, A.M., Associate Professor of Elocution and Oratory.

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. ALFRED C. COXE, A.M., of the United States District Court.
- ALBERT H. WALKER, LL.B., of the Hartford Bar.
- JOHN ORDRONAUX, LL.D., of New York City.
- THE HON. IRVING G. VANN, A.M., of the New York Court of Appeals.
- THE HON. GOODWIN BROWN, A.M., of the Albany Bar.

## THE SCHOOL OF LAW.

# 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 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 will fit the student for the active ' work of the profession in any part of the country.

The instruction by the non-resident members of the Faculty is by lectures. Provision is made each year for several courses by eminent specialists in the profession, each course consisting of from four to ten lectures, according to the nature of the subject.

## **REQUIREMENTS FOR ADMISSION.**

Applicants for a lmission to the School must be at least nineteen years of age. Graduates of universities or colleges, students who have completed an academical or high-school course approved by the Faculty, 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, are admitted without examination and may become candidates for a degree. In order to be entitled to this privilege, however, 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 other applicants, if candidates for a degree, must pass satisfactory examinations in the following subjects : arithmetic, English grammar, geography, orthography, English and United States history and English composition. In the fall of 1892, and thereafter, the examination will include the following a lditional subjects: first year Latin, geometry, and civil One year of French or German will be received as an government. equivalent for the Latin required, and substantial equivalents may be offered for other subjects.

Applicants may be admitted to the School conditionally, notwithstanding that they may be deficient in some subjects, in case such de100

(1999) Andrews ficiencies are not so considerable as, in the judgment of the Faculty, to disqualify them for the performance of the work of the junior year. But all such deficiencies must be made up before the end of the junior year.

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 1892, will take place on Wednesday, September 28, at the Law Lecture Rooms, beginning at nine o'clock in the morning. Students desiring admission at other times than those mentioned must make special arrangements for examination with the Secretary of the School.

## 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 Law,<sup>4</sup> (Blackstone). Contracts,<sup>5</sup>. Agency,<sup>5</sup>. Criminal Law and Procedure,<sup>3</sup>. Torts,<sup>5</sup>. Domestic Relations,<sup>5</sup>. The Law of Real Property,<sup>2</sup> (the subject begun). Evidence,<sup>4</sup> (the subject begun). Bailments,<sup>4</sup>. Common Law Pleading and Practice in Cases at Law,<sup>2</sup>. Civil Procedure under the Codes,<sup>3</sup> (the subject begun). English Constitutional History,<sup>7</sup>.

#### SENIOR YEAR.

Private and Municipal Corporations.<sup>3</sup> Wills and Administration.<sup>5</sup> Mercantile law, including Bills, Partnership, Sales, Suretyship, etc.<sup>4</sup> Evidence.<sup>4</sup> The Law of Real Property.<sup>2</sup> Equity Jurisprudence.<sup>2</sup>

<sup>\*</sup>By Professor Hutchins; <sup>\*</sup>by Professor Collin; <sup>4</sup>by Professor Hughes; <sup>\*</sup>by Assistant Professor Finch; <sup>6</sup>by Professor Tyler; <sup>7</sup>by Professor Tuttle; <sup>\*</sup>by Professor Jenks.

# THE SCHOOL OF LAW.

Equity Pleading and Procedure in State and United States Courts.<sup>‡</sup> Civil Procedure under the Codes.<sup>3</sup> Chattel Mortgages.<sup>6</sup> Mechanic's Liens.<sup>A</sup> Assignments for the benefit of Creditors.<sup>5</sup> Practical Suggestions concerning the Preparation, Trial, and Argument of Causes.<sup>1</sup> Roman Law.<sup>4</sup> International Law.<sup>#</sup> American Constitutional History.<sup>6</sup> American Constitutional Law.<sup>‡</sup>

# 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. Constitutional Law, (two courses).

The Hon. Daniel H. Chamberlain, LL.D., of the New York City Bar.

3. The Law of Shipping and Admiralty.

The Hon. Alfred C. Coxe, A.M., of the United States District Court.

4. The Patent Laws of the United States.

Albert II. Walker, LL.B., of the Hartford Bar.

5. Medical Jurisprudence.

John Ordronaux, LL.D., of New York City.

6. The Law of Insurance.

The Hon. Irving G. Vann, A.M., of the New York Court of Appeals.

7. Extradition.

The Hon. Goodwin Brown, A.M., 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 for each class.

# 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, assisted by the graduate students, constitute the Court. All opinions of the Court are in writing, and are placed on file in the Law Library. The hearings of the Court are based upon assumed facts, the only questions open to discussion being questions of law. Students are required to prepare pleadings, which are submitted for criticism to the professor having in charge the subject of pleading and procedure, and briefs in which the principles applicable to the case are clearly stated and such authorities cited as are produced at the oral argument.

The effort of the Faculty is to make *practical* lawyers, to teach 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 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.

Exceptional opportunities for instruction in Elocution and Oratory are provided for the students in the School of Law. Separate classes are formed for such students, and the course of instruction is specially adapted to their professional needs. The course is optional, and can be taken without the payment of extra tuition.

## 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 he 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 must hold himself in readiness to be examined upon the subject.

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.

#### PRIZES.

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.

Two prizes are given for excellence in debate, the first of thirty dollars and the second of twenty dollars. The regulations for the contest are as follows:

1. From the members of the Senior Class who have gained the highest standard in the preparation and presentation of cases in the University Court, not more than six debaters are appointed by the resident Law Faculty. Their names and the question for debate, are announced at the close of the winter term. At the same time, the position of the debaters is determined by lot.

2. At the debate, the order in which the competitors are to be called is determined by lot, publicly drawn at the time. Each competitor is called twice, and is allowed to speak ten minutes on the first call and five minutes on the second.

3. The prizes are awarded by a committee of three, selected by the President of the University.

4. The contest takes place in public on the evening of the Saturday immediately preceding commencement week.

### 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 pursue 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 Constitutioual 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 in-

# THE SCHOOL OF LAW.

vestigations 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.

The course of 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.

# LAW SCHOOL BUILDING.

For the purposes of the School of Law accommodations have thus far been provided in Morrill Hall. These consist of lecture rooms, offices for the several professors, and rooms for the Law Library. But the growth of the School has been such that a separate building, to be devoted exclusively to its use, has become necessary. The Board of Trustees have made a liberal appropriation for this purpose, and the building is now in process of erection. It is of Cleveland sandstone, contains three large lecture rooms, offices, consultation and recitationrooms, a library and reading-room capable of accommodating 25,000 volumes and 250 readers, and is to be complete in all its appointments. It will be ready for occupancy at the opening of the next university year.

#### LIBRARIES.

The Law Library of the University contains about 10,000 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, as are the books of the private libraries of the several professors which are on the same floor. The principal American and English legal periodicals are regularly taken and kept on file. The General Library of the University is also open to students in the School of Law.

#### FEES AND EXPENSES.

The fee for tuition is \$100 a year, payable as follows : \$40 at the beginning of the first term; \$35 at the beginning of the second term; and \$25 at the beginning of the third term.

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 the master's degree is \$10, which must be paid before the degree is conferred.

Tuition is free to students with State Scholarships and to graduate students.

The following is a fair estimate of the yearly expenses :

Tuition	,	• •	-	•	-	-	-		-		<b>\$100</b>	00
Room.	board.	lights,	fuel,	and	laundry,	about		-		-	200	00

Text-books, about - - - - - 20 00

Total, - - \$320 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 often reduce their expenses to \$3 and occasionally to \$2.50 a week for room and board.

# ANNOUNCEMENT.

An announcement giving more detailed information will be sent on application to the Secretary of the School of Law.

# FELLOWSHIPS AND SCHOLARSHIPS.

UNIVERSITY FELLOWSHIPS FOR 1891-92.

THE CORNELL FELLOWSHIP, Albert Alexander Bird, Ph.B., American History

THE MCGRAW FELLOWSHIP, Alice Walton, A.B., (Smith College), Classics

THE SAGE FELLOWSHIP,

\* Mason Blanchard Thomas, B.S., *Botany* Fred Baldwin Maxwell, (Beloit College), Ph.B., *Botany and Zoology* 

THE SCHUYLER FELLOWSHIP, Frederick Bedell, A.B., (Yale College), M.S., Electrical Engineering

THE SIBLEY FELLOWSHIP, Ernest Fox Nichols, B.S., (Kansas Agricultural College), *Physics* 

THE GOLDWIN SMITH FELLOWSHIP, † Clarence Wentworth Mathews, B.S., Agriculture Milton Ellsworth Thompson, M.E., Electrical Engineering

# THE PRESIDENT WHITE FELLOWSHIP, Lola Maddox, A.B., (Knox College), A.M., English

# THE ERASTUS BROOKS FELLOWSHIP, Paul Louis Saurel, B.S., (College of the City of New York), Mathematics

\*Resigned to accept the Professorship of Biology at Wabash College.

†Resigned to accept the chair of Horticulture and Botany at the State College of Kentucky.

# SUSAN LINN SAGE FELLOWSHIPS IN PHILOSOPHY AND ETHICS FOR 1891-92.

Ernest Albee, A.B., (Vermont University). Ferdinand Courtney French, A.B., A.M., (Brown University). Frank Thilly, A.B., (Cincinnati University), Ph.D., (Heidelberg),

# PRESIDENT WHITE FELLOWSHIPS IN HISTORY AND PO-LITICAL SCIENCE, 1891-92.

Henry Clay Stanclift, Ph.B., History Frank Fetter, A.B., (University of Indiana), Political Economy

# -FELLOWSHIPS IN POLITICAL ECONOMY AND FINANCE, 1891–92.

Willard Clark Fisher, A.B. Thorstein B. Veblen, A.B., Ph.D., (Yale University).

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# GRADUATE SCHOLARSHIPS IN THE SCHOOL OF PHILOSO-PHY.

Louis Hutchinson Galbreath, B.L. Louise Hannum, B.S., (Wellesley College). Robert James Kellogg, A.B. Joseph Alexander Leighton, A.B., (Trinity University). Thomas Wardlaw Taylor, Jr., A.B., (Manitoba University). Worth Marion Tippy.

#### SCHOLARSHIPS FOR 1888-92.

#### UNIVERSITY SCHOLARSHIPS.

THE CORNELL SCHOLARSHIP,

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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,

Carolinne Harder Swartout, Course in Philosophy Owego Free Academy-II. 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 Arls* Oregon State University, Eugene City, Oreg.,—J. W. Johnson, A.M. President.

#### SAGE SCHOLARSHIPS FOR WOMEN.

# Frances Elizabeth Holman Flint, Course in Arts Rochester Free Academy-John G. Allen, Principal

Mary Grace Breckinridge, Binghamton High School-Eliot R. Payson, A.M., Principal.

#### 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,

#### SCHOLARSHIPS FOR 1890-94.

#### THE CORNELL SCHOLARSHIP,

Ezra Pierce Reynolds, Course in Arls Ithaca High School-D. O. Barto, Principal.

THE H. B. LORD SCHOLARSHIP,

William Herbert Dole, Course in Architecture Brooklyn Central High School-Calvin Patterson, B.S., Principal.

#### THE MCGRAW SCHOLARSHIP,

Adna Ferrin Weber, Course in Philosophy Salamanca Union School-A. B. Davis, Ph.B., Principal.

THE SAGE SCHOLARSHIP,

Maria Martha Hoppe, Course in Aris Rochester Free Academy-John G. Allen, Principal.

#### THE SIBLEY SCHOLARSHIP,

Harry Merrick Beach, Course in Civil Engincering Cortland Normal School-James H. Hoose, A.M., Ph.D., Principal.

#### THE PRESIDENT WHITE SCHOLARSHIP,

John Kasson Lathrop, Course in Arts Vonkers High School-Edward R. Shaw, Ph.D., Principal.

#### THE HORACE GREELEY SCHOLARSHIP,

Raymond Allen Pearson, Course in Agriculture Ithaca High School-D. O Barto, Principal.

# THE JOHN STANTON GOULD SCHOLARSHIP, Noah Cummings, Course in Civil Engineering Schenevua Union School-Floyd S. Lowell, Principal.

# THE STEWART L. WOODFORD SCHOLARSHIP, Elmer Ellsworth Bogart, *Course in Arls* Owego Free Academy-Ezra J. Peck, A.M., Principal.

# SCHOLARSHIPS AND FELLOWSHIPS. 189

#### SCHOLARSHIPS FOR 1891-95.

THE CORNELL SCHOLARSHIP,

Arthur William Barber, Course in Arts Plattsburgh High School-Helen D. Woodward, A.B.

THE H. B. LORD SCHOLARSHIP, Hugh Joseph O'Brien, Course in Arts Rochester Free Academy-John G. Allen, Principal.

THE MCGRAW SCHOLARSHIP,

Bertha Howell, Course in Philosophy Chicago, North Division, High School-O. S. Westcott, A.M., Principal.

THE SAGE SCHOLARSHIP,

Frank Charles Wolfe, *Course in Civil Engineering* Wright's University School, Baltimore, Md.-E. A. Wolfe, Principal.

THE SIBLEY SCHOLARSHIP,

Stephen Rose Leonard, Jr., Course in Mechanical Engineering Community Academy-F. M. Loomis, A.B., Principal.

THE PRESIDENT WHITE SCHOLARSHIP, Charles Platt Storrs, Course in Arts Owego Free Academy-Ezra J. Peck, A.M., Principal

THE HORACE GREELEY SCHOLARSHIP,

Nellie Marie Reed, Course in Arts Ithaca High School-Daniel O. Barto, Principal.

THE JOHN STANTON GOULD SCHOLARSHIP, Vancleve Charles Shaw Mott, *Course in Electrical Engineering* Buffalo High School-H. P. Emerson, Principal.

THE STEWART L. WOODFORD SCHOLARSHIP, George Henry Stanion, *Course in Mechanical Engineering* Ithaca High School-Daniel O. Barto, Principal.

# GRADUATES.

## CANDIDATES FOR ADVANCED DEGREES.

Albec, Ernest, A.B.,		Philosophy
	Vermont Univers	ity.
Allen, Mary E., A.B.,	Greek, Latin Michigan Univers	n, and Comparative Philology
Almirall, Juan Antonio, N	J.E.,	Marine Engineering
Ashe, William Willard, B Un	.L., iversity of North C	Botany and Geology
Atwood, Horace, B.S.,	·	Agriculture and Chemistry
Atwood, Mary Lovina, A.	в.,	
	Greek Archæol	logy and Political Institutions
	Oberlin Colleg	
Banks, John Edwin, B.C.	E.,	Bridge Engineering
Ιο	wa Agricultural (	college.
Banta, Mabel, A.B., A.M.	, Latin, Greek Indiana Univers	, and Comparative Philology ity.
Bedell, Frederick, A.B., Nale Contract Nale	M.S., Physic ollege and Cornell	es and Electrical Engineering University.
Bennett, Frederick Wago	ner, B.S.,	
	Mechani	cal Engineering and Geology
	Rutgers Colleg	C.
Bird, Albert Alexander, I	<b>'h.B.</b> ,	American History

Bovrer, William Charles, B.S., M.E., Electricity and Steam Engineering College of the City of New York and Cornell Bronson, Frank Melville, A.B., Greek and Archæology Brown University. Botany, Paleontology, and Entomology Carter, Alice Ph.B., Syracuse University. Cochran, Mary Emma, A.B., History and Political Science Vassar College. Cody, Lydia Sarah, A.B., Philosophy and Ethics Boston University. History and Political Science Coffin, Victor Edwin, A.B., Dalhousie College.

Comstock, Charles Worthiugton, C.E.,	Bridge Engineering
Colorado School o	f Mines.
Cook, Charles Chauveau, B.L.,	Philosophy and Economics
Corbett, Lee Cleveland, B.S.,	Horticulture and Botany
Crehore, Albert Cushing, A.B.,	Physics and Electricity
Yate College	e
Creighton, James Edwin, A.B.,	Philosophy
Dalhousie Coll	lege.
Davis, Walter Scott, A.B.,	History and Political Science
De Pauw Unive	ersity.
Dunn, Willis Andrew, A.B.,	Chemistry and Geology
Westminster Co	ollege.
Edwards, George Vail, A.B.,	Latin
Hamilton Col	lege.
Estrem, Andrew, A.B., A.M.,	History and Political Science
I.uther College and Cori	nell University.
Felt, Ephriam Porter, B.S.,	Zoology and Botany
Mass. Agricultura	I College.
Fetter, Frank, A.B.,	History and Political Science
University of In	
Fish, Pierre Augustine, B.S.,	Loology and Paleontology
Fisher, Willard Clark, A.B.,	Political Economy
Floy, Henry, A.B., M.E.,	Physics and Electricity
Wesleyan and Cornell	Universities.
Foster, Charles Marsh, A.B.,	Greek and Latin
Harvard Univ	ersity.
Fowler, Charles Sumner, A.B.,	Mathematics and Physics
French, Ferdinand Courtney, A.B., A.	M.,
Ethics, History	of Philosophy and Psychology
Calbreath Louis Hutchinson R L.	Philosophy
Comme Valcon Usward DC	Diverse and Mathematics
Oth Anthen Norman D.C.	I HYBICS AND MADEMANCS
GIDD, Artnur Norman, D.S.,	
Coodell Charles Himer A K.	

Franklin College. History and Political Science Goss, David Kopp, A.B., Indiana University. Granrud, John Evenson, A.B., A.M., History and Political Science Luther College. Philosophy Hannum, Louise, B.S., Wellesley College. Sanitary Engineering Hill, John Edward, M.S., C.E., Rutgers College. Holmes, Jessie Rosette, B.S., European History, Political and Social Institutions Knox College. Hopkins, Grant Sherman, B.S., **C**oology

**Electrical Engineering** Hotchkiss, Homer James, B.S., C.E., A.B., Allegheny College. Hoy, David Fletcher, B.S., Botany Hubbard, Grace Amanda, A.B., English Philosophy and Literature Smith College. Hupe, Alexander Louis, B.S., Mechanical Engineering Rose Polytechnic. Johnson, Milton Ellsworth, Jr., B.E. **Steam Engineering** Haverford College. Kellogg, Robert James, A.B., Ethics, Comparative Philology and Philosophy Entomology and History Kellogg, Vernon Lyman, B.S., Kansas University. Physics and Electricity Kinyon, Oscar Curtis, A.B., A.M., Syracuse University. **Electrical Engineering** Kohn, Sol, B.S., South Carolina University. **Electrical Engineering** Le Conte, Joseph, B.S., University of California. Leighton, Joseph Alexander, A.B., Ethics, Metaphysics and Psychology Trinity College, Toronto, Canada. History and Philosophy Lewis, Alvin Fayette, A.B., A.M., Princeton College. **Electrical Engineering** Louis, Otto Theodore, B.S., College of the City of New York. **Electrical Engineering** McMynn, John Clarke, A.B., Williams College. Entomology and Botany MacNeil, Wilbur James, B.S., English and Latin Literature Maddox, Lola, A.B., A.M., Knox College and Cornell University. Chemistry, Geology, and Botany Magee, William Henry, A.B., Dalhousie College. Chemistry and Geology Marsters, John, A.B., Acadia University. Greek and Comparative Philology Mason, Mary Lyman, A.B., Smith College. Agriculture, Horticulture, Mathews, Clarence Wentworth, B.S., and Botany Botany and Zoology Maxwell, Fred Baldwin, Ph.B. Beloit College. Meech, Robert Owen, A.B., English, French, and German European and Mediaeval History Merriam, Bessie Greene, A.B., Physics and Chemistry Merrill, Earle Abbott, A.B., Bowdoin College. **Physics and Mathematics** Nichols, Ernest Fox, B.S., Kansas Agricultural College.

Noe, James Thomas Cotton, A.B., E	Inglish Literature and Philology
Franklin Co Northrup, Elwin F, A.B., Amherst Co	Physics and Mathematics ollege,
Oxer, Rosa Lee, A.B., Indiana Uui	Zoology and Botany versity.
Percival, Frank C, Ph.B., Comparativ	e Philology, English, and Greek
Potter, Henry Noel, B.S.,	Physics and Mathematics
Rane, Frank William, B.Agr., Agrice Ohio State Un	ulture, Horticulture, and Botany iversity.
Rappleye, Walter Glazier, B.S.,	Mathematics
Reid, Harold Newton, B.S.,	Entomology and Horticulture
Rice, James Edward, B.S.,	Agriculture
Rogers, Frederick John, B.S., M.S., Kansas Agricultu	Physics and Mathematics Iral College.
Rowlee, Willard Winfield, B.L.,	Botany
Royce, Charles Howard, B.S.,	Agriculture
Rugg, Walter Sylvester, B.S., Lawrence Un	Electricity and Physics
Rumsey, William Earl, B.S.,	Entomology and Botany
Saunders, Samuel J., A.B.,	Physics and Mathematics
University of Saurel, Paul Louis, B.S., College of the City of	Toronto. Math <b>e</b> matics New York.
Shedd, John Cutler, A.B., Princeton C	ollege. Physics
Sheldou, Helen Mary, I Smith Coll	English Literature and Philology lege.
Shoemaker, William Ross, B.S., Iowa Agricultur	Mathematics
Simpson, Helen Augusta, B.L.,	French and Italian
Smith, Harrold Babbit, M.E.,	Electrical Engineering

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Mathematics
Snyder, Virgil, B.S.,
                       Iowa Agricultural College.
Stewart, Arthur Dantel, M.E., Mechanical Engineering and Geology
                                           Physics and Mathematics
Stiles, Charles Albert, B.S.,
                                          Chemistry and Physiology
Stroud, Bert Brenette, B.S.,
                                    Germanic and English Philology
Strunk, William, Jr., A.B.,
                       University of Cincinnati.
                                                        Mathematics
Tanner, John Henry, B.S.,
                                                          Agriculture
Tarbell, Edward, B.S.,
                                          Philosophy and Economics
Taylor, Thomas Wardlaw, A.M.,
                         Manitoba University.
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Thayer, Harry Stowe, B.L.,	History and Political Science
Thatcher, Louis G., B.S.,	Agriculture
Thompson, Milton Ellsworth, M.E.,	Physics
Thurston, Harriet Taylor, A.B.,	Chemistry and Physics
Vassar Colleg Tippy, Worth Marion, Worcester Polytechuic	ge. Philosophy
Tuell, Harriet Emily, A.B., Wellerley Coll	History
Veblen, Ellen Rolfe, A.B., Carlton Colleg	Botany ze.
Veblen, Thorstein B, A.B., Ph.D. Yale Universi	Economics and History ty.
Walton, Alice, A.B., Greek, Lati Smith Colleg	in, and Comparative Philology
Watanabe, Rinsei, Ph.B., Hillsdale Colle	ege. Philosophy
Waterman, Jot Salisbury, B.L.,	Economics and Politics
Watson, George C, B.Agr.,	Agriculture
Weatherly, Ulysses Grant, A.B., Colgate Univer	History and Political Science sity.
Webb, Walter Loring, B.S., Mechanics	of Engineering and Hydraulics
Wilkinson, George El Dorado, B.S., University of Ill	Zoology and Psychology
Williams, J Lawton, Ph.B., Alfred Univers	Botany and Zoology
Windsor, Lillie Forrest, A.B., Indiana Univer	English Literature and History
Windsor, Miriam Evangeline, A.B., I Indiana Univer	English Literature and History
Wise, William Henry, A.B., Eth De Pauw Unive	ics, Philosophy and Literature
Woodward Katherine L. A.B.	English

Smith College. Wright, Ellsworth David, A.B., Greek and Latin

Youug, Stewart Woodford, B.S.,

**Chemistry and Mathematics** 

### CANDIDATES FOR BACCALAUREATE DEGREES.

Andrews, William Johnston, A.B.,Mechanical Engineering<br/>University of North Carolina.Davis, Lee, B.S.,University of North Carolina.Dick, William Amzi, A.B.,Electrical Engineering<br/>Electrical Engineering

Dingle, James Hervey, A.B., Charleston College	Civil	Engineering
Ely, William Grosvenor, Jr., Ph.B.,	Mechanical	Engineering
Hale, Robert Sever, A.B., Harvard University.	Mechanical	Engineering
Kelley, William Vincent, Jr., B.S., College of the City of NewY	Electrical ork.	Engineering
Knock, Julius James, B.S.,	Civil	Engineering
Lunt, Alexander Drummond, B.S., Worcester Polytechnic Insti	Electrical tute.	Engineering
McConahey, William McConnell, A.B., Washington and Jefferson Co	Electrical ollege.	Engineering
Paige, Walter Cary, B.S., Boston University.	Civil	Engineering
Paine, William Howard, Ph.B., Brown University	Mechanical	Engineering
Parnell, William Edward, Jr., B.S., Michigan Training Schoo	Electrical	Engineering
Pawling, Jessie, Jr., A.B., Central High School, Philadelp	hia, Pa.	Science
Sanders, Francis Nicoll, C.E., Reusselaer Polytechnic Inst	Mechanical itute.	Engineering
Seorcy; J. T., B.C.E., Alabama University.	Mechanical	Engineering
Sibson, Walter Woodhouse, A.B., Philadelphia Central High S	Electrical chool.	Engineering
Stewart, Fenwick Joseph, A.B., Georgetown University	Electrical	Engineering
Timmerman, Charles Edward, B.S., College of the City of New Y	Electrical	Engineering
Timmerman, Arthur Henry, B.S	Electrical	Engineering

Tracy, Haydn Homer, M.E., Worcester Polytechnic Listitute. Waterman, Henry, B.S., North Western Normal School, Genesco, Ill. Wood, Sydney Lunt, B.S., College of the City of New York.

# NOT CANDIDATES FOR A DEGREE.

Reed, Robert Rentoule, B.S. Washington and Jefferson College.

# UNDERGRADUATES.

#### SENIORS.

Aldrich, Elliott Fournier, Allen, Elwin Pitcher, Arnold, Charles Joseph, Atwood, William Greene, Babine, Alexev Vasilyevich, Bacon, George Wood, Baldwin, Arthur J, Baldwin, Ernest Howard, Baldwin, Leonard DeWitt, Ball, Charles Hubbard, Bates, Fred Orlando, Bates, Sherman William, Beardsley, Frank J. Bell, Frank Austin, Black, Frederick M, Bliss, William Lord, Boland, Francis Halsey, Booth, Henry Anson, Boright, William Parsons, Bostwick, Charles Dibble, Breckenridge, Roeliff Morton, Breckinridge, Mary Grace. Brewer, Francis Ezra, Brown, J Grove, Brown, William, Bump, Burton Nelson, Burnett, Samuel Howard, Burns, Justin Jerome Ambrose. Burrage, George Closson, Burrage, Herbert Farwell, Caldwell, Grace Wilmarth, Camp, Charles Forster, Cannon, Harrison Dickinson, Capwell, Allison Stone, Carlton, Willard Gilbert, Christiance, Minnie May,

Aquebogue,	Mechanical Eng.
Clarcnce,	Letters
Albany,	Mechanical Eng.
Fredonia, Ill.,	Civil Eng.
Elatıma, Russia,	Arts
Greenwich, N. J.	, Electrical Eng.
Ithaca,	Arts
Springfield, Mo.,	Civil Eng.
Ithaca,	Arts
Le Roy.	Letters
Shelby Center,	Arts
Akron,	Science
Owego,	Arts
Spencer,	Arts
Newark, Ohio,	Philosophy
Brooklyn,	Electrical Eng.
New York City,	Electrical Eng.
Candor,	Philosophy
Chatham,	Civil Eng.
Ithaca,	Arts
Ithaca,	Philosophy
Binghamton,	Philosophy
Gilberlsville,	Arts
Harford,	Mechanical Eng.
Belfast,	Civil Eng.

Mechanical Eng. Binghamton, Arts Webster, Civil Eng. Watertown, Worcester, Mass., Philosophy Worcester, Mass., Agriculture Arts Ithaca, Brooklyn, Mechanical Eng. Philosophy Ithaca, Rockland, R. I., Electrical Eng. Warren, Ill., Electrical Eng. Letters Ithaca,

Clark, Charles Henry, Canastola, Civil Eng. Clark, Edward Everett, Elmira; Electrical Eng. Clemens, Abraham Bowman, Preston, Canada, Mechanical Eng. Conklin, Harry Raymond, Appleton, Wis., Electrical Eng. Corey, Fred Brainard, Homer, Electrical Eng. Couch, Vinton Myron, Odessa, Civil Eng. Crouch, Calvin Henry, Oswego, Mechanical Eng. Cruikshank, John, Carthage, Letters Curtis, Wiuthrop Lincoln, Horseheads, Civil Eng. North Hannibal, Davis, George Henry, Electrical Eng. Apalachin, Davison, George Millard, Arts Derham, Milo Grant, Altona, Ill., Arts Oberlin, Ohio, Electrical Eng. Dick, William Amzi, A.B., Science Newburgh, Dickey, Laura Stanley, Dunbar, Charles II, Pillsfield, Mass., Electrical Eng. Houston, Idaho, Duniway, Clyde Augustus, Arts Dyett, James Hatheway, Mechanical Eng. Rome, Mifflin, Pa., Dysinger, James Harrison, Arts Washington, D. C., Science Eakle, Arthur Starr, Springville, Science Elliott, Russell, Ely, William Grosvenor, Jr., Ph.B., Norwich, Conn., Mechanical Eng. Civil Eng. Wilhelm, Erisman, Henry, Farkell, George C, Canajoharie, Electrical Eng. Deposit, Civil Eng. Farnham, Irving Tupper, Florence, Ohio, Civil Eng. Fish, John Charles Lounsbury, Marion, Ohio, Philosophy Fite, William Benjamin, Flint, Frances Elizabeth Holeman, Rochesler, Arts Fowler, Albert Merrill, Newburgh, Philosophy Architecture Ithaca, Fuller, Thomas James Duncan, Architecture Iona, Pa., Garrett, Urias Evans, Civil Eng. San Juan, Porto Rico, Geigel, Antonio Sabat, Science Newburgh, Gerecke, Amy, Charleston, S. C., Mechanical Eng. Gibbon, Charles William, Marcellus Falls, Mechanical Eng. Gilbert, Frank Marble, Canajoharie, Letters Gorham, John Milton, LL.B., Brooklyn, Electrical Eng. Gherardi, Bancroft, Jr., Electrical Eng. Davenport, Iowa, Hamann, Henry George, Ludlowville. Letters Haring, Fred Benson, Corry, Pa., Philosophy Harmon, Mary Patterson, Columbus, Ohio, Science Hatcher, Edmund Brush, Philosophy Fremont, Ohio, Haynes, George White, Charlton, Civil Eng. Hedden, Elmond Jansen,

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Moore, Frank Cook,	Aquebogue,	Civil Eng.
Moreland, Sherman,	Van Ettenville,	Letters
Morley, Edgar Lewis,	Baldwinsville,	Electrical Eng.
Mosher, Ward,	Cold Spring,	Letters
Mulford, Furman Lloyd,	Millville, N. J.,	Agriculture
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Murray, Lucy,	San Francisco, Co	al., Arts
Nelson, Henry Clay, B.S.,	New York City,	Electrical Eng.
Norton, Francis Leonard,	Springfield, Mass	s., Arts
Noyes, George Wallingford,	Kenwood,	Arts
O'Shea, Michael Vincent,	Le Roy.	. Letters
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Parke, Frederic Huntington,	Unadilla,	Mechanical Eng.
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Scidmore, Frank Lincoln,	East Watertown,	Electrical Eng.
Searcy, Charles Lewis,	Patriot, Ind.,	Civil Eng.

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Sutliff, Edward Milton, .	•	•	•	•	•	•	•	•	•	•		•	•	•	Warre	n, Ohio
Whicher, Charles Maples,	•		•	•		-	•	•		•	•	•			<i>Л</i>	1ayville

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Clementson, George Burr, Lancaster, Wis., Letters Clephane, Malcolm Wolcott, Englewood, N. J., Electrical Eng. Coe, Ira Judson, Civil Eng. Dover, N. J., Baltimore, Md., Cohen, Alau Mordecai, Electrical Eng. Comstock, Elisabeth Mary, Philosophy Richmond, Ind., Reading, Pa., .Mechanical Eng. Connard, Frank Leavenworth, Whitneys Point, Cook, Junius Ford, Mech. Eng. Elec. Eng. Cosby, Frank Clark, Norfolk, Va., Niagara Falls, Cross, Frank Leonard, Electrical Eng. West Candor, Crum, Fred Stephen, Letters New Berlin, Cushman, Blin Sill, Science Danser, Jason Seymour, East Clarence, Letters Philosophy Hudson, Wis., Darling, Edward Lacy, Letters Darling, Frederick Edgar Bradford, Troy, Civ. Eng. Plymouth, Pa., Davenport, Ward Palmer, Electrical Eng. Brunswick, Davis, Lee, Civil Eng. Charleton, S. C., Dingle, James Hervey, A.B., Science Columbus, Ohio, Doney, De Witt Clinton, Civil Eng. Doores, William Richard, Washington, D. C., Architecture Draper, Frederick Clinton, Fulton, Mechanical Eng. Granville, Ill., Dunn, Charles, Civil Eng. Utica, Pa., Dunn, Frank Slentz, Arts Canandaigua, Durand, Elias Judah, Electrical Eng. Ithaca, Eastman, Walter Lane, Mechanical Eng. Forest Home, Edwards, Walter Wallace, Philosophy Federspiel, Mortimer Alexander, Ithaca, Civil Eng. Olean, Filkins, Claude William Leroy, Albany, Arts Fitzpatrick, May Ransom, Devereux, Mich., Civil Eng. Fort, Edwin J. Civil Eng. Freeman, Hermon Martin, Orange Valley, N. J., Electrical Eng. Ithaca, Frost, Frank Raymond, Little Falls, Philosophy Gardinier, William John, St. Louis, Mo., Mechanical Eng. Garrels, William Louis, Mechanical Eng. Geer, Herbert Guernsey, Polsdam, Duluth, Minn., Gilbert, Wells Smith, Arts Philosophy Gilbert, Rizpah Marguerite, Le Roy, Philosophy Goddard, Mary, Worcester, Mass., Goldsborough, Winder Elwell, Electrical Eng. Greensboro, Md., Philosophy Waverly, Grafft, Jennie Bonnell, Milo, Ill., Philosophy Griswold, George Carter, Georgia City, Mo., Civil Eng. Guinn, John Broome, Boston, Mass., Mechanical Eng. Hale, Robert Sever, A.B.,

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Water Mill, Arts Logan, Ohio, Philosophy Electrical Eng. Niles, Ohio, Letters Ithaca, Letters Homer, Havana, Arts Quebec, Canada, Mechanical Eng. Johnson's Corners, Ohio, Letters Riverdale, N. J., Mechanical Eng. Philosophy Danzers, Mass., Civil Eng. Lyons, Arts Ithaca, Butler, Pa., Mechanical Eng. Electrical Eng. Clarence, Letters Fulton, South Danby, Arts Leonardsville, Mechanical Eng. Architecture Cleveland, Ohio, Philosophy Cleveland, Ohio, Electrical Eng. Elizabeth, N. J., Science Montague, Mass., Mech. Eng. New York City, Civil Eng. Delhi, Science Binghamton, Science Luzerne, Fa., New Berlin, Electrical Eng. Science Elmira, Philosophy Chatham, New York City, Mechanical Eng. Mechanical Eng. Albany, Architecture Atchison, Kan., Washington, D. C. Arts Electrical Eng. Clarence, Philosophy Buffalo, Mechanical Eng. Poughkeepsie, Civil Eng. LeRoy, Philosophy Rockford, Ill., Ithaca, Letters Science Waterville, Gilbertsville, Arts Civil Eng. Ilion, Civil Eng. St. John, N. B.,

Lovell, Ross Meacham, McAllister, Peter Francis, McClaughry, Mary, McGonigal, Ethel Marion, MacHarg, John Brainerd, Jr., MacNider, Stanley Corwine, Macy, Nelson, Marx, Guido Hugo, Melrose, Clifton John, Miles, William David, Miller, Alfred John, Miller, Kempster Blauchard, Miller, Theron Butler, Moore, Harlan, Moore, Harlau Flavius, Morris, Freeman L. Morris, Mary Augusta, Nathan, Benjamin, Newell. Benjamin Haff, Newman, Jacob Kiefer, Newton, Jacob Charles, Nichols, Leon Nelson, Northrop, George Henry, Northup, Clark Sutherland, Otis, Margaret, Paine, William Howard, Ph.B., Palmer, Harry Crowell, Pawling, Jesse, Jr., A.B., Pearson, Sarah, Perkins, Albert Henry, Perkins, George Clarence, Perrine, Charles, Pettebone, Jacob Sharps, Jr., Piffard, Henry Haight, Platt, Frederick Joseph, Poss, Victor Henry, Potter, Fred Hogeboom, Ramsey, Harry Nathan, Relihan, Mary, Ripley, John Wesley, Roess, Charles William, Roper, Denney Warren,

Cortland, Arts Ithaca, Philosophy Ithaca, Science Lyons, Arts Rome, Civil Eng. Hamilton, Canada, Elec. Eng. New York City, Mechanical Eng. Rochester, Mechanical Eng. Franklinville, Arts New Britain, Conn., Elec. Eng. Doylestown, Ohio, Letters Washington, D. C., Electrical Eng. Columbus, Ohio, Letters Harrodsburgh, Ky., Arts Holyoke, Mass., Mechanical Eng. Philosophy Fredonia, Letters Brooklyn, New York City, Letters Brooklyn, Arts. Elec. Eng. New Orlcans, La., Letters Hamburgh, Letters West Winfield, Philosophy Cherry Creek, Edmeston, Arts Arts Rochester, Providence, R. I., Mech. Eng. Civil Eng. East Orange, N. J., Overbrook, Pa., Science Waterlos, Arts Civil Eng. Granby Center, Science Newark, Wallkill, Arts Architecture Dorranceton, Pa., New York City, Electrical Eng. Waterford, Electrical Eng. Civil Eng. St. Louis, Mo., Civil Eng. Saginaw, Mich., Electrical Eng. Olean, Letters Corning, Sag Harbor, Civil Eng. S. Oil City, Pa., Mechanical Eng. Alton, Ill., Electrical Eng.

Ancram,	Civil Eng.
Albany,	Science
Ithaca,	Letters
Waterloo,	Arts
New York City,	Agriculture
Tuscaloosa, Ala.,	Mechanical Eng.
Breslau, Canada,	Elec. Eng.
Auburn,	Mechanical Eng.
Martinsburg,	Science
Spencer,	Arts
Baltimorc, Md.,	Agriculture
Germantown, Pa	., Electrical Eng.
Greenburgh,	Mechanical Eng.
Newburgh,	Electrical Eng.
Savannah,	Arts
Holley,	Arts
Juiz de Fóra, Br	azil, Agriculture
Syracuse,	Science
Belleville,	Arts
New York City,	Science
Glens Falls,	Letters
Shakopce, Minn.	, Letters
Cleveland, Ohio,	Arts
Council Bluffs, I	owa, Letters
Ogdensburgh,	Mechanical Eng.
Ripley,	Electrical Eng.
Titusville, Pa.,	Philosophy
Chicago, Ill.,	Mechanical Eng.
Flackville,	Letters
St. John, Canado	r, Electrical Eng.
Lockport,	Electrical Eng.
	Ancram, Albany, Ithaca, Ithaca, Waterloo, New York City, Tuscaloosa, Ala., Breslau, Canada, Auburn, Martinsburg, Spencer, Baltimore, Md., Germantown, Pa Greenburgh, Savannah, Holley, Juiz de Fóra, Br Syracusc, Belleville, New York City, Glens Falls, Shakopee, Minn. Cleveland, Ohio, Council Bluffs, I Ogdensburgh, Ripley, Titusville, Pa., Chicago, Ill., Flackville, St. John, Canado Lockport,

Yuthill, Grace Blanche,
Van Buskirk, John Hamlin,
Van Buskirk, William Tobey,
Vedder, Catherine Dorothy,
Vedder, Estella May,
Vose, Walter Irving,
Warner, George Bradner,
Warner, Gilliam,
Weed, Robert Murray,
Werner, Charles Hain,
Wessling, Albert Gustave,

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Haverty, Letters Mechanical Eng. Peoria, Ill., Peoria, Ill., Science St. Johnsville, Science St. Johnsville, Science Manville, R. I., Civil Eng. Wellington, Ohio. Letters Cleveland, Ohio, Electrical Eng. Leavenworth, Kan., Letters Reading, Pa., Science Cincinnali, Ohio, Mechanical Eng.

White, Ernest Ingersoll,	Syracuse, Letters
White, Louis Eugene,	Detroit, Mich., Mechanical Eng.
White, Rollin Henry,	Cleveland, Ohio, Mechanical Eng.
White, William Curtis,	Elmira, Arts
Wigglesworth, Albert Wesley,	Palmyra, Electrical Eng.
Wilcox, Glenn Avery,	North Litchfield, Science
Wilkins, Isaac Chester Griswold,	<i>ll'hilehall</i> ; Mechanical Eng.
Williamson, Robert Baird,	Port Hope, Canada, Elec. Eng.
Wilson, Chester Paulton,	Indianapolis, Ind., Elec. Eng.
Wilson, Emory Meyers,	Washington, D. C., Philosophy
Wilson, Fred Lewis,	Buffalo, Electrical Eng.
Wing, Louis Fennimore,	Buffalo, Philosophy
Woodbridge, Thomas Witherbee,	Port Henry, Science
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Hadden, Clarence Bernard,	Sandusky, Ohio
Loveland, Floyd Neilsson,	Richmondville
McNeal, Louis Bertel,	. Marion, Ohio
Morris, Julia Louise,	Brooklyn
Murphy, Charles Eugene,	Pike
Sechrist, Cora Stalling,	Canton, O.
Shearer, John Sandford,	Homer
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Chicago, Ill.,	Mechanical Eng.
Greenwich, Conn	., Mech. Eng.
Ithaca,	Arts
Ogdensburg,	Letters
Chicago, Ill.,	Electrical Eng.
Ithaca,	Philosophy
Burlington, Iowa	a, Arts
Washington, D.	C., Mech. Eng.
Jamestown,	Letters
Carthage,	Mechanical Eng.
Chaseville,	Civil Eng.
Little York,	Electrical Eng.
Utica,	Electrical Eng.
Auburn, Me.,	Electrical Eng.
Albany,	Architecture
New York City,	Architecture
New York City,	Mechanical Eng.
West Winfield,	Civil Eng.
New York City,	Elect. Eng.
Brooklyn,	Architecture
Kapaa Kanai, H	awaiian Is., C. E.
Plantsville, Conn	i., Elect. Eng.
Pittsburgh, Pa.,	Architecture
Nichols,	Civil Eng.
Providence, R. I.	., Elect. Eng.
Little Rock, Ark	., Mech. Eng.
Glen Cove,	Mechanical Eng.
Yonkers,	Mechanical Eng.
Springfield, Mas.	s., Mech. Eng.

St. Louis, Mo., Ele Cincinnati, O., Ele Ovid, Lake Ridge, Ele New York City, Ele Brooklyn, A Sauquoit, Ele West Albany, Ele Ithaca, Yonkers, Buffalo, Mech

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Buffalo,	Civil Eng.			
Rochester,	Civil Eng.			
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Hoppe, Marie Martha, Horner, Charles S, Hoster, Carl Jacob, Howerth, Joseph, Hoyt, Charles Seward, Hull, Mary Josephine, Hunt, Sidney Eggleston, Hunt, William Floyd, Hyde, Walter Woodburn, Jenness, Jennie Maria, Jewell, Edward Winchell, Johnson, Willis Grant, Kehler, Sherman Isaac, Kelsey, Thomas, King, Willis Eldredge, Klinck, John Henry, Knox, Herbert William, Knudson, John Charles, Kranz, William George, Kress. Carl Fred. Lacey, John Fletcher, Landfield, Jerome Barker, Landis, John Christopher, Jr., Lanman, William Kelsey, Lanphear, Burton Smith, Lathrop, John Kasson, Latting, Benjamin Franklin, Lee, Marguerite Thouron, Lewis, Frederic Worthington, Lindall, Grant, Lindsey, Leah Ella, Linke, J Ralph Audley, Locke, Sylvanus Dire, Jr., Louer, Lewis Stern, Love, Frank William, McCounell, Edward Denison, McDonald, Clarence Alexander, McFaddin, Harrison Dawson, Mack, William Gordon, McLaren, William Frederick, Macomber, Irving Emerson, Mandelbaum, Cheri Abraham,

Rochester,	Arts
Cleveland, Ohio,	Science
Columbus, Ohio,	Science
Waterloo,	Arts
Canandaigua,	Arts
Ithaca,	Philosophy
Guilford,	Civil Eng.
West New Brigh	ton, Mech. Eng.
Ithaca,	Arts
Brooklyn,	Philosophy
Wheaton, Ill.,	Mechanical Eng.
New Albany, Oh	io, Science
Liberty, Pa.,	Civil Eng.
Mecklenburgh,	Mechanical Eng.
Ithaca,	Medical Prep.
Charleston, S. C.	, Electrical Eng.
Knoxboro,	Arts
Lansingburgh,	Philosophy
Berlin, Canada,	Mechanical Eng.
Johnstown, Pa.,	Mechanical Eng.
Lincoln, Del.,	Civil Eng.
Binghamton,	Arts
St. Joseph, Mo.,	Philosophy
Columbus, Ohio,	Mechanical Eng.
Carthage,	Electrical Eng.
Cortland,	Arts
Shortsville.	Civil Eng.
Bıooklyn,	Letters
Atlanta, Ga.,	Mechanical Eng.
New Haven,	Civil Eng.
Lockport,	Arts

Troy, Electrical Eng. Hoosic Falls, Mechanical Eng. Chicago, Ill., Mechanical Eng. Buffalo, Science Chicago, Ill., Mechanical Eng. M. E. Sherbrooke, Nova Scotia, East Orange, N. J., Mech. Eng. Norwalk, Ohio, Mech. Eng. Hamilton, Canada, Elect. Eng. Toledo, Ohio, Mechanical Eng. Detroit, Mich., Architecture

Manning, Samuel, Markham, Mary Catherine, Marsh, Clarence Wallace, Mason, Daniel Ambrose, Mason, Eugene George, Matthews, Charles Philo, May, Walter Alfred, Mayhew, Robert, Mayo, Earl Williams, Mendenhall, Samuel Achilles, Messer, Paul, Mickle, John Daniel, Miller, Emma Sophia, Milliken, Albert Evans, Mitchell, John Hennon, Moody, Arthur Edson Blair, Morehouse, Alanson David. Morrison, William, Murray, Liuwood Asa, Nast, Alexander, Nevius, Joseph Nelson, Newton, Peter Augustiu, Jr., Osgood, Winchester Dana, O'Shea, Margaret, Paige, Walter Cary, B.S., Palen, Fred Pomeroy, Park, Robert Bruce, Parkhurst, Frederick Alexander, Parnall, William Edward, Jr., Payne, Earl H, Pearson, Raymond Allen, Peck, Harry Gold, Perry, Anna Louise, Perry Samuel B, Peters, Gus Trimble, Peters, Heber Cushing, Place, Arthur Harrington, Potter, Howard Leon, Preston, Charles Seymour, Priest, Asa Beaumont, Pruyn, Francis Lansing, Quick, Robert Winchell,

Albany, Electrical Eng. Horseheads, Letters Saraloga, Civil Eng. Albion, Electrical Eng. Fredonia, Electrical Eng. Fort Covington, Electrical Eng. Allegheny, Pa., Electrical Eng. Saraloga Springs, Civil Eng. Spring ville, Arts Bozeman, Mont., Mechanical Eng. Chicago, Ill., Mechanical Eng. Chatham, Electrical Eng. Columbus, Pa., Letters San Francisco, Cal., Mech. Eng. New Brighton, Pa., Mech. Eng. New Haven, Conn., Elec. Eng. Brooklyn, Electrical Eng. Cincinnati, O., Mechanical Eng. Tottenville, Electrical Eng. Architecture Chicago, Ill., South Orange, N J., Elect. Eng. Chicago, Ill., Mechanical Eng. Omaha, Neb., Civil Eng. Rochester, Arts Amherst, Mass., Civil Eng. Mechanical Eng. Monticello, Civil Eng. Athens, Pa., Architecture Albany, Elect. Eng. Red Jackel, Mich., Rushville, Ind., Science Ithaca, Agriculture Waterville, Mechanical Eng.

Churchville, Arts Mechanical Eng. Bethel, Columbus, Ohio, Electrical Eng. Newark, N. J., Mechanical Eng. Cortland, Civil Eng. Wells Bridge, Arts Pillsburgh, Pa., Mechanical Eng. Canandaigua, Arts Albany, Electrical Eng. Slaterville, Electrical Eng.

Ralston, William Spencer,	Kittanning, Pa.,	Electrical Eng.
Ramsey, Edmund Payton,	Washington, D.C.	., Electrical Eng.
Reed, Addison Berton,	Waterloo,	Arts
Reynolds, Ezra Pierce,	Alton,	Arts
Rice, Edward Carr,	Fairfield,	Arts
Rich, Herbert Givens,	Chicago, Ill.,	Science
Richardson, Albert Goldwin George	,Ithaca,	Agriculture
Roberts, Edmund Wilson,	Denver, Col.,	Electrical Eng.
Rogers, Thomas Chattle,	Middletown,	Arts
Rosewater, Charles Colman,	Omaha, Neb.,	Philosophy
Rosser, David,	Kingston, Pa.,	Civil Eng.
Rowland, John Thomas, Jr.,	Jersey City, N. J	., Architecture
Rulison, George Warren,	Mohawk,	Philosophy
Sanderson, Edward Spalding,	Scranton, Pa.,	Mechanical Eng
Saxton, Charles Bullock,	Buffalo,	Mechanical Eng
Schaefer, Cuthbert,	Yazoo City, Miss.	, Mechanical Eng.
Scherer, Charles Robert,	Albany,	Science
Schmidt, William Henry,	New York City,	Civil Eng.
Schouton, Clara Esther,	Brockport,	Letters
Sheldon, Jeanette May,	Buffalo,	Architecture
Slater, Frederick Raymond,	Washington, D.	C., Electrical Eng.
Sloan, Harry,	New York City,	Electrical Eng.
Sloan, John Young,	Buffalo,	Electrical Eng.
Smith, Cora Ermina,	Ithaca,	Science
Smith, Floyd Kipp,	Bayonne, N. J.,	Civil Eng.
Smith, Harry James,	Buffalo,	Electrical Eng.
Smith William Sumner,	Hampden, Mass.	, Mechanical Eng.
Snider, Otho Carleton,	Cleveland, Ohio,	Letters
Snyder, Frank Gerome,	Nina,	Mechanical Eng.
Stewart, Fenwick Joseph Thrashe	r, A.B., Washing	ton, D. C., E. E.
Stoddard, John Milton,	Horseheads,	Philosophy

Strong, Frederick Finch, Strong, Howard Phelps, Strong, Herbert William, Sweet, Horace Brimmer, Taylor, William Arthur, Thomas, James Mantelle, Jr., Tomlinson, Daniel West, Jr., Tompkins, John Stuart, Torrance, Stiles Albert, Towle, John Webster, Treat, Charles Henry,

Science Ithaca, Agriculture Ithaca, Agriculture Cleveland, Ohio, **Electrical Engineering** Utica, Freeport, Ill., Electrical Eng. Baltimore, Md., Mechanical Eng. Batavia, Mechanical Engineering Oneonta, Arts Philosophy Gowanda, Falls City, Neb. Civil Eng. Weeping Water, Neb., Mech. Eng.

Trible, Walter Philip, Truby, Albert Ernest, Truby, Willard Frederick, Truman, Frank Stedman, Valentine, Warren Russell, Van Cleef, Henry Howell, Vanderbeck, Herbert, Van Deusen, Clinton Sheldon, Van Dorn, Thomas Burteu. Varick, William Remsen, Wagner, George Francis, Walker, George Washington, Wardlaw, George Agustus, Ware, Louie Erville, Warriner, Thomas Read, Weber, Adna Ferrin, Westcott, Charles D. Westervelt, John, Whetstone, Walter, White, Harry George. Whittemore, Charles Francis, Widger, Clark William, Wiegand, Karl McKay, Wilcox, Arabella Elizabeth, Wilkin, Thomas John, Williams, Earnest Porte, Williams Sophia Wells, Wilson, Leroy Merle, Wines, Arthur Frederick, Wiutermute, Peter, Witherbee, George Pease, Wood, George Green, Wood, George Whitney, Wood, Horatio Nelson Wood, Robert Edward, Woodford, Katherine G, Wyckoff, Arcalous Welling, Yard, James Buoy, Young, John Paul,

Buffalo, Scieuce Ollo, Agriculture Agriculture Ollo, Arts Owego, Ithaca, Mechanical Eng. Poughkeepsie, Mechanical Eng. New York City, Mechanical Eug. Electrical Eng. Newark, Cleveland, Ohio, Mech. Eng. Albany, Medical Preparatory Mechanical Eng. Denver, Col., Scieuce Binghamton, New York City, Electrical Eng. Worcester, Mass., Letters Civil Eng. Adams Center, Philosophy Olean. Washington, D. C., Elec. Eng. Ithaca, Architecture Mech. Eng. Eau Claire, Wis., Mechanical Eng. Buffalo, Chicopee Falls, Mass., Elect. Eng. **Civil Engineering** Norwich, Science Truxton, Philosophy Middletown, Mechanical Eng. Elmira, Bellefontaine, Ohio, Arts Auburndale, Mass., Arts Electrical Eng. Newton, N. J., Mech. Eng. Springfield, Ill., Electrical Eng. Horseheads, Mechanical Eng. Port Henry, Electrical Eng. Westbury, Elec. Eng. Philadelphia, Pa., Mechanical Eng. Westbury, Arts Balavia, Arts Jamestown, Mechanical Eng. Elmira, Arts Olean, Architecture Williamsport, Pu.,

## CATALOGUE OF STUDENTS.

#### **OPTIONAL STUDENTS.**

#### FRESHMEN.

Abraham, Lawrence Emanuel,	Brooklyn,	Letters
Ahern, Thomas Francis,	Whitney's Point	, Mechanical Eng.
Aikenhead, James Ray,	Rochester,	Architecture
Allan, Charles Davies,	Montclair, N. J	, Mechanical Eng.
Almy, Arthur Leroy,	Auburn,	Electrical Eng.
Anderson, George Andrew,	Parish,	Letters
Andrews, Eugene Plumb,	Oswego,	Arts
Angel, Laurance,	Rochester,	Electrical Eng.
Ashby, Charles Wesley,	Troy,	Civil Eng.
Atkinson, William Fitch,	Brooklyn,	Letters
Atwater, William Langworthy,	Batavia,	Civil Eng.
Ayer, John Varnum,	Pass Christian,	Miss., Elec. Eng.

Ayres, Clarence Morton, Babcock, Clinton LeRoy, Baker, Frederic James, Balladur, Charles Paul, Ballou, Harriet Knight, Banks, Mary Fletcher, Barber, Arthur William, Barnes, Albert, Barnes, Jay Preston, Barnes, William Elias, Baum, Roy Amos,

Civil Eng. St. Joseph, Mo., Boonville, Arts Jamestawn, Electrical Eng. Smyrna, 'Asia Minor, Elect. Eng. Philosophy Boonville. Architecture Brooklyn, Chazy, Arts Lockport, Electrical Eng. Housatonic, Mass., Civil Eng: Oran, Electrical Eng. Marathon, Arts FRESHMEN.

Belknap, Waldron Phoenix,	New York City,	Mechanical Eng.
Bell, Albert Cunningham,	Rochester,	Electrical Eng.
Bell, Charles House,	Hillsdale,	Letters
Benjamin, Claude Towne,	Burlington Flats	, Arts
Bennett, Russell Howard,	Syracuse,	Architecture
Bentley, Edward Abram,	New Brighton, F	a., Mech. Eng.
Bergmann, Louise S,	Louisville, Ky.,	Medical Prep.
Berry, Emily Wyckoff,	Brooklyn,	Philosophy
Besosa, Joseph Caledonia,	Ponce, Porto Rico	, Mech. 'Eng.
Blake, Carroll,	Albany,	Electrical Eng.
Blatchford, Charles Hammond,	Chicago, Ill.,	Mechanical Eng.
Bliss, Jesse Leonti, Sou	th Hadley Falls, N	lass., Med. Prep.
Blum, Maximilian Lindheim,	Albany,	Civil Eng.
Bockes, George Leslie,	Skancalcles,	Arts
Bográn, Saturnio Pacheo,	Central Valley,	Agriculture
Bonsteel, Jay Allan,	Franklinville,	Civil Eng.
Borton, George Wills,	Atlantic City, N.	J., Mech. Eng.
Bowman, Earl Alexander,	Gouverneur,	Arts
Bowman, Leona,	Jamestown,	Arts
Boynton, Margaret Fursman,	Lockport,	Philosophy
Branson, Edward Lathrop,	Ottawa, Kan.,	Mechanical Eng.
Bridgmau, Lulu,	Penn Yan,	Philosophy
Brodhead, Alexander Leisenring,	Caledonia,	Mechanical Eng.
Bronson, Anna Couaut,	Ithaca,	Philosophy
Brown, Allan John,	Oswego,	Civil Eng.
Brown, Hugh Thomas,	Columbia, Tenn.,	Electrical Eng.
Beueggeman, George Frederick A	rthur, St. Louis, M	o., Architecture
Bryson, Thomas Bines,	Mechanicsburg. 1	Pa., Civil Eng.
Bump, Elizabeth Washburne,	Ithaca,	Philosophy
Bump, Frank Sheldon,	Binghamlon,	Science
Burroughs, Henry Harding,	Ithaca, •	Electrical Eng.
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Bursch, Frederick Conrad, Busch, Fred Carl, Capps, William Lee, Carll, Samuel Peaslee, Carney, Frank, Chamberlain, Harry Myron, Chapman, Flora E, Chapman, Roswell Curtis, Clark, Frank Berry, Clark, George Donald, Clark, Gertrude Eliza,

Brooklyn, Civil Eng. Science Buffalo, Springfield, Ill., Electrical Eng. Pleasantville, Pa., Arts Watkins, Philosophy Constable, Arts Viroqua, Wis., Philosophy Norwich, Arts Whallonsburgh, Civil Eng, Port Hope, Canada, Elec. Eng. Buffalo, Arts Clark, Harry Josiah, Coleman, George Louis, Collins, George Williston, Collins, Harry Llewellyn, Colsten, Albert Lloyd, Conklin, Arthur Stewart, Cooke, Frank Leslie, Cool, Frank Warren, Copeland, Henry Collins, Corse, Virgil Powers, Corson, Bayard Wilkeson, Cowperthwait, Allan, Craig, Austin, Craig, Thomas Luther, Creveling, John Leroy, Croll, Andrew Gilbert, Crumb, William Hanford, Cummings, Mary Gilmer, Daley, Robert Morris, Dark, Wilbur Wynn, Davis, Fred Brownell, Day, Winterton James, DeLano, Harry Clark, DeLano, Milton, Jr., Denman, John, Jr., Denny, Willis Franklin, Diltz, Frank Butler, Dixson, Thomas Willy, Downey, Joseph Robert, Downing, Frederick Bagg, Dreier, Walter Chase, Druliner, Frank L, DuBois, Paul Thorne, Dunham, Walter Edward, Dyke, James Rudolph, Jr., Eastman, William Russell, Eckart, William Rankiue, Egbert, Charles Coggill, Ehrhart, Eugene Nelson, Ellis, William Sterling, Elmes, Charles Warren, Emeny, Fred James,

Ithaca, Electrical Eng. Titusville, Pa., Mechanical Eng. Chicago, Ill., Mechanical Eng. Washington, D. C., Elec. Eng. Binghamton, Civil Eng. Elmira, Mechanical Eng. Hackettstown, N.J.. Elec. Eng. Pittston, Pa., Mechanical Eng. Ticonderoga, Science Electrical Eng. Lacona, Norristown, Pa., Architecture New York City, Mechanical Eng. Rochester, Arts Ann Arbor, Mich., Elect. Eng. Electrical Eng. Auburn, Weatherly, Pa., Mechanical Eng. Electrical Eng. Rockford, Ill., St. Louis, Mo., Philosophy Science Chatham, Indianapolis, Ind., Elec. Eng. St. Johnsville, Civil Eng. Seneca Falls, Electrical Eng. Civil Eng. Canastota, Electrical Eng. Canastota, Mech. Eng. Kendall Creek, Pa., Louisville, Ga., Architecture Electrical Eng. Fulton, Letters Pulaski, Science Pueblo, Col. Electrical Eng. Erie, Pa., Civil Eng. Chicago, Ill., South Bend, Ind., Electrical Eng. Architecture Hudson, Electrical Eng. Troy, Architecture Delmar, Falls Church, Va., Philosophy San Francisco, Cal., Mech. Eng. Morristoum, N. J. Electrical Eng. New York City. Agriculture Architecture Chicago, Ill., Chicago, Ill., Mechanical Eng. Fulton, Mechanical Eng.

Emery, Ralph, Evans, Charles Milton, Everson, William Winton, Ewalt, George Sealy, Fairchild, Charles Gray, Fenimore, Jason Lawrance, Fichthorn, Joseph Hoover, Firth, Elmer Wallace, Fisher, George Milton, Fisher, William George, Flory, Burton Pughe, Foraker, Burch, Foulke, Roland Roberts, Freeborn, Angelo Cobb, Freshman, Edward Arthur, Gage, Edward Ballard, Gaines, Frederick Freelinghuysen, Hawley, Pa., Garretson, David Irwin, Gibbons, William Hill, Gideon, Abraham, Gilbert, Ernest Marvin, Gilbert, Warner White, Godfrey, John Hanes, Gordon, Robert Loudon, Graff, Thomas Ewing, Grant, Floyd Mayham, Green, George Victor, Greene, James Edward, Greenlee, William Brooks, Guerrero, Julius Carlos, Guerrero, Emanuel, Hager, Edward Charles, Hall, Benjamin Wallace, Hall, Charles Ward, Halsey, Pierson Loveridge, Hamlin, Edwin Thompson, Hapgood, William Henry, Harmon, Simeon Burt, Harter, Loren Eugene, Hartley, Carney, Harvey, George Roy, Hawley, Asa Wellington,

Bryan, O., Philosophy Towanda, Pa., Philosophy Syracuse. Mechanical Eng. Falls City, Neb., Architecture Parish, Letters Electrical Eng. Bristol, Pa., Lewistown, Pa., Civil Eng. Civil Eng. Brooklyn, Science Westboro, Mass.. Utica, N. Y., Electrical Eng. Mechanical Eng. Sayre, Pa., Electrical Eng. Hillsboro, O., Philadelphia, Pa., Arts Mechanical Eng. Ithaca, New York City, Letters Mechanical Eng. Chicago, Ill., Mechanical Eng. Mechanical Eng. Raritan, N. J., Arts Skaneateles, Civil Eng. Tula, Russia, Electrical Eng. Brooklyn, Civil Eng. Rochester, Mechanical Eng. Walerloo, Mechanical Eng. New York City, Mechanical Eng. Pillsburgh, Pa., Electrical Eng. Schoharie, Mechanical Eng. Fulton, Castile, Medical Prep. Mechanical Eng. Chicago, Ill., Mech. Eng. Durango, Mexico, Durango, Mexico, Mech. Eng. Electrical Eng. Buffalv, Buffalo, Philosophy New York City, Electrical Eng. Milwaukee, Wis., Arts Electrical Eng. Bangor, Me., Architecture Sing Sing, Civil Eng. Adrian, Mich., Letters Copenhagen, Fairmont, W. Va., Mech. Eng. Hamillon, Canada, Mech. Eng. Brandon, Vt., Arts Haynes, Frederick Jacob, Healey, Sumner Mansfield, Heitmann, Edward, Jr., Hendry, William Perris, Higby, Edwin Barker, Hoffmann, Bernhard, Holloway, Carl Sheldon, Holmes, Glenn Dickenson, Holmes, Howard Benard, Horr, Alfred Reuel, Hoskins, Delos West, Howe, George, Howell, Bertha, Howell, Louis Baldwin, Hoy, William Wilson, Hubbard, Tunis Thayer, Hull, Howard Windson, Hull, Ida Lucena, Humphreys, Fred Arthur, Hurst, Joseph H, Ingalls, Royce Kuowlton, Inslee, Charles L, Ives, Robert F, Joerissen, Fred, Jr., Johnson, Estella Maude, Johnson, Raymond Deloraiue, Jones, Edward Cole, Judd, John Wesley. Kain, Charles Addison, Keays, Reginald Horton, Kendall, Charles Hanford, Kenton, Louis Ney, Kerr, Abram Tucker, Jr., Kirby, Robert Ward, Kirkpatrick, Andrew, Jr., Knab, Gustave, Koenig, Arnold Charles, Krebs, George J, Jr., Laird, James David, Langton, James A, Lansing, George Herbert, Larned, William Augustus,

Syracuse. Architecture New York City, Mechanical Eng. Milwaukee, Wis., Mechanical Eng. New York City, Electrical Eng. Turin, Architecture Stockbridge, Mass., Electrical Eng. New York City, Mechanical Eng. Batavia, Civil Eng. Beloit, Wis., Mechanical Eng. Wellington, O., Letters Aurelius, Science North Salem, Electrical Eng. Chicago, Ill., Philosophy Chicago, Ill., Electrical Eng. Bovina Centre, Civil Eng. Mechanical Eng. Chicago, Ill., Scranton, Pa., Electrical Eng. Philosophy Spencer, Lane's Mills, Pa., Mechanical Eng. Philosophy Rummerfield, Pa. Electrical Eng. Joliet, Ill., Newton, N.J., Mechanical Eng. Medical Prep. Brooklyn, Civil Eng. Ilion, Arts Glendale, Buffalo, Electrical Eng. Ft. Atkinson. Wis., Mech. Eng. New Lenox, Mass., Medical Prep. Civil Eng. Pine Bush, Buffalo, Civil Eng. Rushford, Civil Eng. Philadelphia, Pa., Civil Eng. Buffalo, Science Urbana, O., Electrical Eng. Electrical Eng. Newark, N. J., Armor, Civil Eng. Civil Eng. Grand Island, Neb., Danville, Pa., Mechanical Eng. Letters Eagle, Logan, Utah, Letters Mechanical Eng. Greenbush, New York City, Mechanical Eng.

Hannibal, Lathrop, Mark Henry, Letters Latta, Gay Willis, Little Rock, Ark., Electrical Eng. Leckie, William Murray, Joplin, Mo., Mechanical Eng. Lee, William Reuben, Rochester. Arts Legg, William Fairfax, Ithaca, Mechanical Eng. Lehman, William Emanuel, Newark, N. J., Architecture Leite, Francisco Eusebio de Aquino, Minas, Brazil, Architecture Leonard, Stephen Rose, Jr., Kenwood, Mechanical Eng. Lewis, Joshua Roger, Reading, Pa., Civil Eng. Lewis, Robert Bruce, Suspension Bridge, Mech. Eng. Lewis, Theodo e Butcher, Philadelphia, Ba., Electrical Eng. Philosophy. Mulberry, Pa., Lighty, William Henry, Atlanta, Ga., Electrical Eng. Lowe, William Bell, Jr., Lyle, John Mackintosh, Architecture Brooklyn, Mechanical Eng. McBrier, Frederick Bell, Eric, Pa., Brooklyn, Architecture McCarroll, Joseph Allan, Grand Rapids, Mich., Elec. Eng. McCoy, Ralph, Philosophy McCoy, William Sortore, Salamanca, Gilbertsville, Mechanical Eng. McCulloch, William Frederick, Civil Eng. McDiarmid, Milo Stuart, Homer, MacNider, James Wright, Hamilton, Canada, Mech. Eng. Troy, Electrical Eng. Mahan, James Francis, Mech. Eng. Mann, Robert Bruce, Milwa**ukee, W**is., 👘 Albany, Electrical Eng. Manning, William Sheppard, Jr., Science Marsh, Clifford Myram, Saratoga Springs, Architecture Marshall, Jesse Burton, Allegheny, Pa., Paris, Texas, Architecture Martin, Hugh, Civil Eng. Chalfont, Pa., Massinger, Wesley, Springfield, Ill., Electrical Eng. Matlock, Robert Cutter. Chicago, Ill., Electrical Eng. Matthiessen, Frank, Newnan, Ga., Mechanical Eng. Mattox, Robert Wesley, Rochester, May, Porter, Arts Mechanical Eng. Peru, Ill., Means, Archibald Layng. Mechanical Eng. Sencea Falls, Medden, Frederick John, Morrisburg, Canada, Mech. Eng. Meikle, John Hotson, Messenger, George Livingston, Dryden, Arts Ironton, Ohio, Science Miles, Erastus Smith, Canton, Ohio, Electrical Eng. Miller, Burt A, Syracuse, Mechanical Eng. Mitchell, James Brady, Bryan, Ohio, Arts Moore, Blanche Edna, Moore's Station, Canada, Agricul. Moore, Charles S, Highland Fark, Ill., Architecture

Morgan, Elisha,

Morgan, Richard Evans,	New York City,	Electrical Eng.
Morse, George Westlake,	Elmira,	Electrical Eng.
Morton, Darwin Abbot,	Groton,	Science
Moseley, Edward Allen,	Dallas, Texas,	Electrical Eng.
Mott, Vancleve Charles Shaw,	Buffalo,	Electrical Eng.
Muller, Leslie,	Warrenton, Va.,	Civil Eng.
Mutschler, Louis Henry,	Canandaigua,	Medical Prep.
Mytou, Walter Raleigh,	Huntingdon, Pa.	, Architecture
Nakayama, Ichi,	Gumnan, Japan,	Electrical Eng.
Nash, Frank Channing,	Spokane, Wash.,	Philosophy
Nelson, Gertrude Jane,	Chicago, Ill.,	Philosophy
Neville, Wilkinson D,	Bay City, Mich.,	Mechanical Eng.
Newbery, George Alejander, Bue	nos Aires, Argenti	ne Republic, E.E.
Newhouse, Irene Campbell,	New York City,	Arts
Nicholls, Thomas Henry,	Dutch Flats, Cal.	, Letters
Nichols, Harry Alfred,	Fulton,	Mechanical Eng.
Nichols, John Adams, Jr.,	Syracuse,	Architecture
Nicholson, John Johns,	Baltimore, Md.,	Electrical Eng.
Norton, Alfred Buckley,	Syracuse,	Electrical Eug.
Nourse, Ralph Farrington,	Ithaca,	Mechanical Eng.
O'Brien, Hugh Joseph,	Rochester,	Arts
Old, Clayton Woodman,	New York City,	Mechanical Eng.
Orgon, Eugene Spencer,	Naples,	Arts
Osmond, Eloise Livermore,	Norwich,	Arts
Ossoski, Sidney,	Hornellsville,	Arts
Ott, Paul,	Philadelphia, Pa.	, Mech. Eng.
Owen, Aloney Rust,	Eau Claire, Wis.	, Letters
Palmer, Marshall Barker,	Clinton,	Civil Eng.
Park, William Osborne,	Atchison, Kan.,	Electrical Eng.
Patterson, Sterling Woodford,	Newark Valley,	Arts
Payne, Olcott,	Little Neck,	Electrical Eng.

Paz, Louis, Pease, Charles, Percy, Mary Neal, Phillips, Ellis Laurimore, Pierce, Jonas James, Jr., Pierce, Lucia Sylvia, Piser, Theodore Halstead, Pitcher, Henry Churchill, Plumb, Albert Macy, Plumb, Hyde Parker, Pomeroy, William Dutton, Sta Bàrbara, Honduras, Civil Eng. Windsor Locks, Conn., Philosophy Philosophy Chatham, Electrical Eng. Naples, Sharpsville, Pa., Electrical Eng. Cooper's Plains, Letters Shushan, Electrical Eng. Albion, Ill., Letters Denver, Col., Civil Eng. Denver, Col., Electrical Eng. Utica, Electrical Eng.

Powell, George Harold, Powell, Percy Howard, Powlesland, Ina Belle, Pratt, Frank Everett, Purdy, Frank Dyer, Putnam, Richard Johnston, Rathbun, George Jay, Record, Byron Frank, LL.B., Redfield, Robert Place, Reed, LeGrand Bey, Reed, Nellie Marie, Rhoda, Arthur Proseus, Rhodes, Stewart, Richens, Blanche Bundy, Rigby, George Norton, Riley, Fred Edwin, Ritchie, Stith Bearden, Robbins, Nathaniel C, Robbins, Percy Arthur, Robertson, Lionel Omar, Robertson, William Ewart, Robertson, William Touro, Robinson, Charles, Rockwell, George Andrews, Roedelheim, Alfred Max, Rogers, Charles Edward, Root, James Harry, Roseustock, Edgar Horace, Russell, Charles Mills, Salant, William, Sanborn, William Brodigan, Sanderson, Charles Reed, Sands, Ord Ledyard, Sanford, Linns, Jr., Savery, Thomas H, Jr., Schenck, William Elmer, Schoenborn, Henry Francis, Jr., Schoonmaker, George Washington, Jamaica, Scott, Jesse Melville White, Scott, Quincy Adams, Seabury, Albert Heulett, Seep, Albert Henry,

Ghent, Agriculture Hempslead, L. I., Electrical Eng. Syracuse, Philosophy Nicholson, Pa., Civil Eng. Electrical Eng. Ithaca, Abbeville, La., Electrical Eng. Utica, Mechanical Eng. Philosophy Smith's Mills, Middletown, Arts Toronto, Canada, Mech. Eng. Ithaca, Arts Gloversville, Architecture Cleveland, O., Mechanical Eng. Auburn, Letters Electrical Eng. Yonkers, Civil Eng. Palmer, Civil Eng. Camden, Ark., Electrical Eng. Nyack, Mechanical Eng. Chicago, Ill., Architecture Jamestorun, Electrical Eng. Ithaca, New York City, Mechanical Eng. Chillenango, Mechanical Eng. Oshkosh, Wis., Architecture Electrical Eng. Allegheny, Pa., Whitney's Point, Mechanical Eng. Agriculture Skancatelcs, Petersburgh, Va., Electrical Eng. Science Glens Falls, Science New York City, Sterling, Ill., Mechanical Eng. Scranton, Pa., Electrical Eng. Mechanical Eng. Hancock, Jackson, Mo., Electrical Eng. Mech. Eng. Wilmiugton, Del., Philosophy Fullon, Elec. Eng. Washington, D. C., Civil Eng. Medical Prep. Albany, Pittsburgh, Pa., Mechanical Eng. Civil Eng. Hempstead, Titusville, Pa., Mechanical Eng.

Sellwood, Richard Matthew, Shammo, Eva Belle, Shape, Robert Louis, Shaw, Charles G, Sherman, Nathaniel Norton, Sibley, Robert Gladstone, Siebold, William Otto, Simpson, Le Roy, Skinner, Fred Bush, Smith, Annie Isabelle, Smith, Arthur Sedwick Roberts, Smith, Lester Griffing, Smith, Percy James, Smith, William Griswold, Soulé, Robert Spencer, Sperry, Julius Carrington, Stanion, George Henry, Stanton, Nathan Pendleton, Stanton, William Alfred, Stearns, Sumner Everett, Stebbins, Emma Mabel, Stebbins, Smith Hanover, Steele, Flora Whitney, Steinacher, Julio Miguel, Stephens, DeWitt Clinton, Stephens, John Buell, Stern, Morris Lewis, Stevens, Harold Luther, Stickney, George Hoxsie, Stilwell, Richard Oakley, Stone, Lulu Mabel, Stoneman, Bertha, Storrs, Charles Platt, Strang, Walter Whitcomb, Stratford, Frank Burnette, Straus, Horatio, Sturges, Effingham Mackenzie, Swart, Richard Houghton, Swindells, Joseph Springer, Taylor, Alexander Clinton, Taylor, Charles Fine, Taylor, Edmund Pendleton,

Duluth, Minn., Mechanical Eng. Muscatine, Iowa, Philoscphy Milwaukee, Wis., Architecture South Orange, N. J., Letters Watertown, Mechanical Eng. Jamaica, Civil Eng. Science Buffalo, 'Aurora, Ill., Electrical Eng. Medina, Arts Hartford, Conn., Arts Electrical Eng. Rome, Mechanical Eng. Pittston, Pa., Mechanical Eng. I.ee, Mass., Mechanical Eng. Toledo, Ohio, New Orleans, La., Architecture Letters Syracuse, Mechanical Eng. Ithaca, Philosophy Oxford, Architecture Vicksburg, Miss., Electrical Eng. St. Louis, Mo., Architecture New York City, Civil Eng. Silver Creek, Arts Herkimer, Ponce, Porto Rico, Civil Eng. Electrical Eng. Oneida, Letters Fullon, Arts Rochester, Architecture Brooklyn, Architecture Buffalo, Electrical Eng. Manlius, Philosophy Brooklyn,

Lakewood, Philosophy Owego, Arts Geneseo, Arts Jersey City, N. J., Mechanical Eng. Lyons, Arts Zanesville, Ohio, Arts Auburn, Mechanical Eng. Civil Eng. Brooklyn, Springfield, Ohio, Mech. Eng. Camden, N. J., Electrical Eng. Medlock, Va., Electrical Eng.

Taylor, Waller, Ten Broeck, Floyd Gunn, Terry, Robert James, Thatcher, Frederick Hoyt, Thebaud, John Edward, Thebaud, Victor Emile, Thompson, Albert Clifton, Thompson, Milton Wesley, Thornburgh, Herbert Thayer, Tobey, Waldo Franklin, Townsend, Arthur Critchlow, Tremaine, Annie Marie, Trevvett, Sidney Alexander, Trumble, Worcester Wayland, Truran, Ernest Alfred, Turner, John Booth, Upham, Warren Kinney, Veeder, Martha Anna, Vickery, John Wilson, Wagner, John Lowry. Wallhauser, George Otto, Walsh, Frank Lawson, Warner, Charles Lathrop, Warner, Harry Mead, Waterman, Henry, B.S., Watts, Alfred Allen, Weatherson, John, Weber, Frederick Christian, Weber, Herman Rudolph, Weiler, Ferdinand Albert. Weller, Stuart, Westfall, John Van Etten, Westwood, Herman John, Wheeler, Edward Mayland, Wheelock, Charles Austin, Whelpley. James Russell, Whitfield, Erle Winfred, Wilcox, Merritt Smith, Wilder, Edward Twichell, Williams, Howard Edward, Williams, Herbert Howard, Williams, Harris Stoneman,

Monticello, Fla., Mechanical Eng. Elmira, Mechanical Eng. St. Louis, Mo., Medical Prep. New Caanan, Conn., Mech. Eng. Civil Eng. Buffalo, Buffalo, Architecture New York City, Civil Eng. Philadelphia, Pa., Electrical Eng. Cleveland, O., Medical Prep. Philosophy Port Henry, New Brighton, Pa., Mech. Eng. Fredonia, Arts Medical Prep. Ulica, Gloversville, Civil Eng. Civil Eng. Brewster, Mechanical Eng. Rouse's Point, Electrical Eng. Jamestown, Philosophy Lyons, Architecture Rochester, Wheeling, W. Va., Electrical Eng. Civil Eng. Olean, Wappingers Falls, Electrical Eng. Electrical Eng. Titusville, Pa., Science Glens Falls, Philosophy Genesco, Ill., Brantford, Ontario, Electrical Eng. Civil Eng. Chicago, Ill., St. Louis, Mo., Mechanical Eng. Electrical Eng. Denver, Col., Washington, D. C., Letters Springfield, Mo., Science Dresserville, Science Fredonia, Arts Architecture Trenton, Moscow, Arts Civil Eng. Washington, D. C., Arts Ilion, Architecture Sandusky, O., Architecture Topeka, Kan., Mechanical Eng. New York City, Electrical Eng. Ithaca, Buffalo, Philosophy

## CATALOGUE OF STUDENTS.

Williams, Roger Henry, Wilson, James Robert, Wilson, Oscar Raymond, Wohl, Nathan Edgar, Wolfe, Frank Charles, Woodbridge, John Reed, Woodworth, Benjamin Studley, Wray, Burt Gillender, Yeomans, May Cleveland, Young, Charles Somers, Young, Walter Douglas. Zalduondo, Juan, Zarbell, Elmer Nielson,

Ithaca, Philosophy San Francisco, Cal., Elec. Eng. Trumansburg, Mechanical Eng. Dallas, Texas, Electrical Eng. Union Bridge, Md., Civil Eng. Port Henry, Electrical Eng. Fort Wayne, Ind., Electrical Eng. New York City, Mechanical Eng. Walworth, Philosophy Camden, N.J., Letters Auburn, Science Fajando, Porto Rico, Mech. Eng. Civil Eng. Chicago, Ill.,

#### OPTIONAL.

Barnett, Edward Leroy,	Rouses Point
Beeber, William Parson,	. Williamsport, Pa.
Bliss, Hattie Maranda,	Ithaca
Bruce, Mamie,	Norfolk, Va.
Clark, Raymond,	Brooklyn
Couklin, William Peer,	Brooklyn
Cowdrey, Louis Rader,	Passaic, N.J.
Davis, Stella Susie,	Ithaca
Earll, Carrie May,	Syracuse
Earll, Eva Cynthia,	Syracuse
Gillmore, Frances Lulu,	Pittsburgh, Pa.
Haskell, Robert Hutchins,	Hempstead
Iewett, Fred Ford,	
Joues, Herbert Jude	Ithaca
Mayer, James Ross,	Erie, Pa.
Mayer, Joseph George,	New York City
Murray, Minnie Teresa,	Ithaca
Rogers, Lena,	Syracuse
Rosenau, Edward J	Buffalo
Skinner, LeRoy James,	Medina
Slater. Samuel Scott	New York City
VauAken, Susan Mina,	Brockport
VanBenschoten, Anna Lavinia.	Binghamton
Watson, Henry DeWitt,	Cincinnatus

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### SPECIAL STUDENTS.

### SPECIAL STUDENTS.

Alsop, Susan Kite, Paoli, Pa., Mathematics Atwood, George, Agriculture East Genoa, Baldwin, William Alpheus, Volney, Philosophy Bangs, Edward Hugh, **Physics** Buffalo, Bowen, Robert Adgar, Pendleton, S. C., English Literature Bruère, Alice Heurietta, St. Charles, Mo., **Physics** Burke, Hattie Paterson, Farmington, W. Va., English Lit. Buxton, Maude, French Johnstown, Calthrop, Everard John, Mechanical Eng. Syracuse, Chase, Clara Thompson, Camden, English Literature Christian, Elizabeth, Agriculture Ulica, Christie, William Wallace, Paterson, N. J., Mechanical Eng. Criddle, Ida Belle, English Forest Home, Davy, James Roscoe, History Rochester, Physiology Dodds, Elizabeth, Daylon, Ohio, Dodge, Grace Louise, Physiology Rondoul, Dodson, Charles W., Andover, Mass., Philosophy Agriculture Dodson, John Mark, Chicago, Ill., Agriculture Doxsee, Frank Cooper, Islip, Agriculture Earll, Dora Hattie, Mottville, **Mathematics** Ege, Sarah, Hopewell, N. J., English Ennis, Margaret Cessford, Pattersonville, Agriculture Ford, Fred Ernest, Elba, Chemistry Tokio, Japan, Furukawa, Jimkichi, Philosophy Glen, Janet Brownell, Rochester, Pedagogy Montercy, Goodrich, Katharine May, Chemistry Ithaca, Grant, Schuyler, Agriculture Jamestown, Hazeltine, Ray Thomas, Chemistry Andover, Mass., Hill Herbert Hudson, English Ithaca, Hooker, Mary Agnes, History Chicago, Ill., Jaggar, Lufanna Rowland, History Granville, Ohio, Jewett, Mary Emma, Agriculture Gouverneur, Lynde, Charles Melvin, German Amsterdam, McLauchlin, Emma Christine, Agriculture Caledonia, McKenzie, Simon Samuel, Pittsburgh, Pa., Mechanical Eng. McNeil, Thomas, Buffalo, Agriculture Martin, Mary Elizabeth, **Mathematics** New York City, Miller, Katherine Moncrief, English Shelbyville, Ky., Moore, Charlotte, History State Centre, Iowa, Morrissey, Katharine Virginia, 15

Newcomb, Hermann Danforth, Osgood, Anna Belle, Pringle, Benjamin, Reed, Raymond Clinton, Reed, Robert Rentoul, B.S., Ross, Marie Stuart, M.D., Rust, Clara Fannie, Ruyter, Lilian Catharine, Schlapp, Max Gustav, Smith, Asa Harmon, Smith, Emily Premont, Sprague, Delos Everett, Stranahan, Cora, Tevis, Mary McClure, Tod, John, Troy, Hugh Charles, Walrath, Alice, Wanzer, Esther May, Warner, James Edson, Watts, Marie Louise, Wing, Anna Keise, Wood Daniel Return,

New York City, 👘	Agriculture
Rochester,	English
Stedman,	Agriculture
Ithaca,	Medical Prep.
Washington, Pa.,	Engineering
Buffalo,	Physiology
Ithaca, Mod	lern Languages
Ithaca, Mod	lern Languages
Madison, Iowa,	Physiology
Manchester Center,	Agriculture
Cambridge, Mass., C	Greek and Latin
Penn Yan,	Agriculture
Oswego Falls,	English
Louisville, Ky.,	Chemistry
Youngstown, O.,	Chemistry
Ithaca,	Agriculture
Hallsville,	Letters
Ithaca,	History
Cambridge, Mass.,	Arts
Newark, N. J.,	Philosophy
Willow Brook,	English
Markhams,	Agriculture

## STUDENTS IN THE SCHOOL OF LAW.

#### GRADUATES.

Liucolu, Spencer Francis, LL.B., .	•	•	•	•			•	•	•	•	•	•	. Naples
Munson, Harlan Laurence, LL.B.,	•	•	•	•	•	•	•	•	•	•	٠	•	Westfield
Scovell, Josiah Boardman, LL.B., .	•	•	•	•	•	•	٠	٠	•	•	•	•	Lewiston

## 

## SENIORS.

Bell, James Donald, B.L.,
Benedict, Truman Leonard,
Brooks, Edward Anderson,
Brown, Minor Harlan,
Cole, Vernon,
Daley, William Bailey,
Dardess, John Connelly,
Davies, Llewellyn

De Ford, William Allan,
Denton, Elmer Alonzo,
Dowd, Thomas Harry,
Duniway, Ralph Roelfson,
Ferris, Frank H,
Fitzhugh, Henry L, Batesville, Ark.
Fulton, Thomas Cooper,
Gordon, Henry Irving,
Gridley, Willis Timothy,
Griffith, Ellis Albert,
Has Brouck, Howard, B.L.,
Hisey, William Newell,
Johanson, Carl Magnus, A.B. (Williams Coll.), Colorado Springs, Col.
Johnson, Charles Chamberlain,
Kelly, Sidney Jay,
Kenefick, Richard Farrell,
Ladd, Jed Perkins, Jr.,
Le Boeuf, Randall James,
McLiudeu, Charles Francis,
Middaugh, Ray E.,
Monroe, Charles Wilbur,
Moran, Daniel Webster,
Nakahara, Kota,
Nall, George Arthur,
O'Connor, Michael Joseph,
Patterson, Arthur Grant,
Plato, Fred Walter,
Rea, James M,
Reid, Rollin Hugh,
Richards, Joseph T,
Richey George D,
Smith, Clarence Grant Tangier, Brook Haven
Smythe, Hugh Clayton,
Taylor, Joseph William,
Trax, Judson D,
Tuttle, Daniel Sanford
Watkins, Thomas David,
Wilcox, George Burton,
White, Hubert Lawrence,

•

## CATALOGUE OF STUDENTS.

## JUNIORS.

Adams, Herbert Beecher,	Fort Covington
Alger, Edmund Conger,	Cortland
Bloss, Joseph Mackie,	Titusville, Pa.
Brown, Mrs. Mary Kennedy,	Grand Junction, Col.
Burns, Thomas,	Watertown
Burt, Charles Wellington,	East Saginaw, Mich.
Cobb, Fordyce Allen,	Ithaca
Coville, Henry Dart,	Central Square
Davis, Burton William, Ph.B.,	
Dimmick, Russell,	Honesdale
Dygert, Lincoln Williams,	Syracuse
Freeman, Lewis C,	Albany
Fritz, Emil W,	New York City
Graham, Alexander Raymond,	Clyde
Graham, George Northup,	North Granville
Hall, Fred W,	San José, Cal.
Hanson, Bert, A.B., (Yale University),	Great Falls, N. H.
Harrold, James Picken,	Rockford, Ill.
Hulburt, Leslie Ernest,	Fairport
Hunt, Dennis William,	Syracuse
Hurley, Jeremiah Joseph,	Dunkirk
Hyde, Ira Hinsdale,	Norwich
Jackson, Edward, Jr.,	
Jenkins, James,	Gardner
Johns, Charles F,	Salamanca
Jones, Robert Valentine,	Philadelphia, Pa.
Kelley, Charles C,	Jersey City, N. J.
Kellogg, William Greenwood,	Greenwood
Knapp, Alexander Payson,	New York City
Kuapp, Clyde Wilson,	
Dennox, Frank R,	Canastota
Lonergan, Richard Thomas,	Etmira
Machesney, Haines Allen,	Allegheny, Pa.
McCluskey, Seldeu Edward,	Lewisville
McGuire, John James,	
McNeal, Alfred Francis,	Marion, O.
Morse, Clarence Worden,	Bath, Me.
Mitchell, Harold Crowell,	Seneca Falls
O'Connor, George James,	Rome
Olmsted, Andrew Lee,	Syracuse
Ormsbee, Addison Crawford,	Newburgh

\*

## STUDENTS IN THE SCHOOL OF LAW. 229

Oura, Hajime,
Randall, Edward L,
Reed, Harrison,
Root, Francis Stanton,
Rogers, James Tracy,
Smith, Herbert Leonardo,
Smith, Isaac P,
Smith, Ray Burdick, A.B., (Yale University),
Snyder, John G,
Southworth, John Howard,
Spawn, George Martin,
Springer, Harwood Henry,
Stevenson, Harry Murray,
Stevens, Julian J,
Strattou, Vernon Davis,
Swift, James Carroll,
Tarbell, George Schuyler, Ph.B.,
Terry, Jay,
Thompson, Arthur Rumford,
VanBergeu, Harold Mills,
Warren, Arthur Robert,
Ward, George Washington,
Watson, William Henry,
Wheeler, William Algar,
White, Andrew Strong, B.L.,
Widdicombe, Robert Hedrick, Boonville, Mo.
Young, William,

Students from General Courses Electing Work in the School of Law.\*

Allen, Edwin Pitcher,	٠	•	•		•	•	•		•	•	•	•	•	•	•	•		•	٠	Clarence
Baldwin, Arthur J.	•	•	•	•	•	•	•	•		•		•	•	•	•	•	•	•	٠	. Ithaca

\*Juniors and seniors in good standing in the general courses of the University may be allowed, under permission of the General Faculty and with the consent of the Faculty of the School of Law in each case, to elect studies in the Law School which shall count toward graduation both in that School and in the general courses; but the sum total of hours so elected cannot exceed the number required for one year's work in the Law School. Under this provision a student may complete a general course of university study and the law course in five years.

## SUMMARIES.

Baldwin, Leonard DeWitt,	Ithaca
Black, Frederic M,	Newark, O.
Breckenridge, Roeliff Morton,	. Hamilton, Canada
Danser, Jason Seymour,	East Clarence
Gardinier, William John,	Little Falls
Hadden, Clarence Bernard,	Sandusky, O.
Hamilton, John Alan,	East Saginaw, Mich.
Haring, Fred Benson,	Ludlowville
Hogg, George Thomas,	Franklinville
Kreidler, Deo Clair,	South Dansville
Kreidler, Charles Ray,	South Dansville
Ladd. Carlton, Eastman,	Buffalo
Marston, Amos Wilbur,	Winnebago, Ill.
Mosher, Ward	Cold Springs
Newall, Benjamin Haff,	Brooklyn
Quencer, Albert Benore,	Watertown
Register, Harry Vollmer,	. Philadelphia, Pa.
Rice, Edward Carr,	Fairfield
Root, Louis Carroll,	Port Byron
Schneek, George William,	Waterloo
Shurter, Edwin Du Bois,	Brookton
Stanford, George Elijah,	Evanston, Ill.
Stoddard, Charles Herbert,	Glens Falls
Strait, Burton,	Shokopee, Minn.
Studley, Elmer Ebenezer,	East Ashford
Tuttle, George Mott,	LeRoy

## SUMMARIES.

## SUMMARY OF COURSES. [UNDERGRADUATES.]

			S	enio <b>rs</b> .	Juniors.	Sopho- mores.	Fresh- men.	Total.
Arts,	•	•	•	32	30	35	42	139
Philosophy,	•	•	•	20	22	21	35	- 98
Letters,	•	•	•	21	28	14	22	85
Science,	•	•	•	17	25	16	18	76_
Agriculture,	٠	•	•	6	4	8	5	23
Architecture,			•	3	9	<b>2</b> I	36	69
Civil Engineering,	•	•	•	24	26	36	53	139
Electrical Engineering, .	•	•	•	39	39	72	100	250
Mechanical Engineering,	•	•	•	31	40	77	93	241
Medical Preparatory,	•		•	<b>—</b> —		2	IO	12
Optional,	•	٠	٠	4	II	15	24	54

## SUMMARIES.

## SUMMARY BY CLASSES.

Graduates,	•		•	٠	٠		•	٠	•	٠		•	•	•	•	٠	•		•	•	٠		•	•	147
Seniors,	٠	•	•	٠	•	٠	•	•			•	•	•	•	•	•	•		٠	•	•	•	•	•	197
Juniors,	•	•	•	•	•	•	٠	٠	•	•	•	•	•	•	•	•		•	•	•	٠	٠	٠	•	234
Sophomores, .	•	•	٠	•	٠	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	317
Freshmen,	•	•	٠	•	•	•	•	•	•	•	•	•		•	•		•	•	•	•		•		•	438
Special Studer	its		•	٠	•	•	•	•	•	•	•	•	•		٠	•	•	•	•	•		•	•		62
Students in th	e S	Sci	ho	ol	0	f ]	_∕a	W	:																
Graduates	, .	•			•			•	•	•	•		•		•	•	•	•	•	•	•	•	•	•	4
Seniors, .	•	٠	•	•	•	•	•	•	•	•	٠	•	•	•	•			•	•	•		•	•	•	47
Juniors, .	•	•	•	•	•	•	•	•	•	٠	•	•	•		•	•	•		•	•	٠	•	•	٠	68
Students f	ro	111	G	et	ıeı	ral	C	ίοι	ars	es	el	lec	eti	ng	, w	or	·k	in	L	aw	7 8	icl	10	01,	28
																									1542
Names repeate	ed,	٠		•	•	٠	•	•	•	•	•	•	•	•	•	•	•	٠	٠	•	٠	٠	٠	•	53
•	ſo	tal	l i	n 1	th	e 1	( <b>T</b> 11	liv	'er	sit	V.						-					-	_		1480
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## SUMMARY BY RESIDENCES. [UNDERGRADUATES.]

. . . . . . .

New York,	Mississippi,
Pennsylvania, 106	Texas,
Illinois,	West Virginia,
Ohio 60	Delaware, 2
New Jersey	Florida,
Massachusetts	Idaho,
Missouri. 21	New Hampshire,
District of Columbia	Utah
Wisconsin.	Vermont, 2
Michigan, 13	Alabama, I
Indiana.	Montana, I
California. 10	North Carolina,
Colorado.	Oregon, I
Virginia. 10	Tennessee, I
Iowa 8	Washington, I
Connecticut. 8	Canada,
Maine	Japan, 5
Kansas. 6	Porto Rico,
Marvland. 6	Brazil,
Minnesota. 6	Mexico,
Rhode Island. 6	Nicaragua, 2
Arkansas	Russia, 2
Kentucky. 5	Argentine Republic, I
Louisiana	Asia Minor, I
Nebraska 5	Hawaiian Islands, I
South Carolina. 5	Holland, I
Georgia.	Honduras, I
Total.	

# THE TWENTY-THIRD ANNUAL COMMENCEMENT.

JUNE 18, 1891.

## **DEGREES CONFERRED.**

#### FIRST DEGREES.

#### BACHELORS OF ARTS.

Winifred Ball, Elwyn Brockway Bentley, Frank Crane Bentley, Fred Olds Bissell, James Irving Casey, Theron Dexter Davis, Oliu Farber, Albert Perry Fowler, William Robert Gill, Sarah Ellen Hawley, Robert James Kellogg,

Harry Abram Lozier, Jr., Clinton Stoner Marsh, Robert Owen Meech, Annie Florence Moon, Phillip Ogden, Ervin Louis Phillips, Bertha Prichard Reed, Clark Ames Rosegrant, Frederic Palen Schoonmaker, Amelia Shapleigh, Grace Pierson Taintor, George John Vogel.

#### BACHELORS OF PHILOSOPHY.

Milton Irwin Dunlap, Edith Marie Norton, Everett Ward Olmsted, Ina Eloeeu Genung, Alice Mabel Gilliland, Merton Ogden Phillips, Mary Isabel Hoskins, Mary Louise Robbins, George Schuyler Tarbell, Clara Hannah Kerr, Carrie Lena VanVleet. (IN HISTORY AND POLITICAL SCIENCE.) . Burton William Davis, Alfred Willis Abrains, Albert Alexander Bird, Willard Underhill Taylor. **BACHELORS OF LETTERS.** Edward Clifford Bailey, Thomas John Bridges, William Pimm Baker, Ola Beth Capron, Matie Adeline Cosad, Frank Greene Bates,

Elmer G Mansfield, Carrie Ingersoll Adsitt,

Charles Courter Dickinson, George Jason Dikeman, Irving Boyd Easton, Robert Budroe Foote, Jr., John Kneeland Garnsey, Mary Ellen Griswold, Metcalf Bradley Hatch, Jr., Byron Henry Heath, Fidelio King Hiscock, Manfred James Holmes, Charles Joseph Levy, Horace Mack, 2d,

Non, William George Newbrook,
Alice Lucinda Priest,
Charles Russell,
Jr., Rose Josephine Ryan,
ey, Henry Hubbell Sanger,
Peter Lamont Schutt,
f., Jr., Edward Morgan Sheldon,
Helen Augusta Simpson,
Charles Marvin Smith,
es, Frank Will Smith,
Harry Stowe Thayer,
Jot Salisbury Waterman,

Charles Mervine Weeks.

#### BACHELORS OF SCIENCE.

Harry Merrit Bradley, Lena Frances Brown, Edward Michael Burns, Eunice Maria Davis, David Fletcher Hoy, Ida Hyde, Cornelia Adeline McConville, John Thompson Manierre. Louis Rouillion, Alvin Wayland Shepard, Charles Albert Stiles, John Henry Stocker, Bert Brenette Stroud, John Henry Tanner.

(IN NATURAL HISTORY.)

Irvine Jay Kerr,

Robert Orton Moody.

(IN AGRICULTURE.)

Horace Atwood,	Clarence Wentworth Mathews,
Charles Gilmore French,	Sherman Darwin Maynard,
Samuel Jeffrey,	Charles Howard Royce,
Thomas Lyttleton Lyon,	William Earle Rumsey,
Wilbur James MacNeil,	Edwin Strattou Van Kirk,

Jared Van Wageneu, Jr.

(IN ARCHITECTURE.)

Raymond Francis Almirall,Brad FGilbert Hart Auderson,John 7Edwin Thayer Barlow,LouisCharles Henry Deuchler, A.B.,Edwar

Brad French Hurd, John Thomas Lewis, Louis Rolfe Stagg, Edward Everett Waful.

```
(IN CHEMISTRY.)
```

Maurice Cauffman,

, Emile Monnin Chamot, Clarence Stanley Lomax.

## 234 TWENTY-THIRD ANNUAL COMMENCEMENT.

#### CIVIL ENGINEERS.

James Wallace Beardsley, Thomas Francis Bowes, James Parker Brownell, Albert Sears Crane, Carl Everett Davis, Robert Ladd Gifford, Harry Eysaman Golden, Carleton Greene, A.B., Elijah Allen Hallock, William Kendrict Hatt, A.B., Edwin Hilborn, Irving Hitz, B.C.E., Howard Corwin Hulse, John Albert Knighton, Clarence Charles Lewis, Earl Brink Lovell, José del Cármen Muñoz, Carl Hess Niemeyer, Herbert Parsons, Arturo Rodriguez, Jesse Alanson Rogers, Clarence A Snider, Harrison Lockwood Stidham, Wellington Romeyn Vedder.

#### MECHANICAL ENGINEERS.

Juan Antonio Almirall, Christopher Henry Bierbaum, William Charles Boyer, George Mackensie Brill, Robert Turnbull Burwell, Herbert Burns Clarke, Freeman Britton Cowan, Philip Jackson Darlington, Arthur Carpenter Field, Halsey Rogers Graves, Stanley Wolcott Hayes, Oren Gibson Heilman, John James Herrick, Herbert Wade Hibbard, Lucian Cornes Jackson, Arthur Townsend Kelsey, William Winant Kirley, James Edward Kress, Warren H Meeker, William Chapman Shapleigh, Arthur Daniel Stewart, Horace Greeley Van Everen, Augustus Wood, Edwin Yawger.

### (IN ELECTRICAL ENGINEERS.)

Frank Arthur Barton, Herschel Albert Benedict, John Francis Booraem, Samuel Edward Hitt, Gaylord DeForest Hullett, Albert Louis Kuehmsted,

Paul Konstance Browd, Ernest H Brown, Francis Cary Caldwell, A.B., George Ray Chamberlain, Richard Eugene Danforth, Louis Warren Emerick, Charles Locke Etheridge, Edwin Eugene Fisher, Edwin Fitts, Henry Floy, Joseph Linville Hall, Frank Land, Lehman Levy, B.S., William Edward Lindsay, John Clarke McMynn, A.B., Frank Clinton Perkins, Seabury Gould Pollard, Harold Babbitt Smith, Frank Jerome Tone, Charles Miles White, Herbert McAdam Willson, Edward McGill Wood.

#### BACHELORS OF LAW.

Frederick Goodrich Bagley, Albert Sullard Barnes, Alvarado Brown Cole. Walter Platt Cooke, William Gregg Doolittle, Edward Charles Dowling, George Hale Emerson, Leon Livermore Fancher, James Flaherty, Martin Joseph Flannery, Harry Gardner Folts, Charles Frenkel, B.Lit., Frank Gleason Gardner. Merton Stanley Gibbs, John Milton Gorham, Ernest Grove Gould, Fred Wells Hargreaves, B.L., Irving G Hubbs, Frank Johnson, Peter Schermerhorn Johnson, William W Kelley, **Charles Sumner Lattin**,

Spencer Francis Lincoln, Julius William Loewenthal, Charles Hamilton McKnight, Frank P Marquis, Reuben Leslie Maynard, A.B., Harlan Lawrence Munson, Edward Richard O'Malley, Clarence Gray Parker, Charles Henry Parshall, A.B., James Henry Pool, Byron Frank Record, Josiah Boardman Scovell, Carl Jay Seymour, Fred Kingsbury Stephens, Alphonso Derwin Stillman, Thomas Allen Joseph Sullivan, Joe Layet Thistlethwait, Fred Moore Whitney, Albert Thomas Wilkinson, Howell Charles Williams, Albert Mack Wittenberg, Henry Lake Woodward.

#### ADVANCED DEGREES.

#### MASTERS OF ARTS.

Elizabeth Briggs, cum laude, Salem Griswold Pattison, A.B., Sara Frances Pellett, A.B., Antoinette Lawrence, Ph.B., magna cum laude, cum laude, Lola Maddox, A. B., cum laude, Sara Bulkley Rogers, A.B.

### MASTERS OF SCIENCE.

Earl Barnes, A.B., with high distinction, Frederick Bedell, A.B., with high distinction, Arthur H Crist, B.L.,

Floyd Lucien Robinson, B.S., with the highest distinction, Frederick John Rogers, B.S., with high distinction. Henry Hiram Wing, B.Agr., with high distinction.

## MASTERS OF CIVIL ENGINEERING.

Thomas McEldeny Vickers, C.E., John Cassan Wait, C.E., with distinction, with the highest distinction.

## 236 TWENTY-THIRD 'ANNUAL COMMENCEMENT.

MASTERS OF MECHANICAL ENGINEERING.

Clarence Linus Cory, B.M.E., Daniel Royse, B.M.E., August Julius Wiechardt, M.E.

MASTERS OF LAW.

George Comstock Baker, LL.B., Robert Cushing Cumming, LL.B., Charles Ralph Coville, LL.B., Kiichiro Kambe, LL.B., Matsuga Takemura, LL.B.

DOCTORS OF PHILOSOPHY.

George W Botsford, A.B., Oliver Farrar Emerson, A.M., magna cum laude, magna cum laude, Arthur Gordou Laird, A.B., cum laude.

PRIZES AWARDED.

The Sibley Prizes in Mechanic Arts:	
1st Prize,	
2d Prize,	MILLIKEN.
3d Prize, CARL FRED KR	ESS.
4th Prize	EASTMAN.
5th Prize,	
The H. K. White Prizes in Veterinary Science : 1st Prize,	er Howe.
The Prize offered by the New Shakspere Society of Loudon GERTRUDE ANNA	n : Riemann.
The Mrs. A. S. Barnes Shakspere Prize : LOLA	A MADDOX.
The Eighty-Six Memorial Prize in Declamation :	
EDWIN DIPOT	SHITD THE

### The Woodford Prize iu Oratory:

OLIN-FARBER.

PRIZES IN THE SCHOOL OF LAW.

## 

## 

### CERTIFICATES AWARDED.

Certificates for the Medical Preparat	ory Course :
ARTHUR WOODWARD BOOTH,	IRVINE JAY KERR,
THOMAS FRAN	ICIS MYLOD.
<b>Teachers' Certificates :</b>	
CARRIE INGERSOLL ADSITT,	Latin
INA ELOEEN GENUNG,	
BYRON HENRY HEATH,	German and Romance Languages
BERTHA PRICHARD REED,	
Rose Josephine Ryan,	
FRANK WILL SMITH,	German
GRACE PIERSON TAINTOR,	Latin
John Henry Tanner,	Mathematics
Certificates for Proficiency in Milita	ry Science :
EDWIN THAYER BARLOW,	ERVIN LOUIS PHILLIPS,
FRANK ARTHUR BARTON,	LOUIS ROUILLION,
RICHARD EUGENE DANFORTH,	HENRY HUBBELL SANGER,
CHARLES COURTER DICKINSON,	GEORGE SCHUYLER TARBELL,
ALBERT LOUIS KUEHMSTED,	WILLARD UNDERHILL TAYLOR.

## HONOR LIST.

## THESES OF DISTINGUISHED EXCELLENCE.

CARRIE INGERSOLL ADSITT: The Philosophy and Religion of Virgil. GILBERT HART ANDERSON: The Development of the Dwelling-house in the United States.

- WILLIAM PIMM BAKER : The Development of the Executive Departments in the Government of the United States.
- JAMES WALLACE BEARDSLEY: A Study upon the Necessity for an Additional Water Supply for the City of Ithaca.
- ELWYN BROCKWAY BENTLEY: The Conflict between the Church and

Commerce over Usury.

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- CHARLES FRENKEL: The Texas Community System.

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JOSIAH BOARDMAN SCOVELL : The Police Power, with Special Reference to Prohibitory Liquor Legislation.
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HENRY LAKE WOODWARD : Liability of Members of a *de facto* Corporation.

## 240 T.WENT.Y-THIRD 'ANNUAL COMMENCEMENT.

## SPECIAL MENTION.

(Awarded for special study with marked proficiency in particular lines during the last two years of the course.)

CARRIE INGERSOLL ADSITT,
WILLIAM PIMM BAKER,
FRANK GREENE BATES,
FRED OLDS BISSELL,
THOMAS JOHN BRIDGES,
EUNICE MARIA DAVIS,
GEORGE JASON DIKEMAN,
INA ELOREN GENUNG,
BYRON HENRY HEATH, German and Romance Languages
MANFRED JAMES HOLMES,
ROBERT JAMES KELLOGG,
ROBERT OWEN MEECH,
PHILLIP OGDEN,
ERVIN LOUIS PHILLIPS,
ALICE LUCINDA PRIEST,
BERTHA PRICHARD REED,
ROSE JOSEPHINE RYAN,
FRANK WILL SMITH,
GRACE PIERSON TAINTOR, Latin
JOHN HENRY TANNER,
HARRY STOWE THAYER,
CARRIE LENA VAN VLEET,

.

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 of (1) 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 1891-92.

President-G. F. Winston, '74.

Vice-Presidents-W. H. Smith, '73; S. H. Gage, '77; J. D. Adams, '82; C. H. Thurber, '86.

Corresponding Secretary-W. T. Hewett, '79.

Recording Secretary-G. W. Harris, '73.

Treasurer-H. M. Hibbard, '74.

Executive Committee-G. F. Winston, W. T. Hewett, G. W. Harris,

H. M. Hibbard, ex officio; and J. T. Newman, '75; C. H. Blood, '88. Auditing Committee—D. F. Van Vleet, '77; A. B. Comstock, '85.

OFFICERS OF LOCAL ALUMNI ASSOCIATIONS.\*

#### CENTRAL NEW YORK ASSOCIATION.

President—Hamilton S. White, '77. Vice-President—S. F. Belknap, '73. Secretary—Percy Clisdell. Treasurer—W. K. Pierce.

ITHACA ASSOCIATION.

President—C. E. Van Cleef, '71.
Vice-President—William R. Dudley, '74.
Secretary—D. F. Van Vleet, '77.
Treasurer—Wm. Hazlitt Smith, '73.
Members of Executive Committee—Above named officers, ex officio;
G. W. Harris, '73; F. J. Whiton, '79.

#### MICHIGAN ASSOCIATION.

President—Chas. S. Cobb, '77, Eaton Rapids, Mich. Secretary—Delos D. Jayne, '81, Orchard Lake, Mich.

<sup>\*</sup> As last reported.

#### MINNESOTA ASSOCIATION.

President—John G. Moore, '73. Vice-President—H. W. Slack, '72. Secretary—E+ B. Barnes, '88, Minneapolis, Minn. Treasurer—E. H. Crooker, '84. Directors—W. E. Lucas, '77; F. I. Wilson, '82; C. E. Carpenter, '86.

#### NEBRASKA ASSOCIATION.

President—A. C. Wakeley, '79. Vice-Presidents—A. J. Cornish, '80; L. E. Fuller, '77. Secretary—Frank Irvine, '80, Omaha, Neb. Treasurer—C. L. Saunders, '80.

#### NEW ENGLAND ASSOCIATION.

President—G. B. Upham, '74. 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, 'So, Temple Court, New York City. Treasurer-Otto M. Eidlitz, 'S1.

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.

#### NORTHEASTERN PENNSYLVANIA ASSOCIATION.

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President—H. M. Streeter, '82.
Vice-Presidents—J. L. Stone, '74; T. J. McConuon, '72; M. G.
Peters, '72.
Recording Secretary—R. H. Patterson, '83.
Corresponding Secretary and Treasurer—F. L. Brown, '82; Scranton, Pa.
Executive Committee—Myron Kasson, '71; F. L. Brown, '82; R.
B. Howland, '72.
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#### NORTHWESTERN ASSOCIATION.

President—George H. Thayer, '83, Plymouth, Ind. Vice-President—Ralph Seymour, '83, Chicago, Ill. Secretary—Frank H. Jones, '80, Chicago, Ill. Treasurer—James H. Peirce, '74. Registrar—D. F. Flannery, '76, Illinois Bank Building, Chicago, Ill.

#### 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, '73, Larned, Kan.

Vice-Presidents—Frank W. Cooper, '74; George B. Richards, '87, Kansas City, Mo.

Secretary-Ed. A. Wagener, '76. Topeka, Kan.

Treasurer-Wm. S. Elliott, '87.

Registrar-Eugene L. Hopkins, '88, Topeka, Kan.

#### WASHINGTON ASSOCIATION.

President-C. W. Curtis, '88.

Vice-Presidents-A. M. Farrington, '79; J. McK. Borden, '78; C. D. White, '86.

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 West 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.
## ALUMNI BUREAU.

The Alumni Association voted at its meeting in June, 1890, to establish in the University an Alumni Bureau, the object of which shall be to promote the interests of graduates of Cornell in securing professional and educational positions. In accordance with this resolution a permanent Bureau has been constituted where the names of graduates are registered with a record of the position desired and of the studies and experience of those who wish situations. To render this organization in the highest degree efficient, it is desired that all interested should communicate as early in the year as possible to Professor Hewett, the Corresponding Secretary of the Alumni, information of vacancies which may occur in public positions which graduates are prepared to fill. Former students can thus render a constant service to the University, and to successive classes as they graduate. A list of such situations is kept and is available for consultation by all students. In accordance with the vote of the Alumni Association, the annual report of the Alumni Trustee, containing a review of the year and such matters affecting the University as interest the Alumni, is sent to all members whose annual dues have been paid. Remittances may be made to the order of the Corresponding Secretary. The last report is now ready for distribution.

The Corresponding Secretary is required to keep a list of the addresses of graduates, and it is requested that he may be notified of changes in the address of any member.

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